

# Ordinance Governing Bachelor of Dental Surgery I,II,III & IV B.D.S. Degree Courses

(New DCI Regulation-2007)

## Revised Scheme (RS) 2024 - 25



***Accredited 'A+' Grade by NAAC (3<sup>rd</sup> Cycle)  
Placed in Category 'A' by MoE (GoI)***

### **KLE ACADEMY OF HIGHER EDUCATION AND RESEARCH**

***(Deemed-to-be-University)***

[Declared as Deemed-to-be-University u/s 3 of the UGC Act, 1956 vide Government of India Notification  
No. F.9 -19/2000-U.3 (A)]

JNMC Campus, Nehru Nagar, Belagavi - 590 010. Karnataka, INDIA.

Phone : +91 0831-2444444, 2493779 FAX : +91 0831-2493777

E-mail : [info@kledeemeduniversity.edu.in](mailto:info@kledeemeduniversity.edu.in) Website : <http://www.kledeemeduniversity.edu.in>

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**Director, Academic Affairs**

Email: [diracademic@kledeemeduniversity.edu.in](mailto:diracademic@kledeemeduniversity.edu.in)

**KLE Academy of Higher Education & Research**

JNMC Campus, Nehru Nagar, Belagavi-590 010.

Phone : 0831-2444444

e-mail:[info@kledeemeduniversity.edu.in](mailto:info@kledeemeduniversity.edu.in)

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Ph: 0831-2424124 E-mail: [customerservice@omegaoffset.com](mailto:customerservice@omegaoffset.com)





## **VISION**

To be an outstanding KAHER of excellence ever in pursuit of newer horizons to build self-reliant global citizens through assured quality educational programmes.

## **MISSION**

- To promote sustainable development of Higher Education consistent with statutory and regulatory requirements.
- To plan and continuously provide necessary infrastructure, learning resources required for Quality education and innovations.
- To stimulate to extend the frontiers of knowledge, through Faculty Development and Continuing Education Programmes.
- To make research a significant activity involving Staff, Students and Society.
- To promote Industry/Organization, Interaction/Collaborations with Regional / National / International bodies.
- To establish healthy systems for communication among all stakeholders for vision oriented growth.
- To fulfill the National Obligation through Rural Health Mission.

## **OBJECTIVES**

The objectives are to realize the following at KAHER and its Constituent Institutions :

- To implement effectively programmes through creativity and innovation in teaching, learning and evaluation.
- To make existing programmes more career oriented through effective system of review and redesign of curriculum.
- To impart spirit of inquiry and scientific temperament among students through research oriented activities.
- To enhance reading and learning capabilities among faculty and students and inculcate sense of Life Long Learning.
- To promulgate process for effective continuous, objective oriented student performance evaluation.
- To ordinate periodic performance evaluation of the faculty.
- To incorporate themes to build values, civic responsibilities and sense of National Integrity.
- To ensure that the academic, career and personal counseling are in-built into the system of curriculum delivery.
- To strengthen, develop and implement staff students welfare programmes.
- To adopt and implement principles of participation, transparency and accountability in governance of academic and administrative activities.
- To constantly display sensitivity and respond to changing educational, social and community demands.
- To promote Public - Private Partnership.

# INSIGNIA



*The Emblem of the KAHER is a Philosophical statement in Symbolic.*

## ***The Emblem...***

*A close look at the emblem unveils a pillar, a symbol of the 'KAHER of Excellence' built on strong Values & Principles.*

## ***The Palm & the Seven Stars....***

*The Palm is the palm of the teacher - the hand that acts, promises and guides the students to reach for the Seven Stars...*

*The Seven Stars signify the 'Saptarishi Dnyanamandal', the Great Bear - a constellation made of seven stars in the sky, each signifying a particular Knowledge Domain. Our culture says: The true objective of human birth is to Master these Knowledge Domains.*

*The Seven Stars also represent the Saptarishis, the founders of KLE Society whose selfless service and intense desire for 'Dnyana Dasoha' laid the foundation for creating the knowledge kingdom called KLE Society.*

*Hence another significance of the raised Palm is our tribute to these great Souls for making this KAHER a possibility.*

## ***Empowering Professionals...***

*'Empowering Professionals', the inscription at the base of the Emblem conveys that our Organization with its strength, maturity & wisdom will forever strive to empower the student community to become globally competent professionals. It has been a guiding force for many student generations in the past, and will continue to inspire many forthcoming generations.*



## KLE Academy of Higher Education & Research

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Phone : 0831-2444444 / 2493779 Fax : 0831-2493777

Web: <http://www.kledeemeduniversity.edu.in>

E-mail: [info@kledeemeduniversity.edu.in](mailto:info@kledeemeduniversity.edu.in)

Ref. No. KAHER/24-25/D-27122427

21<sup>st</sup> December, 2024

### NOTIFICATION

Sub : **Ordinance governing revision in the course curriculum of Bachelor of Dental Surgery (BDS) under the Faculty of Dentistry**

Ref : Minutes of the 57<sup>th</sup> Academic Council meeting held on 18<sup>th</sup> October, 2024.

In exercise of the powers conferred under Rule 6 (9) of the Memorandum of Association of the KLE Academy of Higher Education and Research in its **57<sup>th</sup> Academic Council** meeting held on **18<sup>th</sup> October, 2024**, has approved revision in the curriculum for **Bachelor of Dental Surgery (BDS)** under the **Faculty of Dentistry** from the academic year **2024-25 onwards**.

By Order

  
**Dr. Mrs. Jyoti M. Nagamoti**  
Director, Academic Affairs

  
**Prof. Dr. M.S. Ganachari**  
Registrar

To

**The Dean,  
Faculty of Dentistry,  
BELAGAVI.**

CC to :

1. The Special Officer to Hon. Vice-Chancellor, KAHER, Belagavi.
2. The Principal, KLE V.K. Institute of Dental Sciences, Belagavi.
3. The Controller of Examinations, KAHER, Belagavi.
4. The Director, Academic Affairs, KAHER, Belagavi.
5. The Director, IQAC, KAHER, Belagavi.



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# **SECTION I**

## **GOALS OF EDUCATION AND TRAINING IN DENTAL SCIENCES**

The Dental curriculum shall be oriented towards educating students of B.D.S. Course to:

1. Take up the responsibilities of Dental surgeon and be capable of functioning independently in both urban and rural environment.
2. Provide educational experience that allows hands-on-experience both in hospital as well as in community setting.
3. Make maximum efforts to encourage integrated teaching and de-emphasize compartmentalisation of disciplines so as to achieve horizontal and vertical integration in different phases.
4. Offer educational experience that emphasizes health rather than only disease.
5. Teach common problems of health and disease and National programmes.
6. Use learner-oriented methods, which would encourage clarity of expression, independence of judgment, scientific habits, problem solving abilities, self-initiated and self-directed learning.
7. Use of active methods of learning such as group discussions, seminars, role play, field visits, demonstrations, peer interactions etc., which would enable students to develop personality, communication skills and other qualities which are necessary.

Regular periodic assessment is done throughout the course. Examinations are designed with a view to assess not merely the knowledge but also practical and clinical skills, habits and values which are necessary for a graduate to carry out professional day to day work competently.

Towards achieving these goals, Institute of Dental Sciences should:

- Evolve institutional objectives, which would be in consonance with the National goals and health policy. The institutional objectives should describe the attributes of their product.
- Shift the role of Dental teachers from merely imparting knowledge to that of a facilitator and motivator of student learning.
- Establish a Dental Education Unit for faculty development, preparation of learning resource materials and for improving evaluation methods.

## **SECTION 2**

### **AIMS AND OBJECTIVES OF BDS COURSE**

#### **AIMS :**

The dental graduates during training in the institutions should acquire adequate knowledge, necessary skills and reasonable attitudes which are required for carrying out all activities appropriate to general dental practice involving the prevention, diagnosis and treatment of anomalies and diseases of the teeth, mouth, jaws and associated tissues. The graduate also should understand the concept of community oral health education and be able to participate in the rural health care delivery programmes existing in the country.

#### **OBJECTIVES :**

The objectives are dealt under three headings (a) Knowledge and understanding (b) Skills and (c) Attitudes.

##### **(a) Knowledge and understanding:**

The graduate should acquire the following during the period of training :

1. Adequate knowledge of the scientific foundations on which Dentistry is based and good understanding of various relevant scientific methods, principles of biological functions and be able to evaluate and analyse scientifically various established facts and data.
2. Adequate knowledge of the development, structure and function of the teeth, mouth and jaws and associated tissues both in health and disease and their relationship and effect on general state of health and also bearing on physical and social well-being of the patient.
3. Adequate knowledge of clinical disciplines and methods which provide a coherent picture of anomalies, lesions and diseases of the teeth, mouth and jaws and preventive diagnostic and therapeutic aspects of Dentistry.
4. Adequate clinical experience required for general dental practice.
5. Adequate knowledge of the constitution, biological function and behaviour of persons in health and sickness as well as the influence of the natural and social environment on the state of health in so far as it affects Dentistry.



**(b) Skills:**

A graduate should be able to demonstrate the following skills necessary for practice of Dentistry

1. Able to diagnose and manage various common dental problems encountered in general Dental practice keeping in mind the expectations and the right of the society to receive the best treatment available wherever possible.
2. Acquire the skill to prevent and manage complications if encountered while carrying out various surgical and other procedures.
3. Possess skill to carry out certain investigative procedures and ability to interpret laboratory findings.
4. Promote oral health and help prevent oral diseases when ever possible.
5. Competent in the control of pain and anxiety during dental treatment.

**(c) Attitudes:**

A graduate should develop during the training period the following attitudes:

1. Willing to apply the current knowledge of Dentistry in the best interest of the patients and the community.
2. Maintain a high standard of professional ethics and conduct and apply these in all aspects of professional life.
3. Seek to improve awareness and provide possible solutions for oral health problems and needs of the community.
4. Willingness to participate in the Department of Dental Education (DDE) programmes to update the knowledge and professional skill from time to time.
5. To participate in the implementation of the National Oral Health Programmes.

## **SECTION 3**

### **REGULATIONS RELATING TO B.D.S. COURSE**

#### **I. ELIGIBILITY FOR ADMISSION**

**Eligibility Requirements for admission to BDS Course:** Only those candidates who would satisfy or are likely to satisfy the relevant eligibility requirements for admission to a course will be considered eligible to appear for National Eligibility Entrance Test (NEET) & subsequently for admission to that course.

##### **Qualifications:**

- i. Requisite qualifications for admission to BDS Course: The candidate seeking admission to this course should have passed the Higher Secondary Certificate Examination PUC II / HSC or the Indian School Certificate Examination (ISCE) or any other examination equivalent to 10+2 / HSC examination of any recognized board / University from any school / college situated in India / abroad after 12 years of study.
- ii. For admission to BDS Course: The candidate should have passed in the subjects of Physics, Chemistry, Biology & English individually & must have obtained at least 50% marks in Physics, Chemistry & Biology taken together in the qualifying examinations i.e. PUC II / 10+2 / HSC or equivalent. The candidate should also have scored 50% marks in English language. The candidate should also have secured marks as per the guidelines of National Testing Agency and NEET for admission to BDS course.
- iii. Candidates who are likely to appear or who have appeared for qualifying examination i.e. PUC II / 10+2 / HSC or equivalent but whose results have not been declared will also be considered eligible to appear for NEET, as per NTA regulation, provided they have offered the above mentioned subjects at the said examination.

#### **II. AGE REQUIREMENT**

The candidate shall have completed the age of 17 years at the time of admission or will complete this age on 31st December of the year in which he/she seeks admission.

#### **III. DURATION OF THE COURSE**

The BDS course shall be of five academic years including compulsory rotating Internship.

#### IV. ATTENDANCE REQUIREMENT, PROGRESS AND CONDUCT

Attendance requirement shall be as follows:

- a. Every candidate shall have attendance of 75% in theory classes and 75% in Practical / Clinical in each subject in each year.
- b. In case of subject in which the instructional programme extends more than one academic year and where there is no University Examination in the subject during that year (i.e. non- exam going subjects), the attendance requirement shall not be less than 75% in Lectures and 75% in Practical / Clinical classes collectively. At the time of appearing for the professional examination in the subject the candidate should satisfy the condition as above.
- c. Candidate who is declared failed, shall put up an addition of a minimum of 75% attendance in the failed subjects.

#### V. TEACHING HOURS

Minimum teaching hours for each subject in Theory and Practical are as shown in the table – 1

**Table 1 : Subjects and Hours of Instruction : I BDS**

| Sl. No. | Subjects                                                             | Lecture Hours | Practical Hours | Total Hours |
|---------|----------------------------------------------------------------------|---------------|-----------------|-------------|
| 1.      | General Human Anatomy including Embryology, Osteology and Histology. | 100           | 175             | 275         |
| 2.      | General Human Physiology, Biochemistry, Nutrition and Dietetics.     | 120<br>70     | 60<br>60        | 180<br>130  |
| 3.      | Dental Anatomy Embryology and Oral Histology                         | 105           | 250             | 355         |
| 4.      | Dental Materials.                                                    | 20            | 40              | 60          |
| 5.      | Preclinical Prosthodontics & Crown & Bridge                          | -             | 100             | 100         |
| 6.      | Environmental Studies                                                | 50            | -               | 50          |
| 7.      | Law – Indian Constitution                                            | 25            | -               | 25          |
| 8.      | Kannada                                                              | 100           | -               | 100         |

**Table 2 : Subjects and Hours of Instruction : II BDS**

| <b>Sl. No.</b> | <b>Subjects</b>                                | <b>Lecture Hours</b> | <b>Practical Hours</b> | <b>Total Hours</b> |
|----------------|------------------------------------------------|----------------------|------------------------|--------------------|
| 1.             | General and Dental Pharmacology & therapeutics | 70                   | 20                     | 90                 |
| 2.             | General Pathology                              | 55                   | 55                     | 110                |
| 3.             | General Microbiology                           | 65                   | 50                     | 115                |
| 4.             | Dental Materials                               | 60                   | 200                    | 260                |
| 5.             | Oral Pathology and Microbiology                | 25                   | 50                     | 75                 |
| 6.             | Pre Clinical Prosthodontics & Crown & Bridge   | 25                   | 200                    | 225                |
| 7.             | Pre Clinical Conservative Dentistry            | 25                   | 200                    | 225                |

**Table 3 : Subjects and Hours of Instruction : III BDS**

| <b>Sl. No.</b> | <b>Subjects</b>                         | <b>Lecture Hours</b> | <b>Practical Hours</b> | <b>Clinical Hours</b> | <b>Total Hours</b> |
|----------------|-----------------------------------------|----------------------|------------------------|-----------------------|--------------------|
| 1.             | General Medicine                        | 60                   | -                      | 90                    | 150                |
| 2.             | General Surgery                         | 60                   | -                      | 90                    | 150                |
| 3.             | Oral Pathology and Microbiology         | 120                  | 80                     |                       | 200                |
| 4.             | Oral Medicine and Radiology             | 20                   | -                      | 70                    | 90                 |
| 5.             | Pediatric & Preventive Dentistry        | 20                   | -                      | 70                    | 90                 |
| 6.             | Orthodontics & Dentofacial Orthopaedics | 20                   | -                      | 70                    | 90                 |
| 7.             | Periodontology                          | 30                   | -                      | 70                    | 100                |
| 8.             | Oral & Maxillofacial Surgery            | 20                   | -                      | 70                    | 90                 |
| 9.             | Conservative Dentistry & Endodontics    | 30                   | -                      | 70                    | 100                |
| 10.            | Prosthodontics and Crown & Bridge       | 30                   | -                      | 70                    | 100                |

**Table 4 : Subjects and Hours of Instruction : IV BDS**

| <b>Sl. No.</b> | <b>Subjects</b>                           | <b>Lecture Hours</b> | <b>Practical Hours</b> | <b>Total Hours</b> |
|----------------|-------------------------------------------|----------------------|------------------------|--------------------|
| 1.             | Oral Medicine and Radiology               | 45                   | 100                    | 145                |
| 2.             | Pediatric and Preventive Dentistry        | 45                   | 100                    | 145                |
| 3.             | Orthodontics and Dentofacial Orthopaedics | 30                   | 100                    | 130                |
| 4.             | Periodontology                            | 50                   | 100                    | 150                |
| 5.             | Oral & Maxillofacial Surgery              | 50                   | 200                    | 250                |
| 6.             | Conservative Dentistry and Endodontics    | 80                   | 300                    | 380                |
| 7.             | Prosthodontics and Crown & Bridge         | 80                   | 300                    | 380                |
| 8.             | Public Health Dentistry                   | 60                   | 200                    | 260                |

#### **VI. SCHEME OF EXAMINATION**

The scheme of examination of B.D.S. course shall be divided into 4 professional examinations, viz., I.B.D.S. Examination at the end of first academic year, II B.D.S. at the end of second academic year, III B.D.S. at the end of third academic year, IV B.D.S. at the end of fourth academic year. University examinations shall be held twice a year.

A candidate who satisfies the requirement of attendance, progress, and conduct as stipulated by the KAHAR shall be eligible to appear in the University examination. Certificate to the above effect should be produced from the Head of the Institution along with the online application for examination and the prescribed fees.

#### **Internal Assessment Examination**

The internal assessment includes written / clinical / practical tests. It will also include other items such as maintenance of records, participation in seminars and group discussions, clinical case study, proficiency in carrying out practical or clinical skill or participation in projects and assignments even during vacation. These will be evaluated objectively and recorded.

A minimum of 3 internal assessments will be held in an academic year. The average of all the three will be sent to the university as the final internal assessment marks. A minimum of 35% of the internal assessment marks should be obtained to be eligible to appear for the final university examination.

**For the following subjects Institutional Examination will be conducted.**

- i. Environmental Studies.
- ii. Law - Indian Constitution.

The Institution will conduct theory examination of 100 marks for each subject at the end of the course.

- iii. Communication Skills
- iv. Early Clinical Exposure
- v. Value Education & Personality Development

**Distribution of subjects for University Examination**

**I B.D.S. Examination**

- 1. General Human Anatomy including Embryology and Histology.
- 2. General Human Physiology and Biochemistry, Nutrition and Dietetics.
- 3. Dental Anatomy, Embryology and Oral Histology.
- 4. Communication Skills
- 5. Early Clinical Exposure
- 6. Value Education & Personality Development

**II B.D.S. Examination**

- 1. General and Dental Pharmacology and Therapeutics
- 2. General Pathology and Microbiology
- 3. Dental Materials
- 4. Pre Clinical Prosthodontics - Only Practical and Viva Voce
- 5. Pre Clinical Conservative Dentistry – Only Practical and Viva Voce
- 6. Communication Skills
- 7. Early Clinical Exposure

**III B.D.S. Examination**

- 1. General Medicine
- 2. General Surgery
- 3. Oral Pathology and Oral Microbiology

#### **IV B.D.S. Examination**

1. Oral Medicine and Radiology
2. Pediatric and Preventive Dentistry
3. Orthodontics and Dentofacial Orthopaedics
4. Periodontology
5. Oral and Maxillofacial Surgery
6. Conservative Dentistry and Endodontics
7. Prosthodontics and Crown and Bridge
8. Public Health Dentistry

#### **DISTRIBUTION OF MARKS IN UNIVERSITY EXAMINATION AND INTERNAL ASSESSMENT**

**THEORY : 100 Marks      PRACTICAL : 100 Marks**

|                            |                    |                               |                    |
|----------------------------|--------------------|-------------------------------|--------------------|
| Theory Examination         | : 70 Marks         | Practical Examination         | : 90 Marks         |
| Theory Internal Assessment | : 10 Marks         | Practical Internal Assessment | : 10 Marks         |
| Viva Voce                  | : 20 Marks         |                               |                    |
|                            | <hr/>              |                               | <hr/>              |
|                            | <b>: 100 Marks</b> |                               | <b>: 100 Marks</b> |

#### **PRACTICAL AND VIVA VOCE ONLY IN UNIVERSITY EXAMINATION**

Pre-clinical Prosthodontics – (II BDS )

Pre-clinical Conservative Dentistry – (II BDS)

|                     |                  |
|---------------------|------------------|
| Internal Assessment | 020 Marks        |
| Practical           | 060 Marks        |
| Viva Voce           | 020 Marks        |
|                     | <hr/>            |
|                     | <b>100 Marks</b> |

#### **VI. ELIGIBILITY TO APPEAR IN UNIVERSITY EXAMINATION**

A student should have a minimum 75% attendance in theory and practical / clinical separately and a minimum aggregate of 35% of internal assessment marks in theory and practical / clinical separately in each subject to be eligible to appear for the university examination.

A candidate who has failed in any **one** subject in I BDS year or in II BDS year or in III BDS university examination shall be permitted to go to next higher BDS

class and will be allowed to appear in that subject in subsequent university examinations within 6 months. However, he/she has to pass the university examination in that subject before he/she is allowed to take next higher BDS university examination.

## **VII. CRITERIA FOR PASS IN THE UNIVERSITY EXAMINATION**

- I. For declaration of pass in a subject, a candidate should secure minimum 50% marks in the university examination both in theory and practical/clinical examinations separately, as stipulated below :
  - a. For Pass in theory, a candidate should secure minimum 50% aggregate marks in university theory examination. This include marks obtained in university written examination, viva voce examination and internal assessment (theory) combined together which shall be fifty marks out of one hundred marks (50 / 100 marks).
  - b. For Pass in practical, a candidate should secure minimum 50% aggregate marks in university practical examination. This include marks obtained in university practical examination, and internal assessment (practical/clinical) combined together which shall be fifty marks out of one hundred marks (50 / 100 marks).
  - c. The total marks in Pre-Clinical Prosthodontics & Crown & Bridge University Examination shall be out of 100 marks (practical 60, viva voce 20 and Internal Assessment 10 marks). As there is no theory examination in this subject, the viva- voce marks are considered as a component of the practical examination. The pass criteria for these two subjects is 50 out of 100 marks (i.e. 50/100 marks) in the university examination.
  - d. **Grace marks** for passing BDS shall be as per bylaws of the KAHER.
  - e. Successful candidates who obtain 65% to 75% of the total marks shall be declared to have passed the examination in First Class. Other successful candidates will be placed in Second Class. A candidate who obtains 75% marks and above is eligible for distinction. Only those candidates who pass the whole examination in the first attempt will be eligible for distinction or class.

## **VIII. INTERNSHIP**

Every candidate is required after passing the final BDS examination to undergo one year paid rotating Internship in a recognized Dental College including a minimum of three months postings in rural areas arranged by Department of Public Health Dentistry.

## **IX. MISCELLANEOUS**

Migration/ Transfer of Students

1. Migration from one dental college to other is not a right of a student. However,



migration of students from one dental college to another dental college in India may be considered by the Dental Council of India only in exceptional cases or extreme compassionate grounds\*, provided following criteria are fulfilled. Routine migrations on other grounds shall not be allowed.

2. Both the colleges, i.e. one at which the student is studying at present and one to which migration is sought to, are recognised by the Dental Council of India.
3. The applicant candidate should have passed first professional BDS examination.
4. The applicant candidate submits his/her application for migration, complete in all respects, to all authorities concerned within a period of one month of passing (declaration of results) the First BDS examination.
5. The applicant candidate must submit an affidavit stating he/she will pursue 12 months of prescribed study before appearing at second BDS examination at the transferee dental college, which should be duly certified by the Registrar of the concerned university in which he/she is seeking transfer. The transfer will be applicable only after receipt of the affidavit.
6. Migration should not be allowed more than 5% of the intake of any recognised institution for that particular academic session.

**Note 1:**

- i. Migration during clinical course of study shall not be allowed on any ground.
- ii. All applications for migration shall be referred to Dental Council of India by college authorities. No institution/ university shall allow migrations directly without the approval of the council.
- iii. Council reserves the right, not to entertain any application which is not under the prescribed compassionate grounds and also to take independent decisions where applicant has been allowed to migrate without referring the same to the Council.

**Note 2:** \* Compassionate grounds criteria:

- i. Death of a supporting guardian.
- ii. Illness of the candidate causing disability.
- iii. Disturbed conditions as declared by Government in the Dental College area.

**B. Re-admission of candidates who discontinued the course**

A candidate who discontinues the course is eligible for re-admission subject to the following conditions:

1. Provision for re-admission is only once during the entire course.

2. He/she should seek readmission within three years from the date of discontinuation of the course.
3. He/she should pay the prescribed fees for the year for which he/she seeks admission and cannot claim readmission on the strength of fees paid earlier.
4. If the candidate discontinues after University Examination, he/she should reappear for the subjects in which he/she failed before seeking admission to the next higher class by paying examination fees etc. He/she should put in two terms of attendance in the class for which he/she seeks readmission before appearing for the University Examination.

## **2.1.1 GENERAL HUMAN ANATOMY INCLUDING EMBRYOLOGY AND HISTOLOGY**

### **GOAL :**

The students should gain the knowledge and insight into, the functional anatomy of the normal human head and neck, functional histology and appreciation of the genetic basis of inheritance and disease and the embryological development of clinically important structures, so that relevant anatomical and scientific foundations are laid down for the clinical years of the BDS course.

### **OBJECTIVES :**

#### **a) Knowledge**

At the end of the I BDS course the student is expected to :

1. Know the normal disposition of the structures in the body while clinically examining a patient and while conducting clinical procedures.
2. Know the anatomical basis of disease and injury.
3. Know the microscopic structure of the various tissues, a pre-requisite for understanding of the disease processes.
4. Know the nervous system to locate the site of lesions according to the sensory and / or motor deficits encountered.
5. Have an idea about the basis of abnormal development, critical stages of development, effects of teratogens, genetic mutations and environmental hazards.
6. Know the sectional anatomy of head and neck and brain to read the features in radiographs and pictures taken by modern imaging techniques.
7. Know the anatomy of cardio-pulmonary resuscitation.

#### **b) Skills**

At the end of the I BDS course the student is expected to :

1. Locate various structures of the body and to mark the topography of the living anatomy.
2. Identify various tissues under microscope.
3. Identify the features in radiographs and modern imaging techniques.
4. Detect various congenital abnormalities.

### C. Attitude

Students should respect and follow the correct procedure while handling cadaver and other biological tissues.

### Course Outcomes - Theory

| At the end of General Human Anatomy including Embryology, Osteology & Histology course, the students should be able to: |                                                                                                                                                |
|-------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| T 2.1.1.1                                                                                                               | Describe the normal disposition of the structures in the body while clinically examining a patient and while conducting clinical procedures.   |
| T 2.1.1.2                                                                                                               | Describe the anatomical basis of disease and injury.                                                                                           |
| T 2.1.1.3                                                                                                               | Describe the microscopic structure of the various tissues, a pre-requisite for understanding of the disease processes.                         |
| T 2.1.1.4                                                                                                               | Discuss the nervous system to locate the site of lesions according to the sensory and / or motor deficits encountered.                         |
| T 2.1.1.5                                                                                                               | Explain the basis of abnormal development, critical stages of development, effects of teratogens, genetic mutations and environmental hazards. |
| T 2.1.1.6                                                                                                               | Describe the sectional anatomy of head and neck and brain to read the features in radiographs and pictures taken by modern imaging techniques. |
| T 2.1.1.7                                                                                                               | Describe the anatomy of cardio-pulmonary resuscitation.                                                                                        |

### Programme Outcome & Course Outcome (POCO) Matrix – Theory

| Course Outcome | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|----------------|-----|-----|-----|-----|-----|-----|-----|
| T 2.1.1.1      | 2   | 2   | 1   | 1   | 1   | 2   | 1   |
| T 2.1.1.2      | 2   | 2   | 1   | 2   | 1   | 2   | 1   |
| T 2.1.1.3      | 2   | 1   | 2   | 2   | 1   | 2   | 1   |
| T 2.1.1.4      | 1   | 2   | 1   | 1   | 1   | 2   | 1   |
| T 2.1.1.5      | 2   | 1   | 1   | 2   | 1   | 2   | 1   |
| T 2.1.1.6      | 2   | 2   | 2   | 2   | 2   | 2   | 1   |
| T 2.1.1.7      | 2   | 2   | 2   | 1   | 1   | 2   | 2   |
| Average Score  | 1.8 | 1.7 | 1.4 | 1.6 | 1   | 2   | 1   |

### Course Outcomes – Practical

| At the end of General Human Anatomy including Embryology, Osteology & Histology course, the students should be able to: |                                                                                         |
|-------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| P 2.1.1.1                                                                                                               | Locate various structures of the body and to mark the topography of the living anatomy. |
| P 2.1.1.2                                                                                                               | Identify various tissues under microscope.                                              |
| P 2.1.1.3                                                                                                               | Identify the features in radiographs and modern imaging techniques.                     |
| P 2.1.1.4                                                                                                               | Detect various congenital abnormalities                                                 |

### Programme Outcome & Course Outcome (POCO) Matrix - Practical

| Course Outcome       | PO1        | PO2        | PO3        | PO4        | PO5      | PO6      | PO7        |
|----------------------|------------|------------|------------|------------|----------|----------|------------|
| P 2.1.1.1            | 2          | 1          | 1          | 1          | 1        | 2        | 1          |
| P 2.1.1.2            | 2          | 1          | 1          | 2          | 1        | 2        | 1          |
| P 2.1.1.3            | 1          | 2          | 2          | 2          | 1        | 2        | 1          |
| P 2.1.1.4            | 2          | 2          | 2          | 1          | 1        | 2        | 2          |
| <b>Average score</b> | <b>1.7</b> | <b>1.5</b> | <b>1.5</b> | <b>1.5</b> | <b>1</b> | <b>2</b> | <b>1.5</b> |

#### A) INTEGRATION

By emphasising on the relevant information and avoiding unwanted details, the anatomy taught integrally with other basic sciences & clinical subjects not only keeps the curiosity alive in the learner but also lays down the scientific foundation for making a better doctor, a benefit to the society.

This insight is gained in a variety of ways:

- 1) Lectures & small group teaching
- 2) Demonstrations
- 3) Dissection of the human cadaver
- 4) Study of dissected specimens
- 5) Osteology

- 6) Surface anatomy on living individual
- 7) Study of radiographs & other modern imaging techniques.
- 8) Study of Histology slides.
- 9) Study of embryology models
- 10) Audio-visual aids

Throughout the course, particular emphasis is placed on the functional correlation, clinical application & on integration with teaching in other bio dental disciplines.

|                      |   |           |              |
|----------------------|---|-----------|--------------|
| Instructional period | - | Theory    | - 890 Hours  |
|                      |   | Practical | - 4835 Hours |

#### **B) AN OUTLINE OF THE COURSE CONTENT:**

1. General anatomy: Introduction of anatomical terms and brief outline of various systems of the body.
2. Regional anatomy of head & neck with osteology of bones of head & neck, with emphasis on topics of dental importance.
3. General disposition of thoracic, abdominal & pelvic organs.
4. The regional anatomy of the sites of intramuscular & intra vascular injections, & lumbar puncture.
5. General embryology & systemic embryology with respect to development of head & neck.
6. Histology of basic tissues and of the organs of gastrointestinal, respiratory, Endocrine, excretory systems & gonads.
7. Medical genetics.

**Curriculum and Course Content for I BDS**  
**Theory – 100 Hours ; Practical – 175 Hours**

| Sr. No. | Topic - THEORY                                                                                                                                                                                                                                          | Teaching hours | Must know / Desirable to know / Nice to Know | Suggested teaching methodology |
|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------------------------------------|--------------------------------|
| 1       | <b>Introduction</b><br>Scope and subdivisions of Anatomy, definition and interpretation of anatomical terms, planes, anatomical positions, elements of anatomy including fascia, muscles, blood vessels, nerves, joints, lymph nodes and lymph vessels. | 10             | MK                                           | Lecture                        |
| 2       | <b>Gross Anatomy of Head and Neck</b>                                                                                                                                                                                                                   | 30             |                                              |                                |
|         | a. Scalp : Layers, blood supply, nerve supply, lymphatic drainage and applied aspects.                                                                                                                                                                  |                | MK                                           | Lecture                        |
|         | b. Face : Muscles, blood supply, nerve supply, lymphatic drainage. Lacrimal apparatus and applied anatomy.                                                                                                                                              |                | MK                                           | Lecture                        |
|         | c. Neck :<br>i. Cervical fascia.<br>ii. Posterior triangle.<br>iii. Suboccipital triangle.<br>iv. Anterior triangle – submental, digastric, carotid and muscular.<br>v. Midline structures of neck.                                                     |                | MK                                           | Lecture                        |
|         | d. Cranial cavity: meninges, parts of brain, ventricles of brain, cranial nerves attached to the brain, pituitary gland, dural folds and sinuses.                                                                                                       |                | MK                                           | Lecture                        |
|         | e. Cranial nerves - I, II, III, IV, V, VI, VII, VIII, IX, X, XI, XII                                                                                                                                                                                    |                | MK                                           | Lecture                        |
|         | f. Orbit : nerves, vessels, extrinsic muscles of eyeball, supports of the eye ball.                                                                                                                                                                     |                | MK                                           | Lecture                        |
|         | g. Parotid region : parotid gland.                                                                                                                                                                                                                      |                | MK                                           | Lecture                        |
|         | h. Temporal and infra-temporal fossae: pterygo - palatine fossa, muscles of mastication, maxillary artery, maxillary nerve and mandibular nerve.                                                                                                        |                | MK                                           | Lecture                        |
|         | i. Temporo- mandibular joint.                                                                                                                                                                                                                           |                | MK                                           | Lecture                        |
|         | j. Submandibular region : submandibular salivary gland.                                                                                                                                                                                                 |                | MK                                           | Lecture                        |

|           |                                                                                                                                                                                                                                                                     |           |    |                |
|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|----|----------------|
|           | k. Thyroid and parathyroid glands.                                                                                                                                                                                                                                  |           | MK | Lecture        |
|           | l. Vessels of head and neck : carotid, subclavian arteries, internal jugular vein.                                                                                                                                                                                  |           | MK | Lecture        |
|           | m. Nasal cavity and paranasal air sinuses.                                                                                                                                                                                                                          |           | MK | Lecture        |
|           | n. Lymphatic drainage of head and neck.                                                                                                                                                                                                                             |           | MK | Lecture        |
|           | o. Mouth : tongue and palate.                                                                                                                                                                                                                                       |           | MK | Lecture        |
|           | p. Pharynx (palatine tonsil and the auditory tube)                                                                                                                                                                                                                  |           | MK | Lecture        |
|           | q. Larynx.                                                                                                                                                                                                                                                          |           | MK | Lecture        |
|           | r. Ear                                                                                                                                                                                                                                                              |           | MK | Lecture        |
|           | s. Cervical part of trachea and oesophagus.                                                                                                                                                                                                                         |           | MK | Lecture        |
|           | t. Joints of Head & neck: atlanto-occipital and atlanto-axial.                                                                                                                                                                                                      |           | MK | Lecture        |
| <b>3.</b> | <b>Osteology of Head and Neck</b>                                                                                                                                                                                                                                   | <b>18</b> |    |                |
|           | Foetal skull                                                                                                                                                                                                                                                        |           | MK | Tutorials/ SGT |
|           | Adult Skull<br>– Exterior : norma.<br>– Interior : cranial fossae,<br>– Individual bones : mandible, maxilla, frontal, parietal, occipital, temporal, zygomatic, ethmoid, sphenoid, vomer, palatine and nasal bones.<br>– Mandible                                  |           | MK | Tutorials/ SGT |
|           | Cervical vertebrae                                                                                                                                                                                                                                                  |           | MK | Tutorials/ SGT |
|           | Hyoid bone                                                                                                                                                                                                                                                          |           | MK | Tutorials/ SGT |
| <b>4</b>  | <b>Neuroanatomy</b>                                                                                                                                                                                                                                                 | <b>10</b> |    |                |
|           | a. Detailed description of all cranial nerves Including their nuclei of origin, intra and extra cranial courses.                                                                                                                                                    |           | MK | Lecture        |
|           | b. Cervical spinal nerves and cervical plexus.                                                                                                                                                                                                                      |           | MK | Lecture        |
|           | c. Autonomic nervous system of head and neck.                                                                                                                                                                                                                       |           | MK | Lecture        |
| <b>5.</b> | <b>Embryology</b>                                                                                                                                                                                                                                                   | <b>12</b> |    |                |
|           | a. Gametogenesis : spermatogenesis and oogenesis, fertilization, implantation, germ layer formation, fetal membranes and placenta, Neural crest, Bilaminar and trilaminar embryonic disc, Intra embryonic mesoderm - formation and fate, notochord formation & fate |           | MK | Lecture        |



|           |                                                                                                                                                                                                                                                          |           |    |                                    |
|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|----|------------------------------------|
|           | b. Development of branchial apparatus, pharyngeal arches, pouches and clefts.                                                                                                                                                                            |           | MK | Lecture                            |
|           | c. Development of face, jaws, oral cavity, tooth, tongue, palate, nasal cavity, paranasal air sinuses, salivary glands, hypophysis cerebri, temporo-mandibular joint and anomalies in their development, Tooth development in brief.<br>d. Thyroid gland |           | MK | Lecture<br><br>Integrated Teaching |
| <b>6.</b> | <b>Histology</b>                                                                                                                                                                                                                                         | <b>16</b> |    |                                    |
|           | a. Introduction of cytology and histology                                                                                                                                                                                                                |           | MK | Practical / Demonstration          |
|           | b. Basic tissues : epithelial-simple and compound                                                                                                                                                                                                        |           | MK | Practical / Demonstration          |
|           | c. Connective tissue : cells, fibres-collagen, elastic and reticular.                                                                                                                                                                                    |           | MK | Practical / Demonstration          |
|           | d. Cartilage-hyaline, elastic, white fibro cartilages.                                                                                                                                                                                                   |           | MK | Practical / Demonstration          |
|           | e. Spongy and compact bones : transverse and longitudinal section.                                                                                                                                                                                       |           | MK | Practical / Demonstration          |
|           | f. Muscular tissue: skeletal, cardiac and smooth.                                                                                                                                                                                                        |           | MK | Practical / Demonstration          |
|           | g. Nervous tissue : peripheral nerve and ganglia.                                                                                                                                                                                                        |           | MK | Practical / Demonstration          |
|           | h. Blood vessels : artery and vein.                                                                                                                                                                                                                      |           | MK | Practical / Demonstration          |
|           | i. Glands-serous, mucous and mixed salivary glands.                                                                                                                                                                                                      |           | MK | Practical / Demonstration          |
|           | j. Lymphoid tissue : lymph node, palatine tonsil, thymus and spleen.                                                                                                                                                                                     |           | MK | Practical / Demonstration          |
|           | k. Skin-hairy and non hairy.                                                                                                                                                                                                                             |           | MK | Practical / Demonstration          |
|           | l. Endocrine gland : pituitary, thyroid, parathyroid, suprarenal and pancreas.                                                                                                                                                                           |           | MK | Practical / Demonstration          |
| <b>7.</b> | <b>Medical Genetics</b>                                                                                                                                                                                                                                  | <b>4</b>  |    |                                    |
|           | Mitosis, Meiosis, Chromosomes, Chromosomal aberrations, gene structure, Mendelism, Genes and modes of inheritance, Mutation                                                                                                                              |           | MK | Lecture                            |

| Sr. No. | Topic - PRACTICALS                                                                                                                                                                   | Teaching hours | Must know / Desirable to know / Nice to Know | Suggested teaching methodology |
|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------------------------------------|--------------------------------|
|         | <b>Dissection Topics</b>                                                                                                                                                             |                |                                              |                                |
| 1       | Scalp                                                                                                                                                                                |                | MK                                           | Practical / Demonstration      |
| 2       | Face including deeper dissection                                                                                                                                                     |                | MK                                           | Practical / Demonstration      |
| 3       | Posterior triangle of neck                                                                                                                                                           |                | MK                                           | Practical / Demonstration      |
| 4       | Anterior triangles of neck.<br>a. Median region<br>b. Digastric triangle<br>c. Carotid triangle                                                                                      |                | MK                                           | Practical / Demonstration      |
| 5       | Deep dissection of neck:<br>a. Thyroid gland.<br>b. Great vessels of neck                                                                                                            |                | MK                                           | Practical / Demonstration      |
| 6       | Parotid region                                                                                                                                                                       |                | MK                                           | Practical / Demonstration      |
| 7       | Infra temporal fossa :<br>a. Muscles of mastication.<br>b. Mandibular nerve & its branches.<br>c. Maxillary artery.<br>d. Temporo-mandibular joint                                   |                | MK                                           | Practical / Demonstration      |
| 8       | Sub-mandibular region :<br>submandibular gland, hyoglossus and its relations                                                                                                         |                | MK                                           | Practical / Demonstration      |
| 9       | Mouth, palate and pharynx                                                                                                                                                            |                | MK                                           | Practical / Demonstration      |
| 10      | Nasal cavity and paranasal air sinuses                                                                                                                                               |                | MK                                           | Practical / Demonstration      |
| 11      | Tongue                                                                                                                                                                               |                | MK                                           | Practical / Demonstration      |
| 12      | Larynx                                                                                                                                                                               |                | MK                                           | Practical / Demonstration      |
|         | THORAX : Demonstration on a dissected specimen of<br>1. Thoracic wall 2. Heart chambers<br>3. Coronary arteries 4. Pericardium<br>5. Lungs surfaces & pleural cavity<br>6. Diaphragm |                | NK                                           | Practical / Demonstration      |

|  |                                                                                                                                                                                                                                                                                                            |  |    |                           |
|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----|---------------------------|
|  | ABDOMEN : Demonstration on a dissected specimen of<br>1. Peritoneal cavity 2. Organs in the abdominal & pelvic cavity.                                                                                                                                                                                     |  | NK | Practical / Demonstration |
|  | CLINICAL PROCEDURES:                                                                                                                                                                                                                                                                                       |  |    |                           |
|  | a) Intramuscular injections:<br>Demonstration on a dissected specimen and on a living person of the following sites of injection.<br>1. Deltoid muscle and its relation to the axillary nerve and radial nerve.<br>2. Gluteal region and the relation of the sciatic nerve.<br>3. Vastus lateralis muscle. |  | NK | Demonstration/SGT         |
|  | b) Intravenous injections & venesection: Demonstration of veins in the dissected specimen and on a living person<br>1. Median cubital vein 2. Cephalic vein 3. Basilic vein 4. Long saphenous vein                                                                                                         |  | NK | Demonstration/SGT         |
|  | c) Arterial pulsations:<br>Demonstration of arteries on a dissected specimen and feeling of pulsation of the following arteries on a living person.<br>1. Superficial temporal 2. Facial 3. Carotid 4. Axillary 5. Brachial 6. Radial 7. Ulnar 8. Femoral 9. Popliteal 10. Dorsalis pedis                  |  | NK | Demonstration/SGT         |
|  | d) Lumbar puncture:<br>Demonstration on a dissected specimen of the spinal cord, cauda equina & epidural space and the inter vertebral space between L4 & L5                                                                                                                                               |  | NK | Demonstration/SGT         |
|  | <b>Surface Anatomy :</b><br>Superior sagittal sinus, middle meningeal artery, pterion, facial artery, parotid gland and duct, facial nerve on face, common carotid, external and internal carotid arteries, palatine tonsil, vocal cords, thyroid gland, spinal accessory nerve.                           |  | MK | Tutorials/SGT             |
|  | <b>Radiological Anatomy :</b><br>Anteroposterior and lateral views of head and neck, interpretation of normal radiological anatomy                                                                                                                                                                         |  | MK | Tutorials/SGT             |

|  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |    |            |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----|------------|
|  | <b>Histology Slides</b> : for Practical examination as spotters and for discussion                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  | MK | Practicals |
|  | <ol style="list-style-type: none"> <li>1. Epithelium : simple squamous (mesentery), cuboidal (thyroid), columnar (gallbladder), ciliated columnar, pseudo-stratified ciliated columnar (trachea), stratified squamous keratinised (skin), stratified squamous non-keratinised (oesophagus), transitional (urinary bladder).</li> <li>2. Areolar tissue.</li> <li>3. Collagen fibres.</li> <li>4. Elastic fibres.</li> <li>5. Cartilage : hyaline, elastic and white fibro.</li> <li>6. Bone : transverse and longitudinal section.</li> <li>7. Muscles : skeletal (transverse and longitudinal section), cardiac and smooth.</li> <li>8. Blood vessels : large sized and medium sized artery, large and medium sized vein.</li> <li>9. Peripheral nerve and ganglia.</li> <li>10. Salivary glands : serous, mucous and mixed.</li> <li>11. Lymph node.</li> <li>12. Palatine tonsil.</li> <li>13. Thymus.</li> <li>14. Spleen.</li> <li>15. Skin : hairy and non hairy.</li> <li>16. Lip.</li> <li>17. Tooth.</li> <li>18. Tongue.</li> <li>19. Trachea.</li> <li>20. Oesophagus.</li> <li>21. Lung.</li> <li>22. Endocrine glands : thyroid, parathyroid, pituitary and suprarenal.</li> <li>23. Pancreas</li> </ol> |  | MK | Practicals |

|    |                                                                                                                                                                                                       |  |    |                       |
|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----|-----------------------|
|    | <b>Demonstration</b>                                                                                                                                                                                  |  |    |                       |
| 1. | Ear-external, middle and internal                                                                                                                                                                     |  | NK | Demonstration/<br>SGT |
| 2  | Spinal cord                                                                                                                                                                                           |  | NK | Demonstration/<br>SGT |
| 3  | Brain Stem                                                                                                                                                                                            |  | NK | Demonstration/<br>SGT |
| 4  | Cerebellum                                                                                                                                                                                            |  | NK | Demonstration/<br>SGT |
| 5  | Cerebral hemispheres : important gyri and sulci of superolateral, medial and inferior surface; functional areas – sensory, motor, auditory, visual, gustatory and speech areas, blood supply of brain |  | NK | Demonstration/<br>SGT |
| 6  | Cranial nerves in general with functions other than V, VII, IX, X, XI, XII                                                                                                                            |  | NK | Demonstration/<br>SGT |
| 7  | Organs of thorax and abdomen                                                                                                                                                                          |  | NK | Demonstration/<br>SGT |
| 8  | Extremities : upper and lower limbs                                                                                                                                                                   |  | NK | Demonstration/<br>SGT |

### Integrated Teaching

| SI No | Changed reform      | Basis for Change      | Topic           | Remarks |
|-------|---------------------|-----------------------|-----------------|---------|
| 1     | Integrated teaching | Alinging of knowledge | Muscular System |         |

## SCHEME OF EXAMINATION

### A. Theory : 70 Marks

**Duration of paper – 3 Hours**

| Contents                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | No. of Questions and Marks | Total Marks |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|-------------|
| <b>1. Multiple Choice Questions</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | M.C.Q.<br>20 x 1 Mark      | 20          |
| <b>2. Long Essays</b> Gross Anatomy of Head and Neck – Scalp, Face, Triangles of Neck, Dural folds and Venous sinuses, contents of the Orbit excluding Eye ball, Parotid Gland, Infratemporal fossa, Temporo-mandibular joint, Submandibular region, Thyroid gland, Pharynx, Tongue, Nasal Cavity and paranasal air sinuses. Cranial nerves – V, VII, IX and XII, Development of Branchial apparatus, Face, Systemic Embryology and Systemic Histology.                                                                     | 2 x 10 Marks               | 20          |
| <b>3. Short Answers</b> Gross Anatomy of Head and Neck – Scalp, Face, Cervical fascia, Midline structures of the neck, Vertebral Joints of Neck, Contents of the Orbit excluding Eyeball, Vessels of Head and Neck, Infratemporal fossa, Mouth, Palate, Pharynx, Nasal Cavity, larynx, Cervical Part of Trachea and Oesophagus, Lymphatic drainage of Head and Neck. Cranial nerves – V, VII, IX, XI and XII. Cervical Plexus. General and Systemic embryology, histology and osteology of Head and Neck, Medical Genetics. | 10 x 3 Marks               | 30          |
| <b>Grand Total</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                            | <b>70</b>   |

**B. Practicals : 90 Marks****Gross Anatomy:**

|                                               |          |          |
|-----------------------------------------------|----------|----------|
| a) Ten Spotters carrying 3 marks each         | 10 x 3 = | 30 marks |
| b) Discussion on ONE given dissected specimen |          | 15 marks |
| c) Surface Anatomy                            |          | 10 marks |

**Histology:**

|                                               |          |          |
|-----------------------------------------------|----------|----------|
| a) Identification of 10 Slides of 1 mark each |          | 10 marks |
| b) Discussion on TWO given slides.            | 2 x 10 = | 20 marks |

**Records :** 05 marks

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**Total : 90 marks**

**C) Viva Voce : 20 Marks**

|                                   |          |
|-----------------------------------|----------|
| a) Osteology of Head and Neck     | 05 marks |
| b) Soft parts from Head and Neck. | 05 marks |
| c) Embryology Models.             | 05 marks |
| d) Radiological Anatomy.          | 05 marks |

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**Total : 20 marks**

**D) Internal Assessment:**

|                   |                   |
|-------------------|-------------------|
| <b>Theory</b>     | <b>: 10 Marks</b> |
| <b>Practicals</b> | <b>: 10 Marks</b> |

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|                                   |                  |
|-----------------------------------|------------------|
| <b>Theory Examination</b>         | <b>70 marks</b>  |
| <b>Theory Internal Assessment</b> | <b>10 marks</b>  |
| <b>Viva Voce</b>                  | <b>20 marks</b>  |
| <b>Total :</b>                    | <b>100 marks</b> |

|                                      |                  |
|--------------------------------------|------------------|
| <b>Practical Examination</b>         | <b>90 marks</b>  |
| <b>Practical Internal Assessment</b> | <b>10 marks</b>  |
| <b>Total :</b>                       | <b>100 marks</b> |

**Recommended Books :**

| <b>Sl. No.</b> | <b>Title</b>                                         | <b>Author</b>  | <b>Edition</b>   | <b>Yr. of Publ.</b> | <b>Publisher</b>                           |
|----------------|------------------------------------------------------|----------------|------------------|---------------------|--------------------------------------------|
| 1.             | Cunningham's Manual of Practical Anatomy(Vol.1)      | Romanes G.J.   | 15 <sup>th</sup> | 2004                | Oxford Medical Publications, Oxford.       |
| 2.             | Cunningham's Manual of Practical Anatomy(Vol.3)      | Romanes G.J.   | 15 <sup>th</sup> | 2004                | Oxford Medical Publications, Oxford.       |
| 3.             | Essentials of Human Anatomy (Vol.2)<br>Head and Neck | Dutta A. K.    | 4 <sup>th</sup>  | 2005                | Current books International, Kolkata       |
| 4.             | Human Embryology                                     | Inderbir Singh | 7 <sup>th</sup>  | 2001                | Macmillan India Ltd. Chennai               |
| 5.             | Langman's Medical Embryology                         | Sadler T.W.    | 9 <sup>th</sup>  | 2004                | Lippincott Williams and Wilkins, Baltimore |
| 6.             | Text Book of Human Histology                         | Inderbir Singh | 5 <sup>th</sup>  | 2006                | Jaypee Brothers Medical Publishers, Delhi  |



**Reference Books :**

| <b>Sl. No.</b> | <b>Title</b>                                       | <b>Author</b>          | <b>Edition</b>   | <b>Yr. of Publ.</b> | <b>Publisher</b>                                   |
|----------------|----------------------------------------------------|------------------------|------------------|---------------------|----------------------------------------------------|
| 1.             | Gray's Anatomy                                     | Susan Standring        | 39 <sup>th</sup> | 2005                | Elsevier<br>Churchill<br>Livingstone,<br>Edinburgh |
| 2.             | Last's Anatomy<br>Regional and Applied             | Chummy<br>S.Sinnatamby | 10 <sup>th</sup> | 1999                | Churchill<br>Livingstone,<br>Edinburgh             |
| 3.             | Grant's Method of<br>Anatomy                       | John V.<br>Basmajian   | 11 <sup>th</sup> | 1997                | B.I.Waverly,<br>New Delhi.                         |
| 4.             | Lee Mc.Gregor's<br>Synopsis of Surgical<br>Anatomy | Decker G.A.G.          | 12 <sup>th</sup> | 1999                | K.M.Varghese,<br>Bombay                            |
| 5.             | Emery's Elements of<br>Medical Genetics            | Mueller R.F.           | 11 <sup>th</sup> | 2001                | Churchill<br>Livingstone,<br>Edinburgh             |

## **2.1.2 GENERAL HUMAN PHYSIOLOGY AND BIOCHEMISTRY, NUTRITION AND DIETICS**

### **GENERAL HUMAN PHYSIOLOGY**

#### **GOAL :**

The broad goal of teaching physiology to undergraduate students is to provide comprehensive knowledge of the normal functions of the organ systems of the body and to facilitate an understanding of the physiological basis of health and disease.

#### **OBJECTIVES :**

##### **a) Knowledge**

At the end of the I BDS course, the student should be able to :

1. Explain the normal functioning of all the organ systems and their interactions for well co-ordinated total body function.
2. Assess the relative contribution of each organ system towards the maintenance of the milieu interior.
3. List the physiological principles underlying the pathogenesis.
4. Acquire an integrated knowledge of organ structure and function and its regulatory mechanisms.

##### **b) Skills**

At the end of the I BDS course, the student should be able to :

1. Conduct experiments designed for the study of physiological phenomena.
2. Interpret experimental and investigative data.
3. Distinguish between normal and abnormal data derived as a result of tests which he/she has performed and observed in the laboratory.

### Course Outcomes - Theory

| At the end of General Human Physiology, Biochemistry, Nutrition & Dietetics course, the students should be able to: |                                                                                                                                                                                       |
|---------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| T 2.1.1.3                                                                                                           | Describe the microscopic structure of the various tissues, a pre-requisite for understanding of the disease processes.                                                                |
| T 2.1.2.1                                                                                                           | Explain the normal functioning of all the organs systems and their interactions and describe the molecular and functional organization of a cell and list its subcellular components; |
| T 2.1.2.2                                                                                                           | Assess the relative contribution of each organ system and delineate structure, function and inter-relationships of biomolecules and consequences of deviation from normal             |
| T 2.1.2.3                                                                                                           | Elucidate the physiological aspects of normal growth and development                                                                                                                  |
| T 2.1.2.4                                                                                                           | Describe the physiological response and adaptations to environmental stresses and summarize the molecular concept of body defenses and their application in medicine;                 |

### Programme Outcome & Course Outcome (POCO) Matrix - Theory

| Course Outcomes      | PO1        | PO2        | PO3        | PO4      | PO5      | PO6      | PO7      |
|----------------------|------------|------------|------------|----------|----------|----------|----------|
| T 2.1.2.1            | 1          | 1          | 1          | 2        | 2        | 2        | 1        |
| T 2.1.2.2            | 2          | 2          | 1          | 2        | 2        | 2        | 1        |
| T 2.1.2.3            | 1          | 1          | 1          | 2        | 2        | 2        | 1        |
| T 2.1.2.4            | 2          | 2          | 2          | 2        | 2        | 2        | 1        |
| <b>Average Score</b> | <b>1.5</b> | <b>1.5</b> | <b>1.3</b> | <b>2</b> | <b>2</b> | <b>2</b> | <b>1</b> |

### Course Outcomes - Practical

|                                                                                                                     |                                                                                                                                                                                                               |
|---------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| At the end of General Human Physiology, Biochemistry, Nutrition & Dietetics course, the students should be able to: |                                                                                                                                                                                                               |
| P 2.1.2.1                                                                                                           | Explain the normal functioning of all the organs systems and their interactions and describe the molecular and functional organization of a cell and list its subcellular components                          |
| P 2.1.2.2                                                                                                           | summarize the fundamental aspects of enzymology and clinical application wherein regulation of enzymatic activity is altered and to integrate the various aspects of metabolism and their regulatory pathways |
| P 2.1.2.3                                                                                                           | Analyse and interpret investigative data.                                                                                                                                                                     |

### Programme Outcome & Course Outcome (POCO) Matrix - Practical

| Course Outcomes      | PO1        | PO2      | PO3      | PO4      | PO5      | PO6      | PO7      |
|----------------------|------------|----------|----------|----------|----------|----------|----------|
| P 2.1.2.1            | 2          | 2        | 2        | 2        | 2        | 2        | 1        |
| P 2.1.2.2            | 1.5        | 2        | 2        | 2        | 2        | 2        | 1        |
| P 2.1.2.3            | 2          | 2        | 2        | 2        | 2        | 2        | 1        |
| <b>Average Score</b> | <b>1.5</b> | <b>2</b> | <b>2</b> | <b>2</b> | <b>2</b> | <b>2</b> | <b>1</b> |

### Integration

At the end of the integrated teaching the student shall acquire an integrated knowledge of organ structure and function and its regulatory mechanisms

**Curriculum and Course Content for I BDS**  
**Theory – 120 Hours ; Practical – 60 Hours**

| Sr. No. | Topic - THEORY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Teaching hours | Must know / Desirable to know / Nice to Know | Suggested teaching methodology                                 |
|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------------------------------------|----------------------------------------------------------------|
| 1       | <b>General Physiology</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                |                                              |                                                                |
|         | 1. Homeostasis: Basic concept, Feed back mechanisms<br>2. Structure of cell membrane, transport across cell membrane<br>3. Membrane potentials definitions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 6 hours        | MK                                           | Didactic lectures                                              |
| 2       | <b>Blood</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                |                                              |                                                                |
|         | Composition & functions of blood.<br>Specific gravity, Packed cell volume, factors affecting & methods of determination.<br>Plasma proteins - Types, concentration, functions & variations.<br>Erythrocyte - Morphology, functions & variations. Erythropoiesis & factors affecting erythropoiesis.<br>ESR- Methods of estimation, factors affecting, variations & significance.<br>Hemoglobin - Normal concentration, method of determination & variation in concentration.<br>Blood Indices - MCV, MCH, MCHC - definition, normal values, variation.<br>Anemia - Definition, classification, life span of RBC's destruction of RBC's , formation & fate of bile pigments, Jaundice - types.<br>Leucocytes : Classification, number, percentage, distribution morphology, properties, functions & variation. Role of lymphocytes in immunity , leucopoiesis life span & fate of leucocytes.<br>Thrombocyte's - Morphology, , number, variations, function & thrombopoiesis.<br>Haemostasis - Role of vasoconstriction, platelet plug formation in haemostasis, coagulation factors, intrinsic& extrinsic pathways of coagulation, clot retraction. platelet count, clotting time, bleeding time, prothrombin time – normal | 15 hours       | MK                                           | Didactic lecture's<br><br>Videos<br>Chart's for interpretation |

|          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |         |    |                                         |
|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----------------------------------------|
|          | values, method & variations.<br>Anticoagulants - mechanism of action. Bleeding disorders.<br>Blood groups: ABO & Rh system, method of determination, importance, indications & dangers of blood Transfusion<br>Blood volume: Normal values, variations.<br>Body fluids : distribution of total body water, intracellular & extracellular compartments, major anions & cations in intra and extra cellular fluid.                                                                                                                                                                                       |         |    |                                         |
|          | Tests of haemostatic function, Blood substitutes.<br>Tissue fluids & lymph : Formation of tissue fluid, composition, circulation & functions of lymph.<br>Oedema - causes.<br>Functions of reticuloendothelial system.                                                                                                                                                                                                                                                                                                                                                                                 | 3 hours | DK | Didactic lectures                       |
| <b>3</b> | <b>Nerve</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |         |    |                                         |
|          | Classification of nerves                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 1 hour  | DK | DL                                      |
| <b>4</b> | <b>Muscle</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |         |    |                                         |
|          | Structure of skeletal muscle, Properties of skeletal muscle neuromuscular transmission                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |         | MK | DL                                      |
|          | - Molecular mechanism of muscle contraction.<br>Structure and properties of cardiac muscle & smooth muscle                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 7 hours | DK | Didactic lectures & integrated teaching |
| <b>5</b> | <b>Digestive system</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |         |    |                                         |
|          | 1. Introduction to Digestion : Physiological Anatomy & Innervation Gastrointestinal tract<br>2. Salivary glands: Types of salivary glands, composition , Regulation of secretion & Functions of saliva.<br>3. Stomach: Composition and functions of Gastric juice<br>4. Exocrine Pancreas - Physiological Anatomy of pancreas, composition and functions of the pancreatic Juice<br>5. Liver : structure , Composition of Liver bile, Functions of bile<br>6. Gall bladder : Structure and Functions of gall bladder<br>7. Structure of Small intestine<br>Intestinal juice –composition and functions | 8 hours | MK | Didactic lectures & videos              |

|          |                                                                                                                                                                                                                                                                                                                                                                     |          |    |                                                     |
|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|-----------------------------------------------------|
|          | 8. Large intestine - Functions<br>9. Motor functions of GIT: Mastication, Deglutition, Motor activities in Oesophagus, Gastric Motility & Emptying, Movements of Small and Large Intestine Defecation Mechanism of secretion of Gastric Juice and its Regulation of secretion<br>Regulation of Pancreatic secretion.<br>Regulation of secretion of Intestinal juice | 2 hours  | DK | Didactic lecture                                    |
| <b>6</b> | <b>Excretory System</b>                                                                                                                                                                                                                                                                                                                                             |          |    |                                                     |
|          | Structure & functions of kidney, Functional unit of kidney & functions of different parts. Juxta glomerular apparatus, Renal blood flow. Formation of Urine : Glomerular filtration rate - definition, normal values, factors influencing G.F.R<br>Micturition : anatomy & innervation of Urinary bladder, mechanism of micturition Functions of skin               | 5 hours  | MK | Didactic lectures                                   |
|          | Tubular Reabsorption-reabsorption of sodium, glucose, water & other substances.<br>Tubular Secretion- secretion of urea, hydrogen and other substances.<br>Mechanism of concentration & dilution of urine.<br>Role of kidney in the regulation of pH of the blood.                                                                                                  | 3 hours  | DK | Didactic lectures                                   |
| <b>7</b> | <b>Endocrinology</b>                                                                                                                                                                                                                                                                                                                                                |          |    |                                                     |
|          | Enumeration of endocrine glands & their hormones .<br>General functions of the endocrine system<br>Hormones of anterior pituitary , posterior pituitary, thyroid gland , pancreas, adrenal cortex.<br>– synthesis, secretion & transport.<br>Actions of hormones<br>Calcium Homeostasis                                                                             | 10 hours | MK | Didactic lectures.<br><br>Charts for interpretation |
|          | Chemistry, its regulation of secretion, metabolism applied physiology – disorders of hormonal secretion                                                                                                                                                                                                                                                             | 3 hours  | DK | Didactic lectures                                   |

|   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |          |    |                                                  |
|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|--------------------------------------------------|
| 8 | <b>Reproduction</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |          |    |                                                  |
|   | Sex differentiation, Physiological anatomy of male and female sex organs,<br>Female reproductive system :<br>Menstrual cycle, functions of ovary, actions of Oestrogen & Progesterone,<br>Male reproductive system : spermatogenesis, semen and its composition.                                                                                                                                                                                                                                                                                                                                                                                                                | 3 hours  | MK | Didactic lecture's                               |
|   | Control of secretion of ovarian hormones, tests for ovulation, fertilisation, implantation, maternal Changes during pregnancy, pregnancy tests & parturition.<br>Lactation, composition of milk, factors controlling lactation, milk ejection, reflex,<br>Contraception                                                                                                                                                                                                                                                                                                                                                                                                         | 5 hours  | DK | Didactic lectures<br><br>Video assisted learning |
| 9 | <b>Cardio Vascular System</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |          |    |                                                  |
|   | Functional anatomy and innervation of heart.<br>Properties of cardiac muscle<br>Origin & propagation of cardiac impulse and heart block.<br>Electrocardiogram - Normal electrocardiogram.<br>Cardiac cycle - Phases, Pressure changes in atria, ventricles & aorta.<br>Heart sounds<br>Volume changes in ventricles.<br>Jugular venous pulse.<br>Heart sounds<br>Arterial Pulse<br>Heart rate: Normal value,<br>Cardiac output: Definition, normal values, one method of determination, variation, factors affecting heart rate and stroke volume.<br>Arterial blood pressure: Definition, normal values & variations, determinants, regulation & measurement of Blood pressure | 15 hours | MK | Didactic lectures                                |
|   | Changes in ECG in Myocardial infarction.<br>arterial pulse. Coronary circulation.<br>Cardio vascular homeostasis<br>Exercise & posture                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 2 hours  | DK | Didactic lectures                                |



|    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |         |    |                   |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-------------------|
| 10 | <b>Respiratory System</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |         |    |                   |
|    | <p>Physiology of Respiration : External &amp; internal respiration.</p> <p>Functional anatomy of respiratory passage &amp; lungs.</p> <p>Respiratory movements: Muscles of respiration, Mechanism of inflation &amp; deflation of lungs.</p> <p>Intra pleural &amp; Intra pulmonary pressures &amp; their changes during the phases of respiration.</p> <p>Mechanics of breathing - Surfactant, compliance &amp; work of breathing.-</p> <p>Definition</p> <p>Spirometry: Lung volumes &amp; capacities definition, normal values, significance,</p> <p>Pulmonary ventilation - alveolar ventilation &amp; dead space – ventilation.</p> <p>Composition of inspired air, alveolar air and expired air.</p> <p>Transport of Oxygen &amp; Carbon dioxide in the blood.</p> <p>Hypoxia &amp; Types</p> <p>Artificial respiration, pulmonary function tests.</p> | 7 hours | MK | Didactic lectures |
|    | <p>Factors affecting vital capacity, variations in vital capacity, FEV &amp; its variations.</p> <p>Regulation of respiration – neural &amp; Chemical.</p> <p>Cyanosis, Dyspnoea, Periodic breathing.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2 hours | DK | Didactic lectures |
|    | Exchange of gases: Diffusing capacity, factors affecting it                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 1 hour  | NK |                   |

| 11      | <b>Central Nervous System</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                |                                              |                                |
|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------------------------------------|--------------------------------|
|         | 1. Organisation of central nervous system<br>2. Neuronal organization at spinal cord level<br>3. Synapse – Definition, classification, events of transmission, properties of synapse.<br>Receptors-Definition, classification, law of projection<br>Reflexes-Definition, classification, reflex arc<br>4. Tracts/Pathways<br>a. Motor –Pyramidal tract and its function.<br>b. Sensory tracts- Physiology of pain pathway-(Lateral column tract),<br>c. Dorsal column tract, Anterior tract and their Function)<br>5. Functions of Cerebellum, Thalamus, Hypothalamus and Cerebral cortex.<br>6. Formation and functions of CSF<br>7. Autonomic nervous system<br>Classification and- Function | 14 hours       | MK                                           | Didactic lectures              |
| 12      | <b>Special Senses</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                |                                              |                                |
|         | a. Vision—Functions of different parts of eye & Refractive errors<br>Visual Pathway<br>b. Audition- functions of outer, inner, middle ear, Auditory Pathway<br>a. Deafness –Types and tests<br>c. Taste- Taste pathway<br>d. Smell- Olfactory pathway                                                                                                                                                                                                                                                                                                                                                                                                                                          | 5 hours        | MK                                           | Didactic lectures              |
|         | Fundamental knowledge of vision, hearing, taste and smell.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1 hour         | DK                                           | Didactic lecture               |
| Sr. No. | Topic - PRACTICALS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Teaching hours | Must know / Desirable to know / Nice to Know | Suggested teaching methodology |
|         | <ul style="list-style-type: none"> <li>The following list of practical is minimum and essential. All the practical have been categorised as procedures &amp; demonstrations.</li> <li>The procedures are to be performed by the students during practical classes to acquire skills. All the procedures are to be included in the University practical examination.</li> </ul>                                                                                                                                                                                                                                                                                                                 |                |                                              |                                |

|  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                           |                                             |                                                |
|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|------------------------------------------------|
|  | <ul style="list-style-type: none"> <li>Those categorised as demonstrations are to be shown to the students during practical classes. However these demonstrations would not be included in the University examinations but question based on this would be given in the form of charts, graphs and calculations for interpretation by the students.</li> </ul>                                                                                                                                                                     |                                                                                                                                           |                                             |                                                |
|  | <b>PROCEDURES</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                           |                                             |                                                |
|  | 1. Enumeration of Red Blood Cells<br>2. Enumeration of White Blood Cells<br>3. Differential leucocyte counts<br>4. Determination of Hemoglobin<br>5. Determination of blood group<br>6. Determination of bleeding time and clotting time<br>7. clinical Examination of radial pulse<br>8. Recording of arterial blood pressure.<br>9 calculation of blood indices<br>7. Clinical examination of cardiovascular – auscultation of heart sounds<br>8. clinical examination of respiratory system – auscultation of the breath sounds | 3 hours<br>3 hours<br><br>4 hours<br>2 hours<br>2 hours<br>4 hours<br><br>2 hours<br><br>3 hours<br><br>2 hours<br>3 hours<br><br>3 hours | MK                                          | To be done by the students to acquire skills . |
|  | <b>DEMONSTRATION:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                           |                                             |                                                |
|  | 1. Determination of packed cell volume and erythrocyte sedimentation rate<br>2. Determination of specific gravity of blood<br>3. Determination of osmotic fragility of RBCS<br>4. Determination of vital capacity and timed vital capacity<br>6. Electrocardiography: Demonstration of recording of normal Electro cardiogram                                                                                                                                                                                                      | 4 hours<br>2 hours<br>2 hours<br>6 hours<br>2 hours                                                                                       | DK                                          | To be shown to the students                    |
|  | Revision practical's                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 13 hours                                                                                                                                  | All practicals are to be given for revision |                                                |

| SI No | Reform                     | Changed Reform                                                               | Basis for the changes                                  | Remarks |
|-------|----------------------------|------------------------------------------------------------------------------|--------------------------------------------------------|---------|
| 1     | Teaching Learning Strategy | Integrated teaching Salivary Glands, Calcium Homeostasis, Bleeding Disorders | Student centered learning, Enhances Depth of knowledge |         |

## SCHEME OF EXAMINATION

**A.) Theory: 35 Marks.**

**Duration of paper : 1 Hour 30 Mins.**

| Type of Questions                                                                                                                                                               | No. of Questions<br>and marks | Total Mark      |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|-----------------|
| <b>1. Multiple Choice Questions</b>                                                                                                                                             | M.C.Q.<br>10 x 1 marks        | 10              |
| <b>2. Long Essay</b><br>Questions preferably from Blood.<br>Gastrointestinal system.<br>Cardiovascular system.<br>Respiratory system.<br>Endocrines.<br>Central nervous system. | 1 X 10 marks                  | 10              |
| <b>3. Short Answer</b><br>Questions could be from all the chapters.                                                                                                             | 5X3 marks                     | 15              |
|                                                                                                                                                                                 | <b>Total</b>                  | <b>35 Marks</b> |

**B) Practicals : 45 Marks.**

**I ) Major Experiments :**

**20 marks**

Any one of the Major Experiments:

R.B.C. Count.

W.B.C. Count.

Differential Count.

Blood Pressure Recording.

**II ) Minor Experiments :**

**10 marks**

Any one of the Minor Experiments:

Determination of Blood Group

Determination of Bleeding and Clotting time

Haemoglobin Estimation

Calculation of absolute Haematological

Indices- MCH, MCV, MCHC

**III ) Clinical Exercises:**

**10 marks**

**IV) Record**

**05 marks**

**Total : 45 Marks**

**C) Viva Voce : 10 Marks**

**D) Internal Assessment: (Physiology and Biochemistry)\***

**Theory Examination            5 Marks**

**Practical Examination        5 Marks**

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**\* Average IA marks of Physiology and Biochemistry will be calculated for 10 Marks for final Internal Assessment in Theory and Practical each.**

**Recommended books:**

| <b>Sl. No.</b> | <b>Title</b>                        | <b>Author</b>    | <b>Edition &amp; Year of Publication</b> | <b>Publisher</b>             |
|----------------|-------------------------------------|------------------|------------------------------------------|------------------------------|
| 1.             | Text book of Physiology             | Arthur C. Guyton | Recent Edition                           | Prism pub. Bangalore         |
| 2.             | Principal of Anatomy and Physiology | Tortora          | Recent Edition                           | Harper Collins               |
| 3.             | Concise Medical Physiology`         | Choudhari        | Recent Edition                           | New Central Books, Calcutta. |
| 4.             | Human Physiology                    | Chaterjee        | Recent Edition                           | Medical Allied Agency        |
| 5.             | Human Physiology for BDS students   | A.K. Jain        | Recent Edition                           | Avichal Pub. Co.             |

**Reference books:**

| <b>Sl. No.</b> | <b>Title</b>                           | <b>Author</b>                     | <b>Edition &amp; Year of Publication</b> | <b>Publisher</b>                    |
|----------------|----------------------------------------|-----------------------------------|------------------------------------------|-------------------------------------|
| 1.             | Essentials of Medical Physiology       | Sembulingam K., Prema Sembulingam | Recent Edition                           | Jaypee Brothers Medical Publishers. |
| 2.             | Review of Medical Physiology           | Guyton                            | Recent Edition                           | Appliton and Lange                  |
| 3.             | Human Physiology for BDS               | A K Jain                          | 8th Edition                              | Arya Publication                    |
| 4.             | Manual of practical physiology for BDS | Jain A. K.                        | Recent Edition                           | -                                   |

# BIOCHEMISTRY AND NUTRITION

## GOAL :

©The broad goal of teaching biochemistry to the undergraduate students is to make them understand the scientific basis of the life processes at the molecular level and to orient them towards the application of the knowledge acquired in solving clinical problems.

## OBJECTIVES :

### a) KNOWLEDGE

At the end of the I BDS course the student is expected to :

1. Describe the molecular and functional organization of the cell and to study its subcellular components.
2. Delineate structure, function and inter-relationships of bio-molecules and consequences of deviation from normal.
3. Summarize the fundamental aspects of enzymology and clinical applications wherein regulation of enzymatic activity is altered.
4. Describe digestion and assimilation of nutrients and consequences of malnutrition.
5. Integrate the various aspects of metabolism and their regulatory pathways.
6. Explain the biochemical basis of inherited disorders with their associated sequelae.
7. Describe the mechanisms involved in maintenance of body fluid and pH homeostasis.
8. Summarize the molecular concept of body defenses and their application in medicine.
9. Familiarize with the principles of various conventional and specialized laboratory investigations and instrumentation analysis and interpretation of a given data.
10. Suggest experiments to support theoretical concepts and clinical diagnosis.

### b) SKILLS

At the end of the I BDS course the student is expected to :

1. Make use of conventional techniques to perform biochemical analysis relevant to clinical diagnosis.
2. Analyze and interpret investigative data.
3. Demonstrate the skills of solving the clinical problems and decision-making.

### Course Outcomes - Theory

|                                                                                                                     |                                                                                                                                                                                       |
|---------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| At the end of General Human Physiology, Biochemistry, Nutrition & Dietetics course, the students should be able to: |                                                                                                                                                                                       |
| T 2.1.2.1                                                                                                           | Explain the normal functioning of all the organs systems and their interactions and describe the molecular and functional organization of a cell and list its subcellular components; |
| T 2.1.2.2                                                                                                           | Assess the relative contribution of each organ system and delineate structure, function and inter-relationships of biomolecules and consequences of deviation from normal             |
| T 2.1.2.3                                                                                                           | Elucidate the physiological aspects of normal growth and development                                                                                                                  |
| T 2.1.2.4                                                                                                           | Describe the physiological response and adaptations to environmental stresses and summarize the molecular concept of body defenses and their application in medicine;                 |

### Programme Outcome & Course Outcome (POCO) Matrix – Theory

| Course Outcome       | PO1        | PO2        | PO3        | PO4      | PO5      | PO6      | PO7      |
|----------------------|------------|------------|------------|----------|----------|----------|----------|
| T 2.1.2.1            | 1          | 1          | 1          | 2        | 2        | 2        | 1        |
| T 2.1.2.2            | 2          | 2          | 1          | 2        | 2        | 2        | 1        |
| T 2.1.2.3            | 1          | 1          | 1          | 2        | 2        | 2        | 1        |
| T 2.1.2.4            | 2          | 2          | 2          | 2        | 2        | 2        | 1        |
| <b>Average Score</b> | <b>1.5</b> | <b>1.5</b> | <b>1.3</b> | <b>2</b> | <b>2</b> | <b>2</b> | <b>1</b> |

### Course Outcomes - Practical

|                                                                                                                   |                                                                                                                                                                                                               |
|-------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| At the end of General Human Physiology, Biochemistry, Nutrition & Dietics course, the students should be able to: |                                                                                                                                                                                                               |
| P 2.1.2.1                                                                                                         | Explain the normal functioning of all the organs systems and their interactions and describe the molecular and functional organization of a cell and list its subcellular components                          |
| P 2.1.2.2                                                                                                         | summarize the fundamental aspects of enzymology and clinical application wherein regulation of enzymatic activity is altered and to integrate the various aspects of metabolism and their regulatory pathways |
| P 2.1.2.3                                                                                                         | Analyse and interpret investigative data.                                                                                                                                                                     |

### Programme Outcome & Course Outcome (POCO) Matrix – Practical

| Course Outcomes      | PO1        | PO2      | PO3      | PO4      | PO5      | PO6      | PO7      |
|----------------------|------------|----------|----------|----------|----------|----------|----------|
| P 2.1.2.1            | 2          | 2        | 2        | 2        | 2        | 2        | 1        |
| P 2.1.2.2            | 1.5        | 2        | 2        | 2        | 2        | 2        | 1        |
| P 2.1.2.3            | 2          | 2        | 2        | 2        | 2        | 2        | 1        |
| <b>Average Score</b> | <b>1.5</b> | <b>2</b> | <b>2</b> | <b>2</b> | <b>2</b> | <b>2</b> | <b>1</b> |



**Curriculum and Course Content for I BDS**  
**Theory – 80 Hours ; Practical – 60 Hours**

| Sr. No. | Topic - THEORY                                                                                                                                                                                                                                                                                                                                                                                                         | Teaching hours | Must know / Desirable to know / Nice to Know | Suggested teaching methodology |
|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------------------------------------|--------------------------------|
| 1       | Introduction to biochemistry and its scope in dentistry                                                                                                                                                                                                                                                                                                                                                                | 1              | DK                                           | Lecture                        |
| 2       | Carbohydrates                                                                                                                                                                                                                                                                                                                                                                                                          | 4              |                                              |                                |
|         | <ul style="list-style-type: none"> <li>• Definition</li> <li>• Classification</li> <li>• Isomerism of sugar</li> <li>• Physiologically important mono, di and polysaccharides</li> <li>• Glycogen, starch, cellulose- Structure and functions</li> </ul>                                                                                                                                                               |                | MK                                           | Lecture                        |
|         | <ul style="list-style-type: none"> <li>• Sugar derivatives</li> </ul>                                                                                                                                                                                                                                                                                                                                                  |                | NK                                           |                                |
| 3       | <b>Amino acid</b>                                                                                                                                                                                                                                                                                                                                                                                                      | 6              |                                              |                                |
|         | <ul style="list-style-type: none"> <li>• Classification based on structure and nutritional importance</li> <li>• Optical activity</li> <li>• Isoelectric pH</li> <li>• Physiologically active peptides</li> </ul> <b>PROTEINS</b> <ul style="list-style-type: none"> <li>• Definition</li> <li>• Functions</li> <li>• Classification</li> <li>• Structural organization of proteins</li> <li>• Denaturation</li> </ul> |                | MK                                           | Lecture                        |
| 4       | <b>Lipids</b>                                                                                                                                                                                                                                                                                                                                                                                                          | 3              |                                              |                                |
|         | <ul style="list-style-type: none"> <li>• Definition</li> <li>• Classification</li> <li>• Functions</li> <li>• Fatty acids- Definition, examples and importance</li> <li>• Neutral fats</li> <li>• Phospholipids- Types, functions with clinical importance</li> <li>• Cholesterol- structure and biological importance</li> <li>• Lipoproteins- Types and functions</li> </ul>                                         |                | MK                                           | Lecture                        |

|   |                                                                                                                                                                                                                                                                                                                                                       |   |    |         |
|---|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|----|---------|
| 5 | <b>Nucleic Acids</b>                                                                                                                                                                                                                                                                                                                                  | 3 |    |         |
|   | <ul style="list-style-type: none"> <li>• Composition</li> <li>• Structure &amp; Types of deoxy ribonucleic Acid (DNA) &amp; Ribonucleic Acid (RNA)</li> <li>• Nucleosides and Nucleotides and their importance</li> </ul>                                                                                                                             |   | MK | Lecture |
|   | <ul style="list-style-type: none"> <li>• High energy compounds: ATP, Phosphorylamidines, Thioesters, Enol phosphates</li> </ul>                                                                                                                                                                                                                       |   | NK | Lecture |
| 6 | <b>Vitamins</b>                                                                                                                                                                                                                                                                                                                                       | 8 |    |         |
|   | Vitamins: Definition, classification, daily requirement, sources, Biochemical function and deficiency symptoms. Vitamins A functions including visual process. Vitamin D and its role in calcium metabolism. Vitamin E. Vitamin K and gamma carboxylation Brief account of water-soluble vitamins with biochemical functions and deficiency features. |   | MK | Lecture |
|   | Introduction to anti-vitamins and hypervitaminosis                                                                                                                                                                                                                                                                                                    |   | NK |         |
| 7 | <b>Enzymes</b>                                                                                                                                                                                                                                                                                                                                        | 6 |    |         |
|   | <ul style="list-style-type: none"> <li>• Definition</li> <li>• Classification</li> <li>• Enzyme specificity, mechanism of action</li> <li>• Coenzymes and cofactors</li> <li>• Proenzymes</li> <li>• Isoenzymes</li> <li>• Factors influencing enzyme activity</li> <li>• Enzyme inhibition- types and examples</li> </ul>                            |   | MK | Lecture |
|   | <ul style="list-style-type: none"> <li>• Diagnostic enzymes</li> </ul>                                                                                                                                                                                                                                                                                |   | DK |         |
|   | <ul style="list-style-type: none"> <li>• Introduction to allosteric regulation, covalent modification and regulation by induction/repression</li> </ul>                                                                                                                                                                                               |   | NK | Lecture |

|    |                                                                                                                                                                                                                                                                                                                                                                    |   |    |         |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|----|---------|
| 8  | Carbohydrates Metabolism                                                                                                                                                                                                                                                                                                                                           | 8 |    |         |
|    | <ul style="list-style-type: none"> <li>• Digestion and absorption of carbohydrates</li> <li>• Glycolysis</li> <li>• Cori cycle</li> <li>• Citric acid cycle</li> <li>• Energetics of glucose oxidation</li> <li>• Gluconeogenesis</li> <li>• Glycogenolysis</li> <li>• Glycogenesis</li> <li>• Regulation of blood glucose</li> <li>• Diabetes mellitus</li> </ul> |   | MK | Lecture |
|    | <ul style="list-style-type: none"> <li>• Electron transport chain, oxidative phosphorylation, glycogen storage disorders</li> </ul>                                                                                                                                                                                                                                |   | DK |         |
|    | <ul style="list-style-type: none"> <li>• Significance of HMP shunt pathway</li> </ul>                                                                                                                                                                                                                                                                              |   | NK |         |
| 9  | <b>Lipid Metabolism</b>                                                                                                                                                                                                                                                                                                                                            | 6 |    |         |
|    | <ul style="list-style-type: none"> <li>• Digestion and absorption of lipids</li> <li>• Beta oxidation of fatty acids and its energetics.</li> <li>• Ketone body formation</li> <li>• Ketone body Utilization</li> <li>• Keto acidosis</li> </ul>                                                                                                                   |   | MK | Lecture |
|    | <ul style="list-style-type: none"> <li>• Outline of cholesterol biosynthesis and important derivatives of cholesterol</li> </ul>                                                                                                                                                                                                                                   |   | DK | Lecture |
|    | <ul style="list-style-type: none"> <li>• Synthesis of palmitic acid, fatty liver, and lipotropic action</li> </ul>                                                                                                                                                                                                                                                 |   | NK |         |
| 10 | <b>Protein Metabolism</b>                                                                                                                                                                                                                                                                                                                                          | 8 |    |         |
|    | <ul style="list-style-type: none"> <li>• Digestion and absorption of amino acids</li> <li>• General reactions of amino acids</li> <li>• Production and fate of ammonia</li> <li>• Urea cycle pathway</li> <li>• Phenylalanine metabolism</li> <li>• Phenyl ketonuria, albinism, alcaptonuria</li> <li>• Methionine metabolism</li> </ul>                           |   | MK | Lecture |
|    | <ul style="list-style-type: none"> <li>• Glycine metabolism</li> <li>• Synthesis of important products like creatine, noradrenaline, adrenaline, thyroxine, serotonin, heme from amino acids</li> </ul>                                                                                                                                                            |   | DK | Lecture |

|    |                                                                                                                                                                                                                                                                                        |   |    |                     |
|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|----|---------------------|
|    | <ul style="list-style-type: none"> <li>One carbon metabolism</li> <li>Integration of metabolism</li> </ul>                                                                                                                                                                             |   | NK |                     |
| 11 | <b>Nutrition and Diet</b>                                                                                                                                                                                                                                                              | 5 |    |                     |
|    | <ul style="list-style-type: none"> <li>Dietary factors</li> <li>Basal Metabolic Rate (BMR)</li> <li>Biological value of protein</li> <li>Glucose sparing action</li> <li>Essential amino acids</li> <li>Dietary fiber</li> <li>Essential fatty acids</li> <li>Balanced diet</li> </ul> |   | MK | Lecture             |
|    | <ul style="list-style-type: none"> <li>Respiratory quotient, specific dynamic action (SDA) of foods, protein calorie malnutrition (kwashiorkor and marasmus), nitrogen balance</li> </ul>                                                                                              |   | DK | Lecture             |
|    | <ul style="list-style-type: none"> <li>Protein quality and requirement</li> </ul>                                                                                                                                                                                                      |   | NK |                     |
| 12 | <b>Mineral Metabolism</b>                                                                                                                                                                                                                                                              | 5 |    |                     |
|    | Distribution, sources, functions, requirements, absorption, metabolism, and deficiency manifestations of <ul style="list-style-type: none"> <li>Calcium and phosphorus</li> <li>Iron</li> <li>Iodine</li> <li>Fluorine</li> </ul>                                                      |   | MK | Lecture             |
|    | Brief introduction to thyroxine synthesis. General functions of thyroxine                                                                                                                                                                                                              |   | DK | Integrated teaching |
| 13 | <b>Liver Function Tests</b>                                                                                                                                                                                                                                                            | 3 |    |                     |
|    | Brief introduction to liver function tests                                                                                                                                                                                                                                             |   | MK | Integrated teaching |
|    | Van den bergh reaction, albumin / globulin ratio, serum glutamate pyruvate transaminase (SGPT) and other enzymes                                                                                                                                                                       |   | DK | Integrated teaching |
| 14 | <b>pH and its biological importance and electrolyte balance</b>                                                                                                                                                                                                                        | 4 |    |                     |
|    | <ul style="list-style-type: none"> <li>Acids and bases</li> <li>Buffers</li> <li>Acid base balance</li> <li>Acidosis and alkalosis</li> </ul>                                                                                                                                          |   | MK | Lecture             |

|    |                                                                                                                                                                                                                                          |   |    |         |
|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|----|---------|
|    | <ul style="list-style-type: none"> <li>• Handerson- hassel batch equation, role of the kidney in acid base balance</li> <li>• Acid base disorders</li> <li>• Regulation of sodium and water balance and electrolyte imbalance</li> </ul> |   | DK | Lecture |
| 15 | <b>Renal Function Test</b>                                                                                                                                                                                                               | 1 |    |         |
|    | <ul style="list-style-type: none"> <li>• Brief introduction to kidney function tests</li> <li>• Urea clearance test</li> <li>• Creatinine clearance</li> </ul>                                                                           |   | MK | Lecture |
| 16 | <b>Molecular Biology</b>                                                                                                                                                                                                                 | 5 |    |         |
|    | <ul style="list-style-type: none"> <li>• Introduction to nucleotides, Introduction to replication and transcription, Forms and functions of RNA, Genetic code and mutation, Outline of translation process</li> </ul>                    |   | MK | Lecture |
|    | <ul style="list-style-type: none"> <li>• Antimetabolites and antibiotics interfering in replication, transcription and translation</li> </ul>                                                                                            |   | DK | Lecture |
|    | <ul style="list-style-type: none"> <li>• Outline of degradation of purines, Gout, Introduction to cancer, Viruses and oncogenes</li> </ul>                                                                                               |   | NK | Lecture |
| 17 | <b>Hormones</b>                                                                                                                                                                                                                          | 1 |    |         |
|    | <ul style="list-style-type: none"> <li>• Introduction to second messengers, cyclic AMP, calcium ion, inositol triphosphate</li> </ul>                                                                                                    |   | MK | Lecture |
|    | <ul style="list-style-type: none"> <li>• Mechanism of action of steroid hormones, epinephrine, glucagon and insulin in brief</li> </ul>                                                                                                  |   | NK | Lecture |
| 18 | <b>Structural Components and Blood Proteins</b>                                                                                                                                                                                          | 2 |    |         |
|    | <ul style="list-style-type: none"> <li>• Haemoglobin and its abnormal forms, Plasma proteins; classification and their separation, functions of albumin, Brief account of Immunoglobulins: structure and functions</li> </ul>            |   | MK | Lecture |
|    | <ul style="list-style-type: none"> <li>• Introduction to heme synthesis and degradation, Jaundice</li> </ul>                                                                                                                             |   | DK |         |

|         | <ul style="list-style-type: none"> <li>• Introduction to cytoskeleton, Collagen and elastin, Myofibril and muscle contraction in brief.</li> <li>• Glycosaminoglycans, Bone structure</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                | NK                                           | Integrated teaching                                       |
|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------------------------------------|-----------------------------------------------------------|
| 19      | <b>Detoxification</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1              |                                              |                                                           |
|         | <ul style="list-style-type: none"> <li>• Phases of detoxification</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                | NK                                           | Lecture                                                   |
| Sr. No. | Topic - PRACTICALS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Teaching hours | Must know / Desirable to know / Nice to Know | Suggested teaching methodology                            |
|         | <b>PRACTICALS</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 60             |                                              |                                                           |
|         | <ol style="list-style-type: none"> <li>1. Reactions of monosaccharides - glucose &amp; fructose</li> <li>2. Reactions of disaccharides - lactose, maltose and sucrose.</li> <li>3. Preparation of osazones from glucose, fructose, lactose &amp; maltose</li> <li>4. Reactions of polysaccharides - starch</li> <li>5. Identification of unknown carbohydrate</li> <li>6. Reactions of Albumin and Caesin.</li> <li>7. Colour reactions of proteins</li> <li>8. Precipitation reactions of albumin</li> <li>9. Identification of unknown solution</li> <li>10. Reactions of Biochemically important substances : Urea, Uric acid, Creatinine, Acetone and HCl.</li> <li>11. Composition of saliva and starch digestion by salivary amylase.</li> <li>12. Qualitative analysis of gastric juice - normal and abnormal contents</li> <li>13. Urine analysis - normal constituents.</li> <li>14. Urine analysis - abnormal or pathological constituents.</li> <li>15. Glucose estimation by glucose oxidase-peroxidase (GOD-POD) method.</li> </ol> |                | MK                                           | Practical sessions followed by small group teaching (SGT) |

|  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |    |                        |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----|------------------------|
|  | 16. Estimation of Urea in blood by Diacetyl Monoxime Method.<br>17. Estimation of total proteins in serum and A G ratio.<br>18. Estimation of Creatinine in Urine.<br>19. Estimation of Serum Inorganic Phosphorus by Fiske Subbarow Method.                                                                                                                                                                                                                                                                          |  |    |                        |
|  | <b>Demonstration Sessions</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |    |                        |
|  | 1. Colorimeter<br>2. Electrophoresis & Chromatography<br>3. Estimation of Serum calcium and phosphorus<br>4. Estimation of Bilirubin<br>5. Estimation of Urea in blood<br>6. Estimation of total protein in blood serum<br>7. Preparation of haemin crystals<br>8. Discussion of clinical charts - Glucose Tolerance Test (GTT)<br>9. Spotting of specimens: Haemin, Osazone - Microscopy, Ryle's tube, Folin -wu tube, Urinometer, Tests - Biuret reaction, Millon's reaction, Jaffe's reaction, Barfoed's reaction. |  | DK | Demonstration sessions |

## SCHEME OF EXAMINATION

### 1. FORMATIVE ASSESSMENT

OSPE will be conducted for either of the Internal Assessment Exams.

### 2. SUMMATIVE ASSESSMENT

#### A) Theory : 35 Marks.

Duration of paper – 1 Hour 30 minutes.

| Contents                                                                                                                                                                                                                                        | No. of Questions and Marks | Total Marks |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|-------------|
| 1. <b>Multiple Choice Questions</b>                                                                                                                                                                                                             | 10 X 1 mark                | 10          |
| 2. <b>Long Essay</b> Questions preferably from :<br>Chemistry of Carbohydrates, proteins, lipids and amino acids. Metabolism of carbohydrates, protein, lipids, nucleic acids and minerals.<br>Fat soluble and water soluble vitamins. Enzymes. | 1 X 10 marks               | 10          |
| 3. <b>Short Answers</b> Questions preferably from :<br>All the above chapters. Organ function tests, Minerals, Detoxification, Nutrition and Blood Constituents.                                                                                | 5X3=15 marks               | 15          |
|                                                                                                                                                                                                                                                 | <b>Total</b>               | <b>35</b>   |

#### B) Practicals : 45 Marks

- |                                                |          |
|------------------------------------------------|----------|
| a. One Procedure for quantitative estimation : | 20 Marks |
| b. One Procedure for qualitative analysis.     | 15 Marks |
| c. 5 spotters.                                 | 05 Marks |
| d. Record books                                | 05 Marks |

**Total : 45 Marks**

#### C) Viva Voce : 10 Marks

#### D) Internal Assessment: \*

**Theory Examination : 5 Marks**

**Practical Examination : 5 Marks**

**\* Average IA marks of Physiology and Biochemistry will be calculated for 10 Marks for final Internal Assessment in Theory and Practical each.**



**Recommended Books :**

| Sl. No. | Title                                         | Author              | Edn | Yr. of Publ. | Publisher                         |
|---------|-----------------------------------------------|---------------------|-----|--------------|-----------------------------------|
| 1.      | Textbook of Biochemistry for Medical students | DM Vasudevan.       | 9th | 2019         | Jaypee Brothers Medical Publisher |
| 2.      | Textbook of Biochemistry                      | Pankaja Naik.       | 5th | 2019         | Jaypee Brothers Medical Publisher |
| 3.      | Case oriented approach towards Biochemistry   | Namrata Chhabra.    | 2nd | 2021         | Jaypee Brothers Medical Publisher |
| 4.      | Biochemistry                                  | Satyanarayana       | 5th | 2019         | ELSEVIER                          |
| 5.      | Laboratory manual and Practical Biochemistry, | T.N. Pattabhiraman. | 4th | 2015         | Avichal Pub. Co.                  |

**Reference Books :**

| Sl. No. | Title                       | Author            | Edn  | Yr. of Publ. | Publisher                   |
|---------|-----------------------------|-------------------|------|--------------|-----------------------------|
| 1.      | Illustrated Biochemistry    | Harpers'          | 31st | 2021         | McGraw Hill                 |
| 2.      | Principles of Biochemistry. | Albert Lehninger. | 8th  | 2021         | New York : W.H. Freeman,    |
| 3.      | Text book of Biochemistry   | Stryer.           | 9th  | 2019         | Basingstoke : W.H. Freeman, |

## **2.1.3. DENTAL ANATOMY, EMBRYOLOGY AND ORAL HISTOLOGY**

### **GOAL:**

The subject of Dental Anatomy, Histology including Embryology and physiology aims at imparting knowledge in understanding the structure, function, genesis, morphology, physiology and histology of normal tissue associated with oral cavity

### **OBJECTIVES:**

#### **a) KNOWLEDGE :**

After a course on Dental Anatomy, Histology including Embryology and Physiology,

- 1) The student is expected to know morphology, histology, physiology and embryology with clinical applications so as to import this understanding for diagnosing oral diseases in future.
- 2) The student should understand the histology basis and physiologic aging process in the dental tissue so as to apply this knowledge in various dental treatment procedures.
- 3) The student must acquire the basic knowledge of microscope and various dental methods of preservation of tissue (hard and soft tissues) different staining technique and their visualization under microscope.

#### **b) SKILLS:**

The student should acquire basic skill in:-

- 1) Identification of deciduous & permanent teeth.
- 2) Age estimation by patterns of teeth eruption from plastic cast of different age group.
- 3) Microscope study of oral tissue.
- 4) Carving of crown and root of permanent teeth in wax

### Course Outcomes - Theory

| At the end of dental anatomy, embryology & oral histology course, the students should be able to: |                                                                                                                  |
|---------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|
| T 2.1.3.1                                                                                         | State and utilize the appropriate terminology used in dental anatomy and oral histology                          |
| T 2.1.3.2                                                                                         | Integrate the knowledge regarding head and neck embryology and oral physiology for clinical application          |
| T 2.1.3.3                                                                                         | Recognize and describe the morphology of deciduous and permanent dentition and relate it to clinical application |
| T 2.1.3.4                                                                                         | Describe the histology of normal oral structures                                                                 |
| T 2.1.3.5                                                                                         | Explain laboratory techniques for preparation of oral biopsy tissue for microscopic examination (Hard and Soft)  |

### Programme Outcome & Course Outcome (POCO) Matrix – Theory

| Course Outcome       | PO1        | PO2        | PO3        | PO4        | PO5        | PO6      | PO7      |
|----------------------|------------|------------|------------|------------|------------|----------|----------|
| T 2.1.3.1            | 1          | 1          | 1          | -          | -          | 2        | 1        |
| T 2.1.3.2            | 2          | 3          | 2          | 2          | -          | 2        | 1        |
| T 2.1.3.3            | 2          | 3          | 2          | 2          | 1          | 2        | 1        |
| T 2.1.3.4            | 1          | 3          | 1          | 1          | 1          | 2        | 1        |
| T 2.1.3.5            | 1          | 1          | 1          | 1          | 1          | 2        | 1        |
| <b>Average score</b> | <b>1.4</b> | <b>2.2</b> | <b>1.4</b> | <b>1.2</b> | <b>0.6</b> | <b>2</b> | <b>1</b> |

### Course Outcomes - Practical

| At the end of Dental Anatomy, embryology & Oral histology course the students should be able to: |                                                                                                                         |
|--------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| P 2.1.3.1                                                                                        | Recognize and explain the morphology of deciduous and permanent teeth                                                   |
| P 2.1.3.2                                                                                        | Identify the dentition in cast models and relate the approximate age                                                    |
| P 2.1.3.3                                                                                        | Identify normal oral histology slides under microscope and illustrate the histological diagrams in record book          |
| P 2.1.3.4                                                                                        | Illustrate permanent teeth by carving in paraffin wax blocks and write the morphology of permanent teeth in record book |

### Programme Outcome & Course Outcome (POCO) Matrix – Practical

| Course Outcomes      | PO1        | PO2      | PO3      | PO4        | PO5      | PO6      | PO7      |
|----------------------|------------|----------|----------|------------|----------|----------|----------|
| 2.1.2.1              | 2          | 3        | 1        | 2          | 1        | 2        | 1        |
| 2.1.2.2              | 3          | 3        | 1        | 1          | 1        | 2        | 1        |
| 2.1.2.3              | 2          | 3        | 1        | 2          | 1        | 2        | 1        |
| 2.1.2.4              | 2          | 3        | 1        | 2          | 1        | 2        | 1        |
| <b>Average score</b> | <b>2.2</b> | <b>3</b> | <b>1</b> | <b>1.7</b> | <b>1</b> | <b>2</b> | <b>1</b> |

**Curriculum and Course Content for I BDS**  
**Theory – 105 Hours ; Practical – 250 Hours**

| Sr. No. | Topic - THEORY                                                                                                                                                                                                    | Teaching hours | Must know / Desirable to know / Nice to Know | Suggested teaching methodology                                                                   |
|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------------------------------------|--------------------------------------------------------------------------------------------------|
| I       | <b>Dental Anatomy</b>                                                                                                                                                                                             | 40             |                                              |                                                                                                  |
|         | 1. Introduction to Dental Anatomy<br>a. Function of Teeth<br>b. Nomenclature<br>c. Tooth Numbering System<br>d. Chronology of Deciduous and Permanent Teeth<br>e. Definitions and Terms used in Dental Morphology | 4              | MK                                           | Didactic<br>Lecture with<br>ICT enabled<br>Classes                                               |
|         | 2. Morphology of Deciduous & Permanent Teeth                                                                                                                                                                      | 7              | MK                                           | Didactic<br>Lecture with<br>ICT enabled<br>Classes                                               |
|         | 3. Clinical significance of morphology of Deciduous Teeth                                                                                                                                                         | 2              | MK                                           | Didactic<br>Lecture with<br>ICT enabled<br>Classes                                               |
|         | 4. Clinical significance of morphology of Permanent Teeth                                                                                                                                                         | 15             | MK                                           | Integrated Teaching with Oral Pathology and Department of Conservative dentistry and Endodontics |
|         | 5. Anatomy of the Pulp                                                                                                                                                                                            | 2              | MK                                           |                                                                                                  |
|         | 6. Difference between Deciduous and Permanent Teeth                                                                                                                                                               | 2              | MK                                           |                                                                                                  |
|         | 7. Occlusion                                                                                                                                                                                                      | 5              |                                              |                                                                                                  |
|         | a. Development of occlusion<br>b. Dental Arch form<br>c. Compensating curves of dental arches                                                                                                                     |                | MK                                           | Integrated Teaching with Oral Pathology and Department of Prosthodontics                         |

|           |                                                                                                                                                                                                                                                                                                        |     |    |                                                    |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|----|----------------------------------------------------|
|           | d. Angulations of individual teeth in relation to various planes                                                                                                                                                                                                                                       |     | DK | Didactic<br>Lecture with<br>ICT enabled<br>Classes |
|           | e. Functional form of the teeth<br>f. Facial relation of each tooth<br>g. Occlusal contact and intercuspatal relation of all teeth during centric occlusion<br>h. Occlusal contact and intercuspatal relation of all teeth during functional movements<br>i. Clinical significance of normal occlusion |     | MK | Didactic<br>Lecture with<br>ICT enabled<br>Classes |
|           | 8. Temporomandibular Joint                                                                                                                                                                                                                                                                             | 1.5 |    |                                                    |
|           | a. Gross anatomy and articulation<br>b. Muscles of mastication<br>c. Histology                                                                                                                                                                                                                         |     | MK | Didactic<br>Lecture                                |
|           | d. Clinical Consideration with emphasis on Myofascial pain dysfunction syndrome                                                                                                                                                                                                                        | 0.5 | NK | Didactic<br>Lecture with<br>ICT enabled<br>Classes |
|           | 9. Dental Anthropology and Comparative Dental Anatomy                                                                                                                                                                                                                                                  | 1   | NK | Didactic<br>Lecture with<br>ICT enabled<br>Classes |
| <b>II</b> | <b>Oral Embryology</b>                                                                                                                                                                                                                                                                                 | 10  |    | Integrated<br>Teaching with<br>Oral Pathology      |
|           | 1. *Brief review of development of face                                                                                                                                                                                                                                                                |     | MK |                                                    |
|           | 2. Applied aspect of development of face                                                                                                                                                                                                                                                               |     | DK |                                                    |
|           | 3. Development of teeth and the supporting tissues                                                                                                                                                                                                                                                     | 10  | MK |                                                    |

|            |                                                                                                                                                                                                                                                                                                                                                                                                             |   |    |                                                                                              |
|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|----|----------------------------------------------------------------------------------------------|
|            | a. Blood supply, nerve supply and lymphatic drainage of teeth                                                                                                                                                                                                                                                                                                                                               |   | MK | and Anatomy                                                                                  |
|            | b. Applied aspect of disorders in development of teeth.                                                                                                                                                                                                                                                                                                                                                     |   | DK |                                                                                              |
| <b>III</b> | <b>Oral Histology – 50 hrs</b>                                                                                                                                                                                                                                                                                                                                                                              |   |    |                                                                                              |
|            | 1. Oral mucous membrane:<br>a. Development of Oral Mucosa<br>b. Definition and General consideration<br>c. Functions and classifications<br>d. Structure of Oral Mucosa & its components<br>e. Microscopic appearance of Gingiva, palate, lip, alveolar mucosa, tongue, cheek, vestibule and floor of mouth.<br>f. Gingival sulcus and dentogingival junction<br>g. Clinical consideration and age changes. | 8 | MK | Didactic Lecture with ICT enabled Classes                                                    |
|            | h. Cytokeratin                                                                                                                                                                                                                                                                                                                                                                                              |   | NK | Didactic Lecture with ICT enabled Classes                                                    |
|            | 2. Eruption and shedding of deciduous and permanent teeth<br>a. Factor affecting and mechanism of eruption and shedding<br>b. Clinical consideration in eruption and shedding<br>c. Movements of eruption and shedding                                                                                                                                                                                      | 4 | MK | Integrated Teaching with Oral Pathology and Department of Pediatric and Preventive dentistry |

|  |                                                                                                                                                                                                                                      |   |    |                                           |
|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|----|-------------------------------------------|
|  | d. Histology of eruption and shedding                                                                                                                                                                                                |   |    |                                           |
|  | 3. Enamel<br>a. Development of enamel – Amelogenesis & life cycle of ameloblasts<br>b. Properties of enamel<br>c. Structure of enamel<br>d. Clinical consideration and age changes                                                   | 7 | MK | Didactic Lecture with ICT enabled Classes |
|  | 4. Dentin<br>a. Development of Dentin – Dentinogenesis<br>b. Properties of Dentin<br>c. Structure & Types of Dentin<br>d. Theories of Dentin sensitivity<br>e. Clinical consideration and age changes                                | 5 | MK | Didactic Lecture with ICT enabled Classes |
|  | 5. Cementum<br>a. Development of cementum – Cementogenesis<br>b. Properties of cementum<br>c. Structure and types of cementum<br>d. Functions<br>e. Clinical consideration and age changes<br>f. Differences between bone & cementum | 4 | MK | Didactic Lecture with ICT enabled Classes |
|  | 6. Pulp<br>a. Development of Pulp<br>b. Anatomy, histology and functions of pulp                                                                                                                                                     | 4 | MK | Didactic Lecture with ICT enabled         |



|  |                                                                                                                                                                                                                                                |   |    |                                           |
|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|----|-------------------------------------------|
|  | c. Clinical consideration and age changes                                                                                                                                                                                                      |   |    | Classes                                   |
|  | 7. Periodontal ligament<br>a. Development<br>b. Cells and fibers / Structure of PDL<br>c. Functions<br>d. Clinical consideration & age changes                                                                                                 | 4 | MK | Didactic Lecture with ICT enabled Classes |
|  | 8. Bone<br>a. Development and structure of alveolar bone<br>b. Properties<br>c. Classification & composition<br>d. Histology of bone & bone remodeling<br>e. Clinical Consideration & age changes                                              | 4 | MK | Didactic Lecture with ICT enabled Classes |
|  | 9. Salivary Glands<br>a. Development of salivary gland<br>b. Classification and Structure of Salivary Gland<br>c. Histology of Salivary Gland<br>d. Saliva – Composition and formation<br>e. Function , clinical consideration and age changes | 6 | MK | Didactic Lecture with ICT enabled Classes |
|  | 10. Maxillary Sinus<br>a. Structure<br>b. Anatomy & Histology<br>c. Functions<br>d. Clinical considerations                                                                                                                                    | 3 | MK | Didactic Lecture with ICT enabled Classes |

|           |                                                                                                                                                                                                            |          |          |                                                                                                             |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------|-------------------------------------------------------------------------------------------------------------|
|           | 11. Histochemistry of Oral Tissues<br>a. Preparation of specimens for Histologic study<br>b. Paraffin embedding, ground sections, Frozen sections<br>c. Routine H / E staining<br>d. Fixation & Processing | 1        | DK       | Didactic<br>Lecture with<br>ICT enabled<br>Classes &<br>Demonstration<br>in<br>Histopathology<br>Laboratory |
| <b>IV</b> | <b>Oral Physiology</b>                                                                                                                                                                                     | <b>5</b> |          |                                                                                                             |
|           | 1. Saliva : 2 Hrs<br>a. Composition, formation, mechanism of secretion<br>b. Clinical consideration and functions.                                                                                         |          | MK       | Didactic<br>Lecture with<br>ICT enabled<br>Classes                                                          |
|           | 2. *Physiology of taste                                                                                                                                                                                    |          | DK       | Didactic<br>Lecture with<br>ICT enabled<br>Classes                                                          |
|           | 3. Innervation of taste buds and taste pathway                                                                                                                                                             |          | DK       | Didactic<br>Lecture with<br>ICT enabled<br>Classes                                                          |
|           | 4. Mastication : <b>1 Hr</b><br>a. Mastication muscles, masticatory reflexes<br>b. Blood supply, nerve supply, lymphatic drainage of muscle<br>c. Clinical significance                                    |          | MK<br>NK | Didactic<br>Lecture with<br>ICT enabled<br>Classes                                                          |
|           | 5. Deglutition: <b>1Hr</b><br>a. Mechanism<br>b. Clinical significance                                                                                                                                     |          | MK<br>NK | Didactic<br>Lecture with<br>ICT enabled<br>Classes                                                          |

|         | 6. * Calcium, phosphorous metabolism and its clinical consideration                                                                                                                                                                                                                                                                                                                                                                                                      |                | DK                                           | Didactic<br>Lecture with<br>ICT enabled<br>Classes                                              |
|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------------------------------------|-------------------------------------------------------------------------------------------------|
|         | 7. Theories of mineralization :<br><b>1 Hr</b><br>a. Mechanism, theories and their drawbacks<br>b. Clinical consideration                                                                                                                                                                                                                                                                                                                                                |                | MK<br><br>NK                                 | Didactic<br>Lecture with<br>ICT enabled<br>Classes                                              |
| Sr. No. | Topic - PRACTICAL<br>250 hrs                                                                                                                                                                                                                                                                                                                                                                                                                                             | Teaching Hours | Must know / Desirable to know / Nice to Know | Suggested teaching methodology                                                                  |
| 1       | <b>Dental Morphology</b><br>a. Carving in the wax block : <b>10 Hrs</b><br>Shapes: Rectangle, Pyramid, single sided dumbbell, double sided dumbbell, Cube<br>b. Carving on wax block : <b>100 Hrs</b><br>Individual permanent teeth of both the arches upto 1 <sup>st</sup> molar<br>c. Identification of individual teeth from extracted teeth : <b>20 Hrs</b><br>d. Identification of dentition and morphological features using study models and casts: <b>20 Hrs</b> | 150            | MK                                           | Demonstration<br>Small group discussion<br>Use of Rubrics/ Checklist for assessment of Carvings |
| 2       | Dental histology<br>i. Processing of hard and soft tissues for microscopic study: 1hr<br>• Ground section, decalcification section and routine staining procedures<br>• Basic histochemical staining patterns of oral tissues                                                                                                                                                                                                                                            | 100            | DK                                           | Demonstration<br>Small group discussion                                                         |

|  |                                                                                                                                                                                         |  |    |                                                                                                                                                             |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <b>ii. Histology slides</b>                                                                                                                                                             |  |    |                                                                                                                                                             |
|  | <b>a. Development of tooth: 12Hrs</b><br>Bud stage of tooth development<br>Cap stage of tooth development<br>Early bell stage of tooth development<br>Late bell stage tooth development |  | MK | Visualization of histology slides under binocular light microscope<br>Display of soft copy of histology of slides in TV Monitors.<br>Small group discussion |
|  | <b>b. Enamel : 12Hrs</b><br>Enamel rod<br>Hunter-Schreger Bands<br>Tufts, Lamellae, Spindles<br>Incremental lines of Retzius,<br>Neonatal line<br>Gnarled Enamel                        |  | MK | Visualization of histology slides under binocular light microscope<br>Display of soft copy of histology of slides in TV Monitors.<br>Small group discussion |
|  | <b>c. Dentin : 12 Hrs</b><br>Dentino – Enamel junction<br>Dentinal Tubules<br>Tomes granular layer<br>Interglobular Dentin<br>Dead tracts<br>Transverse section of Dentin               |  | MK | Visualization of histology slides under binocular light microscope<br>Display of soft copy of histology of slides in TV Monitors.<br>Small group discussion |

|  |                                                                                                                                          |  |    |                                                                                                                                                             |
|--|------------------------------------------------------------------------------------------------------------------------------------------|--|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <b>d. Cementum : 8 Hrs</b><br>Cellular cementum<br>Acellular cementum<br>Cemento –enamel junction<br>Sharpey's fibers<br>Hypercementosis |  | MK | Visualization of histology slides under binocular light microscope<br>Display of soft copy of histology of slides in TV Monitors.<br>Small group discussion |
|  | <b>e. Pulp: 8Hrs</b><br>Zones of Pulp<br>Pulp stones                                                                                     |  | MK | Visualization of histology slides under binocular light microscope                                                                                          |
|  | <b>f. Periodontal Ligament :12Hrs</b><br>Principal fibers of Periodontal ligament,<br>Cementicles                                        |  | MK | Display of soft copy of histology of slides in TV Monitors.<br>Small group discussion                                                                       |
|  | <b>g. Bone: 5 Hrs</b><br>Decalcified section of Bone<br>Ground section of bone                                                           |  | MK | Visualization of histology slides under binocular light microscope                                                                                          |
|  | <b>h. Salivary gland: 12 Hrs</b><br>Mucous gland<br>Serous glands<br>Mixed gland                                                         |  | MK | Display of soft copy of histology of slides in TV Monitors.<br>Small group discussion                                                                       |

|  |                                                                                                                                                                                                                                                        |  |    |                                                                                       |
|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----|---------------------------------------------------------------------------------------|
|  | <b>I. Maxillary Sinus : 1 hr</b><br>Histology of Maxillary sinus                                                                                                                                                                                       |  | MK | Visualization of histology slides under binocular light microscope                    |
|  | <b>j. Oral mucous membrane : 17hrs</b><br>Keratinized and Non-Keratinised mucosa,<br>Buccal mucosa and Gingiva,<br>Soft palate and Hard palate<br>Vermillion border of lip<br>Tongue- Circumvallate Papillae,<br>Fungiform Papillae, Filiform Papillae |  | MK | Display of soft copy of histology of slides in TV Monitors.<br>Small group discussion |

## SCHEME OF EXMINATION

### A THEORY 100 Marks

**University written exam : 70 Marks**

**Viva Voce : 20 Marks**

**Internal Assessment : 10 Marks**

Distribution of Topic and Type of Question

| Contents                                                                                                                                                                                                                                                                                                                                             | No. of Questions and Marks | Total Marks |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|-------------|
| <b>1. MCQ (Full portion</b>                                                                                                                                                                                                                                                                                                                          | MCQ 20 X 1 marks           | 20          |
| <b>2. Long Essay</b><br>Dental Histology / Dental Anatomy<br>a) One long Essay from Oral / Histology Topics. Development of teeth, Enamel, Dentin Cementum, Periodontal Ligament, oral Mucous membrane, Salivary glands, Eruption and shedding, Bone<br>b) One Long Essay from Dental Anatomy (Topics : Morphology of permanent and deciduous teeth) | 2 X 10 marks               | 20          |
| <b>3. Short Answers</b><br>a. Dental Morphology<br>b. Oral Histology<br>c. Dental Anatomy<br>d. Oral Physiology<br>All the sub topics under above mentioned headings                                                                                                                                                                                 | 10X3=30 marks              | 30          |
|                                                                                                                                                                                                                                                                                                                                                      | <b>Total</b>               | <b>70</b>   |

**B. Practical : 100 Marks****University exam : 90 Marks****Internal Assessment : 10 Marks**

| <b>Contents</b>                                                                                                                                     | <b>Marks</b>                           | <b>Time</b> |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|-------------|
| A. Tooth Carving                                                                                                                                    | 25                                     | 1 Hour      |
| B. Spotters and Ground section slides - 6 Nos<br>Tooth Identification - 3 Nos<br>Cast for Identification, dental formula and age assessment - 2 Nos | 6 x 5 = 30<br>3 X 5 = 15<br>2 X 5 = 10 | 1 Hour      |
| C. Records<br>↳ Oral Histology<br>↳ Morphology                                                                                                      | 10                                     |             |
| <b>Total</b>                                                                                                                                        | <b>90</b>                              |             |

**Recommended Books :**

| <b>Sl. No.</b> | <b>Title</b>                             | <b>Author</b> | <b>Publisher</b> |
|----------------|------------------------------------------|---------------|------------------|
| 1              | Orban's Oral Histology and Embryology    | Orban's       | Mosby            |
| 2              | Dental Anatomy, Physiology and Occlusion | Wheeler's     | Elsevier         |



**Reference Books :**

| <b>Sl. No.</b> | <b>Title</b>                                              | <b>Author</b> | <b>Publisher</b>   |
|----------------|-----------------------------------------------------------|---------------|--------------------|
| 1              | Oral Histology-Development, Structure and Function        | Tencate A.R.  | Mosby              |
| 2.             | Manual of Oral Histology and Oral Pathology : Color Atlas | Maji Jose     | CBS                |
| 3.             | Carving of Teeth                                          | Biviji A.T.   | Bhalani            |
| 4.             | Color atlas of Oral Histology and Morphology              | Berkowitz     | Wolfe              |
| 5.             | Applied Physiology of the Mouth                           | Lavelle       | Butter Worth & Co. |
| 6.             | Dental anatomy histology and development                  | Bhalaji S.I   | Arya               |

# ENVIRONMENTAL STUDIES

## GOAL:

The students should gain knowledge to understand the multidisciplinary nature of the environment and the awareness of the echo system, which maintains the natural environment.

## OBJECTIVES :

### a) KNOWLEDGE

At the end of the I BDS course the student is expected to know :

1. The natural resources like forest, water, mineral, food, energy and land.
2. Functions of the echo system.
3. Bio-diversity and its conservation.
4. Environmental pollution.
5. Social issues.

### b) SKILLS

At the end of the I BDS course the student is expected to :

1. Visit local areas to understand and document environmental assets like river, forest, grassland, hill and mountain.
2. Visit an industrial area or agricultural area to know about local pollutants.
3. Identify common plants, insects and birds in their local areas.
4. Identify rivers, hills and mountains in their local areas.
5. To make use of the knowledge to maintain the surrounding environment.

## **COURSE CONTENTS**

**Theory and Field work : 50 Hours**

**1. The multidisciplinary nature of environmental studies : 2 Hours**

- a. Definition, scope and importance
- b. Need for public awareness

**2. Natural Resources: 8 Hours**

**Renewable and non-renewable resources**

Natural resources and associated problems.

- a. Forest resources: Use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forests and tribal people.
- b. Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems.
- c. Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies.
- d. Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity case studies.
- e. Energy resources: Growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources, case studies.
- f. Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification.
  - ❖ Role of an individual in conservation of natural resources.
  - ❖ Equitable use of resources for sustainable lifestyles.

**3. Ecosystems : 6 Hours**

- a. Concept of an ecosystem
- b. Structure and function of an ecosystem
  - ❖ Producers, consumers and decomposers
  - ❖ Energy flow in the ecosystem
  - ❖ Ecological succession
  - ❖ Food chains, food webs and ecological pyramids

- ❖ Introduction, types, characteristic features, structure and function of the following ecosystem:
  - Forest ecosystem
  - Grassland ecosystem
  - Desert ecosystem
  - Aquatic ecosystems (ponds, streams, lakes, rivers, ocean estuaries)

#### **4. Biodiversity and its conservation :**

**8 Hours**

- a. Introduction - Definition: genetic, species and ecosystem diversity
- b. Biogeographical classification of India
- c. Value of biodiversity: consumptive use, productive use, social, ethical aesthetic and option values
- d. Biodiversity at global, national and local levels
- e. India as a mega-diversity nation
- f. Hot-spots of biodiversity
- g. Threats to biodiversity: habitat loss, poaching of wildlife, man wildlife conflicts
- h. Endangered and endemic species of India
- i. Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity

#### **5. Environmental Pollution :**

**8 Hours**

##### **Definition**

- a. Causes, effects and control measures of:
  - ❖ Air pollution
  - ❖ Water pollution
  - ❖ Soil pollution
  - ❖ Marine pollution
  - ❖ Noise pollution
  - ❖ Thermal pollution
  - ❖ Nuclear pollution

- b. Solid waste management: Causes, effects and control measures of urban and industrial wastes.
- c. Role of an individual in prevention of pollution.
- d. Pollution case studies.
- e. Disaster management: floods, earthquake, cyclone and landslides.

#### **6. Social Issues and the Environment :**

**7 Hours**

- a. From unsustainable to sustainable development
- b. Urban problems and related to energy
- c. Water conservation, rain water harvesting, watershed management
- d. Resettlement and rehabilitation of people; its problems and concerns. Case studies.
- e. Environmental ethics: Issues and possible solutions
- f. Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case studies.
- g. Wasteland reclamation
- h. Consumerism and waste products
- i. Environmental Protection Act
- j. Air (Prevention and Control of Pollution) Act.
- k. Water (Prevention and control of Pollution) Act.
- l. Wildlife Protection Act.
- m. Forest Conservation Act.
- n. Issues involved in enforcement of environmental legislation.
- o. Public awareness.

#### **7. Human Pollution and the Environment :**

**6 Hours**

- a. Population growth, variation among nations.
- b. Population explosion – Family Welfare Programmes.
- c. Environment and human health.
- d. Human Rights

- e. Value Education
- f. HIV/AIDS
- g. Women and Child Welfare
- h. Role of Information Technology in Environment and Human Healthy.
- i. Case Studies.

**8. Field Work :**

**5 Hours**

- a. Visit to a local area to document environmental assets river / forest / grassland / hill / mountain.
- b. Visit to a local polluted site – Urban / Rural / Industrial / Agricultural
- c. Study of common plants, insects, birds.
- d. Study of simple ecosystems – pond, river and hill slopes.

Institutional examination at the end of first BDS

**Scheme of Examination**

**A Theory : 75 Marks.**

❖ Short Answers      5 X 5 = 05 Marks

❖ Essay                      5 X 10 = 50 Marks

**B. Field Work : 25 Marks**

**Recommended Books**

**Recommended Books :**

| Sl. No. | Title                              | Author                  | Edition          | Yr. of Publ. | Publisher               |
|---------|------------------------------------|-------------------------|------------------|--------------|-------------------------|
| 1       | Environmental Biology              | Sharma P. D.            | 2 <sup>nd</sup>  | 2000         | Rastogi Publications    |
| 2       | Environmental Problem & Solutions  | Asthana & Asthana       | 3 <sup>rd</sup>  | 2001         | S. Chan & Company Ltd.  |
| 3       | Environmental Protection & the Law | Mehta C. S.             | 1 <sup>st</sup>  | 2000         | Ashish Publishing House |
| 4       | Environmental pollution            | Tunny Katyal, M. Satake | 10 <sup>th</sup> | 1998         | Anmol Publication       |

# **LAW - INDIAN CONSTITUTION**

## **GOAL:**

The students should gain the knowledge and insight into the Indian Constitution so that they are aware of the fundamental rights and freedom bestowed through the democratic governance of our country.

## **OBJECTIVES :**

### **a) KNOWLEDGE**

At the end of the I BDS course the student is expected to know :

1. Basic knowledge of the Indian Constitution.
2. Democratic institutions created by the Constitution.
3. Special rights created by the Constitution for regional and linguistic minorities.
4. Election commission.
5. Legislative, Executive and Judicial powers and their functions in India.

### **b) SKILLS**

At the end of the I BDS course the student is expected to make use of knowledge :

1. To perform his / her duties towards the society.
2. Judiciously and with conscious effort for self-development.
3. To utilize state policies in their future practice.

## COURSE CONTENTS

### Theory : 25 Hours

|           |                                                                                                                                                                               |         |
|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| Unit – I  | a. Meaning of term Constitution                                                                                                                                               | 2 Hours |
|           | b. Making of the Indian Constitution – 1946 – 1949 and role played by Dr. B. R. Ambedkar.                                                                                     |         |
|           | c. Salient Features of the Constitution.                                                                                                                                      |         |
|           | d. Preamble of the Constitution                                                                                                                                               |         |
| Unit II   | The democratic institutions created by the Constitution – Bicameral System of Legislature at the Center and in the States, Devolution of Powers to Panchayat Raj Institutions | 5 Hours |
| Unit III  | Fundamental Rights and Duties – Their content and significance                                                                                                                | 5 Hours |
| Unit IV   | Directive Principles of states policies – The need to balance Fundamental Rights with Directive Principles.                                                                   | 1 Hour  |
| Unit V    | Special rights created in the constitution for Dalits, Backwards, Women and Children and the Religious and Linguistic Minorities                                              | 1 Hour  |
| Unit VI   | Doctrine of Separation of Powers – Legislative, Executive and Judicial and their functions in India                                                                           | 4 Hours |
| Unit VII  | The Election Commission and State Public Service Commissions                                                                                                                  | 2 Hours |
| Unit VIII | Method of amending the Constitution                                                                                                                                           | 1 Hour  |
| Unit IX   | Enforcing rights through Writs Certiorari, Mandamus, Quo warranto and Habeas Corpus                                                                                           | 2 Hours |
| Unit X    | Constitution and Sustainable Development in India                                                                                                                             | 2 Hours |

## Scheme of Examination

Institutional Theory Examination at the end of the I BDS Course : 100 Marks

### Reference Books :

| Sl. No. | Title                                                | Author           | Yr. of Publ. | Publisher's Name, Place of Publication      |
|---------|------------------------------------------------------|------------------|--------------|---------------------------------------------|
| 1.      | The Constitution of India – A Politico – Legal Study | J. C. Johari     | -            | Sterling Publication, Pvt. Ltd., New Delhi. |
| 2.      | Constitution Law of India                            | J. N. Pandey     | 1998         | Central Law Agency                          |
| 3.      | The Indian Constitution                              | Granville Austin | 2000         | Corner Stone of Nation Oxford, New Delhi    |



# KANNADA

## GOAL:

The students should gain knowledge of the local language (Kannada) so as to communicate and reciprocate with local people in general and patients in particular to impart proper patient care during the course of their study and future.

## OBJECTIVES :

### a) KNOWLEDGE

At the end of the I BDS course the student is expected to know :

1. The basic of Kannada Language.
2. Communicate and interact in Kannada Language with patients and colleagues.

### b) SKILLS

At the end of the I BDS course the student is expected to :

1. Identify and write small words and sentences.
2. Acquire communicative skills.
3. To be compassionate towards patient in treatment delivery.

## COURSE CONTENTS

### Theory : 100 Hours

- |                                          |             |
|------------------------------------------|-------------|
| 1. Interaction (small words & sentences) | : 15 Hours  |
| 2. Introducing each others               | : 04 Hours  |
| 3. About Ramayana                        | : 04 Hours  |
| 4. Enquiring about the College           | : 04 Hours. |
| 5. Enquiring about Room                  | : 04 Hours. |
| 6. Vegetable Market                      | : 04 Hours. |
| 7. About Medical College                 | : 04 Hours. |
| 8. In a clot shop                        | : 04 Hours. |
| 9. Planned to for a picnic               | : 04 Hours. |
| 10. Enquiring about one's family         | : 04 Hours. |

11. Conversation between Doctor and Patient. : 05 Hours.
12. Enquiring about friend's family : 05 Hours.
13. Conversation between friends : 05 Hours.
14. Routine activities of a students : 05 Hours
15. About children's education : 05 Hours.
16. Halebidu and Belur : 05 Hours.
17. Discussion about examination and future plan : 05 Hours
18. Karnataka : Lesson for reading : 05 Hours
19. Lesson for reading : 05 Hours
20. Presentation by students : 04 Hours

### **Scheme of Examination**

Institutional Theory Examination at the end of the I BDS Course : 100 Marks

#### **Reference Books :**

| Sl. No. | Title        | Author                  | Edition | Yr. of Publ. | Publisher's Name, Place of Publication |
|---------|--------------|-------------------------|---------|--------------|----------------------------------------|
| 1.      | Kannada Kali | Lingadevaru<br>Halemane |         | 2002         | Kannada<br>University, Hampi           |

# COMMUNICATION SKILLS

## PREAMBLE

*Communication is the key to education, understanding and peace.*

## **Communication**

Oral communication is the process of expressing information or ideas by word of mouth. This book will help you to find out how you can improve your own oral communication abilities while dealing with patients and relatives. Great communication skills are your ticket to success in the clinical work in urban & rural set and academic. But have you ever been overcome by fear or anxiety prior to speaking in front of patients? Knowing when to choose oral communication and polishing your speaking skills can help you at every stage of your career.

‘Communication’ comes from Latin *commûnicâre*, meaning “to share” which is the purposeful activity of information exchange between two or more participants in order to convey or receive the intended meanings through a shared system of signs and semiotic rules.

Communication takes place inside and between three main subject categories: human beings, living organisms in general and communication-enabled devices (for example sensor networks and control systems). Communication in living organisms (studied in the field of biosemiotics) often occurs through visual, auditory, or biochemical means. Human communication is unique for its extensive use of language.

Human language can be defined as a system of symbols (sometimes known as lexemes) and the grammars (rules) by which the symbols are manipulated. The word “language” also refers to common properties of languages. Language learning normally occurs most intensively during human childhood. Most of the thousands of human languages use patterns of sound or gesture for symbols which enable communication with others around them. Languages tend to share certain properties, although there are exceptions. There is no defined line between a language and a dialect. The communication is two way process instead of one way.

The “information communication revolutions”:

1. Written communication first emerged through the use of pictographs. The pictograms were made in stone, hence written communication was not yet mobile.
2. The next step occurred when writing began to appear on paper, papyrus, clay, wax, etc. with common alphabets. Communication became mobile.
3. The final stage is characterized by the transfer of information through controlled waves of electromagnetic radiation (i.e., radio, microwave, infrared) and other electronic signals.

Communication is thus a process by which meaning is assigned and conveyed in an attempt to create shared understanding. This process, which requires a vast repertoire of skills in interpersonal processing, listening, observing, speaking, questioning, analyzing, gestures, and evaluating enables collaboration and cooperation.

Misunderstandings can be anticipated and solved through formulations, questions and answers, paraphrasing, examples, and stories of strategic talk. '*Good Communication is the bridge between confusion and clarity*'. Written communication can be clarified by planning follow-up talks on critical written communication as part of the everyday way of doing business. A few minutes spent talking in the present will save valuable time later by avoiding misunderstandings in advance. A frequent method for this purpose is reiterating what one heard in one's own words and asking the other person if that really was what was meant.

*'Communication works for those who work at it'.*

*(compiled from <https://en.wikipedia.org/wiki/Communication>)*

## **OBJECTIVES**

1. To formally impart education on communication skills.
2. To enhance the capacity of students in communicating with patients, relatives, colleagues and facilitators.
3. To conduct interactive session and workshop to augment the skills acquired.
4. To develop effective communication skills required in academics, practice of Dentistry and in general.

## **DURATION OF COURSE : 72 Hours**

Course will contain 3 phases

**Phase I** will be conducted during I BDS Course : Total 22 hours. (16 days)

**Phase II** will be conducted in II BDS : Total 18 hours. (16 days)

**Phase III** will be conducted in III and Final BDS : Total 32 hours – (16 days)

## **ELIGIBILITY**

1. Phase I will be for all I BDS Students.
2. Phase II will be for all II BDS Students.
3. Phase III will be for III and Final BDS students

# **LIST OF MODULES AND COURSE CONTENT**

## **\*\* Phase I \*\***

### **Module I : 6 Hours**

#### **Communications skills**

- Introduction
- Fundamentals of Articulation
- Body Language :
  - i) Types
  - ii) Effects of Body language
  - iii) How to improve body language
    - Importance of Grooming

### **Module II : 8 Hours**

#### **Presentation skills & Public Speaking**

- Introduction
- Crucial Elements
- Requisites for Effective Presentation :
  - i) Controlling anxiety
  - ii) Audience centered
  - iii) Accomplished objective
  - iv) Create interest in audience (fun for audience and self)
  - v) Conduct within time frame
- Presentation sequence
- Creating Effective Visual Aids
- Presentation Techniques
- Practice

### **Module III : 8 Hours**

#### **Interpersonal skills**

Ability to convey your point and listen and value others speak

- What are Interpersonal Skills
- Why do Interpersonal Skills matter
- 10 key Interpersonal Skills
  - i) Self confidence
  - ii) Work ethic
  - iii) Relationship Management
  - iv) Receptiveness to feedback
  - v) Body language
  - vi) Listening
  - vii) Collaboration
  - viii) Showing Appreciation
  - ix) Positive attitude
  - x) Work place etiquette

# EARLY CLINICAL EXPOSURE

## **Aim :**

As there is tectonic changes in Dental knowledge, skill, technology, and practice and with changes in the clinical environment, patients expectation, need for accountability of stakeholders, there is need for understanding these basis demand. Early effective approach to the learning and the preparation of learners will be of immense benefit.

## **Objectives :**

- To acquire knowledge about common dental diseases
- To assess knowledge pertaining to oral hygiene aids
- To know the status of dental disease in the community
- Orientation to several aspects of dental practice
- Introduction to clinical skills (history taking, oral examination)
- To learn communication skills, patients perspectives and aspects of professionalism
- To understand oral health and disease
- Orientation to community health education

## **I BDS**

### **Program Details : 32 hours ( 7 days)**

**Phase I** - Sensitization Lecture

**Phase II** – Visit to Dental Health Education Camp

**Phase III** - Visit to Primary Health Centre and Satellite Centers

**Phase IV** - Visit to Various Specialty Department of KLE VK Institute of Dental Sciences and Interaction with the Staff

## **Phase I**

### **Sensitization Lecture : 2 Hours ( 1 day)**

- Gross introduction on common oral health and disease.
- Introduction on Survey procedures and information about Primary Health Care Centre and Satellite Clinic.

## **Phase II**

**Visit to Village for Screening and Dental Health Education Camp : 8 hours (1 day)**

Students will participate and conduct :

1. Health Education
2. School Oral Health Check Up
3. Door To Door Survey.

## **Phase III**

**Visit to PHC Center and Satellite Center : 8 hours (1 day)**

The students will be divided into groups for the visit to :

1. Primary Health Centre at Kiniya
2. Satellite centre at KLE Centenary Charitable Hospital and MRC, Yellur, Belagavi

**Phase IV : Visit to all speciality Department of KLE VK Institute of Dental Sciences and Interaction with the Staff. – 4 Hours (1 day)**



# VALUE EDUCATION AND PERSONALITY DEVELOPMENT

## PREAMBLE

*omajnana-timirandhasyajnananjanasalakaya*

*caksurunmilitamyenatasmaisri-guravenamah*

I was born in the darkest ignorance, and my spiritual master opened my eyes with the torch of knowledge. I offer my respectful obeisances unto him.

***Om AsatoMaa Sad-Gamaya |***

***TamasoMaaJyotir-Gamaya |***

***Mrtyor-MaaAmrtamGamaya |***

***Om ShaantihShaantihShaantih***

Lord, Lead us from Unreality (of Transitory Existence) to the Reality (of Self),  
Lead us from the Darkness (of Ignorance) to the Light (of Spiritual Knowledge),  
Lead us from the Fear of Death to the Knowledge of Immortality.

Om Peace, Peace, Peace.

## INSIGNIA



**The logo :** The radial aura of display of the nibs of the fountain pen denotes true knowledge acquired from the entire universe in developing human mind. The mediating figure in the centre conveys spiritual enlightenment.

**The Colour Green :** Green is the color of nature, fertility, balance, desire to expand and life. Green symbolizes self-respect and well being. It also means learning, growth and harmony. Green also symbolizes the master healer and the life force. Change and transformation is necessary for growth, and so this ability to sustain changes is also a part of the energy of green.

**The Colour Saffron :** Saffron is considered to be a sacred color. It represents courage & sacrifice and denotes renunciation, disinterestedness, religious abstinence, quest for light and salvation. Saffron is the color of happiness and love. The color saffron represents perseverance, spirit of wisdom, energy, heat and playfulness.

The KLE University Logo represents :

**The Emblem :** A close look at the emblem unveils a pillar, a symbol of the 'Academy of Excellence' built on strong Values and Principles

**The Palm and the Seven Stars :** The Palm is of the teacher – the hand that acts, promises and guides the students to reach for the Seven stars. The Seven Stars signify the 'Saptarishi Dnyanamandal', the Great Bear – a constellation made of seven stars in the sky, each signifying a particular Knowledge Domain. Our culture says : The true objective of human birth is to Master these Knowledge Domains. The Seven Stars also represent the Saptarishis, the founder of KLE Society whose selfless service and intense desire for Dynana Dasoha' laid the foundation for creating the knowledge kingdom called KLE Society.

**Empowering Professionals :** 'Empowering Professionals', the inscription at the base of the Emblem conveys that our Organization with its strength, maturity and wisdom will forever strive to empower the student community to become globally competent professionals. It has been a guiding force for many student generations in the past, and will continue to inspire many forthcoming generations.

### Goals of the Course

To impart special training to students to acquire adequate knowledge and develop necessary skills through this course for self-analytical approach towards one's own

life. So that they can improve the quality of life by understanding the need of value education so as to have control on mind, which will help the students in personality development through additional training on spirituality and discipline.

### **Aim and Objectives of this course**

#### **Objectives:**

##### **a. Knowledge :**

The students should acquire knowledge

1. Of personal, social, cultural, religion and spiritual values.
2. Of character building and personality development.
3. Of social role and national responsibility.
4. About spirituality and medicine

##### **b. Skills :**

The students should be able to demonstrate

1. Adequate skill in the yoga's for self-discipline.
2. Attitude to develop willingness to apply the current knowledge for the best of community & self
3. Maintain high standard of professional ethics and conduct

Course offered to I BDS Students in the 2<sup>nd</sup> term of the academic year (Thursday 1: 30 pm onwards)

### **Course Content**

**Total No. of hours : 22**

- |                                               |                |
|-----------------------------------------------|----------------|
| <b>1. Introduction</b>                        | <b>2 hours</b> |
| a. Body , mind connection                     |                |
| b. Steps of downfall / easy steps to downfall |                |
| <b>2. Gate way to destruction</b>             | <b>2 hours</b> |
| a. Desire      b. anger      c. bewilderment  |                |
| <b>3. An Ideal day &amp; their practice</b>   | <b>2 hours</b> |
| a. Routine Day                                |                |

- b. Punctuality, discipline , manners
- c. Sleep & wakeup
- d. Cleanliness
- e. Positive thinking
- 4. Chemistry of mind, action & speech** **2 hours**
- 5. Drop it** **2 hours**
  - a. Stress & ego
  - b. Bitter experience of past living in the present
- 6. Goal setting** **1 hour**
- 7. Getting carried away** **1 hour**
  - a. Self-control
- 8. Charity and Sharing** **1 hour**
- 9. Importance of Prayer** **1 hour**
  - a. Self Confidence / Inner Peace
  - b. Happiness
  - c. Universal prayer and its benefits
- 10. Hard work V/S blind faith** **2 hours**
  - a. What does god want from us ?
  - b. Total attention
  - c. Reasons to visit places of worship
- 11. Making use of opportunities** **2 hour**
  - a. Laid back attitude & laziness
- 12. Make a plan** **2 hour**
  - a. Do not regret the past
  - b. Do not imagine the future
- 13. Fear** **1 hour**
  - a. Consequences and harmful effects
  - b. Overcoming / conquering fear

**14. Meditation – A daily practice****1 hour****Assessment methods :**

1. Maintaining and evaluation of Log Book
2. Group activity
3. Reflections

**Reference Books**

| Sl. No | Author             | Title of the Book                                | Volume    | Year        |
|--------|--------------------|--------------------------------------------------|-----------|-------------|
| 1      | Radhakrishnan S.   | The cultural heritage of India Vol-I.            | I to VIII | 1958 / 2007 |
| 2      | Tapasyananda S.    | Srimad Bhagavata: the holy book of god Vol-1.    | I to IV   | 1980 / 2012 |
| 3      | Prabhavananda S.   | Spiritual Heritage of India                      |           | 1960        |
| 4      | Lokeswarananda S.  | Religion and Culture                             | 4ed       | 2012        |
| 5      | Mission R.         | Life, Mind and Consciousness                     |           | 2004        |
| 6      | Math R.            | Gita for everyday living                         |           | 2009        |
| 7      | Paramananda S.     | Concentration and meditation                     |           |             |
| 8      | Kesari V.          | Values the key to a meaningful life              |           |             |
| 9      | Nihsreyasananda S. | Man & His mind                                   |           |             |
| 10     | Gokulananda S.     | How to overcome mental tension                   |           | 1997        |
| 11     | Brahmeshananda S.  | Health Medicine and Religion                     |           | 2004/2012   |
| 12     | Harshananda S.     | How the modern youth can confront their problems |           | 2010        |
| 13     | Vivekananda S.     | Our Women                                        |           | 2012        |

## **2.2.1. GENERAL AND DENTAL PHARMACOLOGY & THERAPEUTICS**

### **GOAL:**

The broad goal of teaching under graduate students in pharmacology is to inculcate rational and scientific basis of therapeutics keeping in view of dental curriculum and profession.

### **OBJECTIVES:**

#### **a) KNOWLEDGE**

At the end of the II BDS course, the student should be able to :

1. Describe the Pharmacokinetics and Pharmacodynamics of essential and commonly used drugs in general and in dentistry in particular.
2. List the indications, contraindications, interactions, and adverse reactions of commonly used drugs with reasons.
3. Tailor the use of appropriate drugs in disease with consideration to its cost, efficacy, and safety for individual and mass therapy needs.
4. Indicate special care in prescribing common and essential drugs in special medical situations such as pregnancy, lactation, old age, renal & hepatic damage and immunocompromised patients.
5. Integrate the rational drug therapy in clinical pharmacology.
6. Indicate the principles underlying the concepts of "Essential drugs".

#### **b) SKILLS**

At the end of the II BDS course, the student should be able to :

1. Rationally prescribe drugs for common dental and medical ailments.
2. To appreciate adverse reactions and drug interactions of commonly used drugs.
3. Observe experiments designed for study of effects of drugs.
4. Critically evaluate drug formulations and be able to interpret the clinical pharmacology of marketed preparations commonly used in dentistry.
5. Integration : Practical knowledge of use of drugs in clinical practice will be acquired through integrated teaching with clinical department.

### Course Outcomes - Theory

| At the end of General & Dental Pharmacology & Therapeutics course, the students should be able to: |                                                                                                                               |
|----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| T 2.2.1.1                                                                                          | Describe the pharmacokinetics and pharmacodynamics of drugs used in general and in dentistry in particular.                   |
| T 2.2.1.2                                                                                          | Describe Principles of prescription of drugs in special medical situations such as pregnancy, lactation, infancy and old age. |
| T 2.2.1.3                                                                                          | Describe Principles of Prescription writing.                                                                                  |

### Matrix of Programme Outcome & Course Outcome (POCO) - Theory

| Course Outcomes      | PO1      | PO2      | PO3        | PO4      | PO5      | PO6      | PO7      |
|----------------------|----------|----------|------------|----------|----------|----------|----------|
| T 2.2.1.1            | 2        | 2        | 0          | 0        | 1        | 1        | 1        |
| T 2.2.1.2            | 2        | 2        | 1          | 0        | 1        | 1        | 1        |
| T 2.2.1.3            | 2        | 2        | 1          | 0        | 1        | 1        | 1        |
| <b>Average Score</b> | <b>2</b> | <b>2</b> | <b>0.6</b> | <b>0</b> | <b>1</b> | <b>1</b> | <b>1</b> |

### Course Outcomes - Practical

| At the end of General & Dental Pharmacology & Therapeutics course, the students should be able to: |                                                                                                                                       |
|----------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| P 2.2.1.1                                                                                          | Describe the equipment's used in dispensing pharmacy, prescription parts and model prescription.                                      |
| P 2.2.1.2                                                                                          | Critically evaluate the drug formulations and interpret the clinical pharmacology of marketed preparations commonly used in dentistry |
| P 2.2.1.3                                                                                          | Demonstrate dental pharmacy experiments and observe experiments designed for study of effects of drugs                                |
| P 2.2.1.4                                                                                          | Write prescription for common dental and medical ailments                                                                             |

**Matrix of Programme Outcome & Course Outcome (POCO) - Practical**

| <b>Course Outcomes</b> | <b>PO1</b> | <b>PO2</b> | <b>PO3</b>  | <b>PO4</b>  | <b>PO5</b> | <b>PO6</b> | <b>PO7</b> |
|------------------------|------------|------------|-------------|-------------|------------|------------|------------|
| P 2.2.1.1              | 2          | 2          | 1           | 2           | 1          | 1          | 1          |
| P 2.2.1.2              | 2          | 2          | 1           | 1           | 1          | 1          | 1          |
| P 2.2.1.3              | 2          | 2          | 1           | 2           | 1          | 1          | 1          |
| P 2.2.1.4              | 2          | 2          | 2           | 0           | 1          | 1          | 1          |
| <b>Average score</b>   | <b>2</b>   | <b>2</b>   | <b>1.25</b> | <b>1.25</b> | <b>1</b>   | <b>1</b>   | <b>1</b>   |



**Curriculum and Course Content for II BDS**  
**Theory – 70 Hours ; Practical – 20 Hours**

| Sr. No. | Topic - THEORY                                                                                                                                                                       | Teaching hours | Must know / Desirable to know / Nice to Know | Suggested teaching methodology |
|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------------------------------------|--------------------------------|
| 1       | <b>General Pharmacology</b>                                                                                                                                                          |                |                                              |                                |
|         | a. Definitions and sources of drugs with examples                                                                                                                                    | 2              | MK                                           | Lecture                        |
|         | b. Routes of drug administration: oral, sublingual, per rectal, inhalation, intradermal, subcutaneous, Intramuscular, intravenous (advantages and disadvantages with the examples)   | 2              | MK                                           | Lecture                        |
|         | c. Pharmacokinetics with clinical implications. Drug absorption, distribution, metabolism & excretion with examples                                                                  | 2              | MK                                           | Lecture                        |
|         | d. Pharmacodynamics: Mechanism of action, factors modifying drug actions with emphasis on factors like- age, sex, dose, frequency & route of administration, presence of other drugs | 2              | MK                                           | Lecture                        |
|         | e. Therapeutics: Principles of drug therapy, adverse drug reactions & drug interactions                                                                                              | 2              | MK                                           | Lecture                        |
|         | <b>Autonomic Nervous System</b>                                                                                                                                                      |                |                                              |                                |
|         | a. Sympathomimetics                                                                                                                                                                  | 2              | MK                                           | Lecture                        |

|  |                                                                |   |    |         |
|--|----------------------------------------------------------------|---|----|---------|
|  | b. Sympatholytics- alpha blockers, Beta-Blockers               | 2 | MK | Lecture |
|  | c. Cholinomimetics                                             | 2 | MK | Lecture |
|  | d. Anticholinergics                                            | 1 | MK | Lecture |
|  | <b>Autocoids</b>                                               |   |    |         |
|  | a. Histamine and antihistaminics, prostaglandins, leukotrienes | 1 | MK | Lecture |
|  | b. Non-Steroidal Anti-inflammatory Drugs                       | 2 | MK | Lecture |
|  | c. Drugs for bronchial asthma                                  | 1 | MK | Lecture |
|  | d. Drugs for cough                                             | 1 | MK | Lecture |
|  | <b>Central Nervous System of</b>                               |   |    |         |
|  | a. Clinically used opioid and non - opioid analgesics          | 3 | MK | Lecture |
|  | b. Clinically used local anesthetics                           | 1 | MK | Lecture |
|  | c. General anaesthetics and Preanaesthetic medications         | 2 | MK | Lecture |
|  | d. Skeletal muscle relaxants                                   | 1 | MK | Lecture |
|  | e. Antipsychotics, antidepressants, anxiolytics - (In brief)   | 1 | MK | Lecture |
|  | f. Hypnotics                                                   | 1 | MK | Lecture |
|  | g. Antiepileptics                                              | 1 | MK | Lecture |
|  | h. Pharmacology of Ethyl and Methyl alcohols                   | 1 | MK | Lecture |
|  | <b>Cardiovascular System</b>                                   |   |    |         |
|  | a. Introduction to RAAS system                                 | 1 | MK | Lecture |
|  | b. Diuretics                                                   | 1 | MK | Lecture |
|  | c. Hypolipidemic drugs                                         | 1 | MK | Lecture |
|  | d. Antianginal drugs                                           | 2 | MK | Lecture |
|  | e. Antihypertensives                                           | 2 | MK | Lecture |
|  | f. Cardiac glycosides                                          | 2 | MK | Lecture |
|  | g. Pharmacotherapy of shocks and Plasma expanders              | 1 | MK | Lecture |

|  |                                                                        |   |    |         |
|--|------------------------------------------------------------------------|---|----|---------|
|  | h. Vasopressor agents                                                  | 1 | MK | Lecture |
|  | <b>Blood:</b>                                                          |   |    |         |
|  | a. Coagulants, styptics ,<br>anticoagulants and anti platelet<br>drugs | 2 | MK | Lecture |
|  | b. Hematinics: Iron preparations,<br>Vit. B12, Folic acid, Vit. C      | 2 | MK | Lecture |
|  | c. Vitamins : Water soluble<br>vitamins, Vit. D, Vit.K. & Vit. E       | 1 | MK | Lecture |
|  | <b>Endocrine</b>                                                       |   |    |         |
|  | a. Drugs used in diabetes mellitus                                     | 1 | MK | Lecture |
|  | b. Corticosteroids & Anabolic<br>steroids                              | 1 | MK | Lecture |
|  | c. Thyroid & antithyroid drugs                                         | 1 | MK | Lecture |
|  | d. Drugs acting on calcium balance                                     | 1 | MK | Lecture |
|  | <b>Chemotherapy</b>                                                    |   |    |         |
|  | a. Sulfonamides                                                        | 1 | MK | Lecture |
|  | b. Beta-lactum antibiotics                                             | 2 | MK | Lecture |
|  | c. Macrolides and Aminoglycosides                                      | 1 | MK | Lecture |
|  | d. Broad spectrum antibiotics                                          | 1 | MK | Lecture |
|  | e. Antifungal and antiviral agents                                     | 2 | MK | Lecture |
|  | f. Metronidazole and<br>Fluoroquinolones                               | 1 | MK | Lecture |
|  | h. Drug therapy of Tuberculosis and<br>Leprosy                         | 2 | MK | Lecture |
|  | i. Antineoplastic drugs in Dental<br>practice                          | 1 | MK | Lecture |
|  | <b>Gastrointestinal Drugs</b>                                          |   |    |         |
|  | a. Purgatives                                                          | 1 | MK | Lecture |
|  | b. Anti-diarrhoeal                                                     | 1 | MK | Lecture |
|  | c. Antacids and PUD (Peptic ulcer<br>disease)                          | 1 | MK | Lecture |
|  | d. Anti-emetics                                                        | 1 | MK | Lecture |

|  |                                                                                                                                                                                                                                                                                              |   |    |                        |
|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|----|------------------------|
|  | <b>DENTAL PHARMACOLOGY</b>                                                                                                                                                                                                                                                                   |   |    |                        |
|  | a. Fluoride pharmacology                                                                                                                                                                                                                                                                     | 1 | MK | Lecture                |
|  | b. Antiseptics, astringents, dentrifices & bleaching agents                                                                                                                                                                                                                                  | 1 | MK | Lecture/<br>Practical  |
|  | c. Obtundents, mummifying agents and disclosing agents. Brief account of drugs toxic to enamel and oral cavity                                                                                                                                                                               | 1 | MK | Lecture/<br>Practicals |
|  | d. Mouth washes                                                                                                                                                                                                                                                                              |   | MK | Practical              |
|  | e. Emergencies in Dental practice<br><b>Drug therapy of</b><br>* Acute myocardial infarction<br>* Severe hypertension<br>* Severe bleeding<br>* Anaphylactic shock<br>* Hypoglycemia in a diabetic patient<br>* Severe dehydration<br>* Convulsions on a dental chair<br>* Status asthmatics | 2 | MK | Lecture/<br>Practicals |
|  | f. Chelating agents : BAL, EDTA and desferrioxamine                                                                                                                                                                                                                                          | 1 | MK | Lecture                |
|  | g. Ethyl alcohol – Antiseptics and Disinfectants                                                                                                                                                                                                                                             | 1 | MK | Lecture                |
|  | h. Prescription writing for common dental condition encountered in practice eg. Aphthous ulcercers, somatitis, gingivitis, dento- alveolar abscess, dental caries hypersensitive dentine, xerostomia, acute toothache, post operation pain, post extraction pain, oral scurvy etc.           | 2 | MK | Practicals             |
|  | a. Essential drug concept and Rational drug therapy                                                                                                                                                                                                                                          | 1 | DK | Lecture                |
|  | b. Pharmacogenetics                                                                                                                                                                                                                                                                          | 1 | DK | Lecture                |
|  | c. Pituitary hormones                                                                                                                                                                                                                                                                        | 1 | DK | Lecture                |

| Sr. No. | Topic - PRACTICALS                                                                                                                    | Teaching hours | Must know / Desirable to know / Nice to Know | Suggested teaching methodology |
|---------|---------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------------------------------------|--------------------------------|
| 1.      | Introduction-equipments used in dispensing pharmacy, prescription parts and model prescription, e-prescriptions                       | 2              | MK                                           | Practicals                     |
| 2.      | Demonstration of common dosage forms used in clinical practice:                                                                       | 2              | MK                                           | Practicals                     |
| 3.      | Demonstration of administration of drugs by various routes (e.g. Intravenous, intramuscular etc.) using mannequins in simulation lab. | 2              | DK                                           | Practicals                     |
| 4.      | Mixtures: simple -(Expectorant/ salicylate) and diffusible mixtures (Bismuth kaolin/ chalk)                                           | 2              | MK                                           | Practicals                     |
| 5.      | Emulsions: castor oil                                                                                                                 | 2              | MK                                           | Practicals                     |
| 6.      | Liniments & lotions                                                                                                                   | 2              | MK                                           | Practicals                     |
| 7.      | Ointment : Salicylate ointment                                                                                                        | 2              | MK                                           | Practicals                     |
| 8.      | Powders : ORS , dusting powder                                                                                                        | 2              | MK                                           | Practicals                     |
| 9.      | Percentage dilution : 70% alcohol, condy's lotion                                                                                     | 2              | MK                                           | Practicals                     |
| 10.     | Computer assisted learning (CAL) to study the effect of drugs                                                                         | 2              | DK                                           | Practicals                     |
|         | Dental Pharmacy Experiments                                                                                                           |                |                                              |                                |
| 11.     | Mouth washes – (a) Antiseptic                                                                                                         | 1              | MK                                           | Practicals                     |
|         | (b) Alkaline, astringent                                                                                                              | 1              | MK                                           | Practicals                     |
| 12.     | Tooth paste - Obtundent paste                                                                                                         | 1              | MK                                           | Practicals                     |
| 13.     | Tooth powder                                                                                                                          | 1              | MK                                           | Practicals                     |

## Group discussions

Prescription writing for common general conditions encountered in clinical practice e.g. Bronchial asthma, hypertension, congestive heart failure, angina pectoris, peptic ulcer, urinary tract infection, typhoid fever, diabetes mellitus, osteoarthritis, anaphylaxis, status asthmaticus, status epilepticus, iron deficiency & megaloblastic anemia etc.

To familiarize the students with

- \* Methodology of prescription writing
- \* Drug combinations and fixed dose combination(FDC) of marketed preparations
- \* Identification of adverse drug reactions of commonly used drugs.
- \* Skills lab Training : Using Mannequins realistic patient simulations
  - Demonstrating routes of drug administration
- \* The department plans to introduce OSPE, followed by a table viva for formative assessments.

## SCHEME OF EXAMINATION

**A) Theory: 70 Marks Duration of paper : 3 Hours**

**Examination component with distribution of marks:**

| Topics                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Type & No. of questions | Marks     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|-----------|
| Entire portion                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | MCQ 20x1                | 20        |
| General pharmacology, Routes of drug administration, factors modifying drug action<br>Anticholinergics,<br>Beta – Blockers Antihypertensives,<br>Opioid analgesics, NSAIDS, Chemotherapy -<br>Penicillins, Fluoroquinolones, Tetracyclines<br>Fluoride pharmacology,                                                                                                                                                                                                                                                                                                                                                                                                                                    | Long essays<br>2x10     | 20        |
| General pharmacology, Sympathomimetics, alpha blockers, Cardiac glycosides, Diuretics, Antianginals, Pharmacotherapy of shock and plasma expanders, Hypolipidemics, Coagulants, Styptics Anticoagulants, Anti platelet drugs, Hematinics, Ethyl alcohol, Sedatives and Hypnotics, General anesthetics, Preanaesthetic medication, local anesthetics, Antipsychotics, Antidepressants, Antihistaminics, Skeletal muscle relaxants, Chemotherapy, Anti diabetics, Corticosteroids, Anti thyroids, Calcium metabolism, Vit. D., Drugs used in bronchial asthma, cough, Purgatives, Anti-diarrheals, Antiemetics, Drugs used for peptic ulcer, Fluoride Pharmacology, Antiseptics, Astringents, Obtundants. | Short essay<br>10x3     | 30        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <b>Total</b>            | <b>70</b> |

**B) Practical : 90 Marks**

- Spotters : 10 Marks
- Dental prescription : 10 Marks
- General prescription : 10 Marks
- Comment on fixed dose combinations : 10 Marks
- Pharmacy exercise :
  - Preparation - General : 25 Marks
  - Preparation - Dental : 25 Marks

**C) Viva Voce : 20 Marks**

**D) Internal Assessment : Theory Examination : 10 Marks**

**Practical Examination : 10 Marks**

|                            |                    |                               |                    |
|----------------------------|--------------------|-------------------------------|--------------------|
| Theory Examination         | : 70 Marks         | Practical Examination         | : 90 Marks         |
| Theory Internal Assessment | : 10 Marks         | Practical Internal Assessment | : 10 Marks         |
| Viva Voce                  | : 20 Marks         |                               |                    |
|                            | <b>: 100 Marks</b> |                               | <b>: 100 Marks</b> |



**Recommended Books :**

| Sl. No | Title                                 | Author                          | Edn              | Yr. of Publ. | Publisher                |
|--------|---------------------------------------|---------------------------------|------------------|--------------|--------------------------|
| 1.     | Pharmacology and pharmacotherapeutics | R.S.Satoskar, Kale Bhandarkar's | 25 <sup>th</sup> | 2017         | Mumbai Popular Prakashan |
| 2      | Essentials of Medical Pharmacology    | K.D. Tripathi                   | 8 <sup>th</sup>  | 2018         | Jaypee brother           |
| 3      | Clinical Pharmacology                 | Laurence and Bennet             | 11 <sup>th</sup> | 2012         | Churchill Livingstone    |
| 4      | Basic and Clinical Pharmacology       | Bertam G Katzung                | 14 <sup>th</sup> | 2018         | Appleton & Lange         |

**Reference Books :**

| Sl. No | Title                                     | Author              | Edn  | Yr. of Publ. | Publisher             |
|--------|-------------------------------------------|---------------------|------|--------------|-----------------------|
| 1.     | The Pharmacological Basis of Therapeutics | Goodman & Gilman's  | 11th | 2005         | McGraw Hill           |
| 2      | Pharmacology                              | Rang H P & Dale M M | 5th  | 2003         | Churchill Livingstone |

## **2.2.2 GENERAL PATHOLOGY**

**Theory – 55 Hours, Practical – 55 Hours**

### **GOAL:**

To apply the scientific study of disease processes, which result in morphological and functional alterations in cells, tissues and organs to the study of pathology and the practice of dentistry.

### **OBJECTIVES :**

#### **a) KNOWLEDGE**

At the end of the II BDS course the student should be able to:

1. Demonstrate and apply basic facts, concepts and theories in the field of Pathology.
2. Recognize and analyse pathological changes at macroscopic and microscopic
3. Levels and explain their observations in terms of disease processes.
4. Integrate knowledge from the basic sciences, clinical medicine and dentistry in the study of Pathology.
5. Demonstrate understanding of the capabilities and limitations of morphological, pathology in its contribution to medicine, dentistry and biological research.
6. Demonstrate ability to consult resource materials outside lectures, laboratory and tutorial classes.

#### **b) SKILLS**

At the end of the II BDS course the student is expected to :

1. To do basic lab investigations.
2. To recognize common lesions in Head & neck region.
3. To identify pathological changes grossly and microscopically.

### Course Outcomes - Theory

| At the end of General Pathology & Microbiology course, the students should be able to: |                                                                                                                                                                                                                                                                                                                                           |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| T 2.2.2.1                                                                              | Describe the structure and ultra-structure of cell in injury, mechanisms of cell degeneration, cell death and repair and be able to correlate structural and functional alterations and to state the infective micro-organisms of the human body and describe the host parasite relationship.                                             |
| T 2.2.2.2                                                                              | Describe the normal homeostasis & hemopoiesis. Explain the clinical manifestations, pathogenesis, pathology of deranged states of common diseases (RBC, WBC, Platelet disorders)                                                                                                                                                          |
| T 2.2.2.3                                                                              | Explain the morphological and clinical manifestations, pathophysiological processes and pathogenesis associated with bacteria, viruses, parasites and fungi infection. Describe the modes of transmission of pathogenic and opportunistic organisms and their sources, including insect vectors responsible for transmission of infection |
| T 2.2.2.4                                                                              | Discuss methods of disinfection and sterilization to control and prevent hospital and community acquired infections.                                                                                                                                                                                                                      |
| T 2.2.2.5                                                                              | Correlate normal and altered morphology (gross and microscopic) of different organ systems in common diseases and tumours, with disease processes, clinical significance and describe the mechanisms of immunity to infections.                                                                                                           |
| T 2.2.2.6                                                                              | Describe the antimicrobial agents used for treatment of common infections and scope of immunotherapy and vaccines for prevention of communicable diseases.                                                                                                                                                                                |

**Matrix of Programme Outcome & Course Outcome (POCO) - Theory**

| <b>Course Outcomes</b> | <b>PO1</b> | <b>PO2</b> | <b>PO3</b> | <b>PO4</b> | <b>PO5</b> | <b>PO6</b> | <b>PO7</b> |
|------------------------|------------|------------|------------|------------|------------|------------|------------|
| T 2.2.2.1              | 2          | 1          | 1          | 2          | 2          | 2          | 2          |
| T 2.2.2.2              | 2          | 2          | 1          | 2          | 2          | 2          | 2          |
| T 2.2.2.3              | 2          | 2          | 2          | 2          | 1          | 2          | 2          |
| T 2.2.2.4              | 2          | 2          | 2          | 2          | 2          | 2          | 2          |
| T 2.2.2.5              | 2          | 1          | 1          | 2          | 2          | 2          | 2          |
| T 2.2.2.6              | 2          | 2          | 2          | 2          | 2          | 2          | 2          |
| <b>Average Score</b>   | <b>2</b>   | <b>1.6</b> | <b>1.5</b> | <b>2</b>   | <b>1.5</b> | <b>2</b>   | <b>2</b>   |

### Course Outcomes - Practical

| At the end of General Pathology & Microbiology course,<br>the students should be able to: |                                                                                                                                             |
|-------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| P 2.2.2.1                                                                                 | Identify the various methods of disinfection and sterilization to control and prevent hospital and community acquired infections            |
| P 2.2.2.2                                                                                 | Identify the various culture media – aerobic and anaerobic used for in Bacteriology.                                                        |
| P 2.2.2.3                                                                                 | Identify the Albert-stained slide and describe the morphology of CBD                                                                        |
| P 2.2.2.4                                                                                 | Identify the Fontana-stained slide and describe the morphology of spirochetes.                                                              |
| P 2.2.2.5                                                                                 | Perform Gram stain and interpret the slide. Discuss the various morphological forms of bacteria observed in gram stain and its application. |
| P 2.2.2.6                                                                                 | Perform Ziehl Neelsen stain and interpret the slide. Discuss the various modifications of Ziehl Neelsen stain and its application.          |
| P 2.2.2.7                                                                                 | Perform staining of hematology smear, Identify and interpret the common hematological disorders.                                            |
| P 2.2.2.8                                                                                 | Identify and describe the organ pathology of common diseases and tumors.                                                                    |
| P 2.2.2.9                                                                                 | Perform common tests in hematology & clinical pathology and interpret the results.                                                          |

**Matrix of Programme Outcome & Course Outcome (POCO) - Practical**

| <b>Course Outcomes</b> | <b>PO1</b> | <b>PO2</b> | <b>PO3</b> | <b>PO4</b> | <b>PO5</b> | <b>PO6</b> | <b>PO7</b> |
|------------------------|------------|------------|------------|------------|------------|------------|------------|
| P 2.2.2.1              | 2          | 2          | 1          | 1          | 1          | 2          | 2          |
| P 2.2.2.2              | 2          | 2          | 1          | 1          | 1          | 2          | 2          |
| P 2.2.2.3              | 3          | 2          | 1          | 1          | 1          | 2          | 2          |
| P 2.2.2.4              | 3          | 2          | 1          | 1          | 1          | 2          | 2          |
| P 2.2.2.5              | 3          | 2          | 1          | 1          | 1          | 2          | 2          |
| P 2.2.2.6              | 3          | 2          | 1          | 1          | 1          | 2          | 2          |
| P 2.2.2.7              | 3          | 3          | 1          | 3          | 1          | 3          | 3          |
| P 2.2.2.8              | 3          | 3          | 1          | 1          | 1          | 3          | 3          |
| P 2.2.2.9              | 3          | 3          | 1          | 3          | 1          | 3          | 3          |
| <b>Average Score</b>   | <b>2.7</b> | <b>2.3</b> | <b>1</b>   | <b>1.4</b> | <b>1</b>   | <b>2.3</b> | <b>2.3</b> |

**Curriculum and Course Content for II BDS**  
**Theory – 60 Hours ; Practical – 60 Hours**

| Sr. No.    | Topic - THEORY                                                                                                                                                                                                                                                                                                                                                                                                                                | Teaching hours | Must know / Desirable to know / Nice to Know | Suggested teaching methodology |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------------------------------------|--------------------------------|
| <b>I</b>   | <b>Introduction to Pathology</b>                                                                                                                                                                                                                                                                                                                                                                                                              | <b>1</b>       |                                              |                                |
|            | a. Evolution of modern pathology.<br>b. Subdivisions in pathology.<br>c. Techniques used in the study of pathology.<br>d. Terms used in Pathology.                                                                                                                                                                                                                                                                                            |                | MK                                           | Lecture                        |
| <b>II</b>  | <b>Disturbances of metabolism of cells</b>                                                                                                                                                                                                                                                                                                                                                                                                    | <b>2</b>       |                                              |                                |
|            | a. Intra cellular accumulations : Fatty change, accumulation of lipids, proteins, glycogen, hydropic and cloudy degeneration.<br>b. Disorders of Pigmentation and pathologic calcification.                                                                                                                                                                                                                                                   |                | MK                                           | Lecture                        |
|            | c. Degenerations: Hyaline change and mucoid degeneration                                                                                                                                                                                                                                                                                                                                                                                      |                | DK                                           | Lecture                        |
| <b>III</b> | <b>Cell injury</b>                                                                                                                                                                                                                                                                                                                                                                                                                            | <b>4</b>       |                                              |                                |
|            | a. Cell in health, cell structure and functions<br>b. Cell injury : Types, Mechanisms, intracellular changes, morphology with examples, Cell death.<br>c. Necrosis : Definitions, types of necrosis with examples and cellular changes (morphology), mechanism.<br>d. Apoptosis : Definition example, morphology.<br>e. Gangrene- Definition, types with examples, differences between dry and wet gangrene, stressing mainly on cancrum oris |                | MK                                           | Lecture                        |

|             |                                                                                                                                                                                                                                                                                                                                                 |          |    |         |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|---------|
| <b>IV</b>   | <b>Inflammation and Repair</b>                                                                                                                                                                                                                                                                                                                  | <b>5</b> |    |         |
|             | a. Acute inflammation & cells in acute inflammation, chemical mediators of acute inflammation and outcome of acute inflammation.<br>b. Chronic inflammation & cells in chronic inflammation.<br>c. Granulomatous inflammation : Definition of Granuloma, types of granuloma with examples.<br>d. Patterns and systemic effects of Inflammation. |          | MK | Lecture |
| <b>V</b>    | <b>Healing of wound</b>                                                                                                                                                                                                                                                                                                                         | <b>2</b> |    |         |
|             | a. Healing by primary & secondary intention.<br>b. Factors affecting wound healing and complications of wound healing.<br>c. Special emphasis on healing of fracture.                                                                                                                                                                           |          | MK | Lecture |
| <b>VI</b>   | <b>Immunity and hypersensitivity</b>                                                                                                                                                                                                                                                                                                            | <b>1</b> |    |         |
|             | a. Definition, types and mechanisms of immunologic tissue injury with examples.<br>b. Humoral and cell mediated immunity.<br>c. Hypersensitivity and auto immunity.                                                                                                                                                                             |          | MK | Lecture |
| <b>VII</b>  | <b>Infection and infestation</b>                                                                                                                                                                                                                                                                                                                | <b>4</b> |    |         |
|             | a. Bacterial Infection - Pyogenic infections, typhoid fever, Tuberculosis, syphilis (including oral lesions), leprosy, HIV                                                                                                                                                                                                                      |          | MK | Lecture |
|             | b. Viral Infection - HPV, HSV and hepatitis infections                                                                                                                                                                                                                                                                                          |          | DK | Lecture |
| <b>VIII</b> | <b>Circulatory disturbances</b>                                                                                                                                                                                                                                                                                                                 | <b>5</b> |    |         |
|             | a. Hyperaemia.<br>b. Congestion and Haemorrhage.<br>c. Oedema<br>d. Thrombosis, embolism and infarction.<br>e. Shock.                                                                                                                                                                                                                           |          | MK | Lecture |



|             |                                                                                                                                                                                                                                                                                                                                                                                                                                                            |          |    |                           |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|---------------------------|
| <b>IX</b>   | <b>Disturbances of nutrition</b>                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>2</b> |    |                           |
|             | a. Deficiency of protein, carbohydrate, fat.<br>b. Vitamin deficiency : Vitamin A, C, D, K & Vitamin B complex                                                                                                                                                                                                                                                                                                                                             |          | MK | Lecture                   |
| <b>X</b>    | <b>Cellular growth and differentiation</b>                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>2</b> |    |                           |
|             | a. Adaptive disorders of growth : Atrophy, Hypertrophy, Hyperplasia and Metaplasia.<br>b. Types and pathologic changes of dysplasia.                                                                                                                                                                                                                                                                                                                       |          | MK | Lecture                   |
| <b>XI</b>   | <b>Neoplasia</b>                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>5</b> |    |                           |
|             | a. Definition, classification, characteristics of benign and malignant tumours.<br>b. Spread of malignant tumours<br>c. Etiology and Pathogenesis of neoplasia.<br>d. Clinical aspects and laboratory diagnosis of cancer.<br>e. Premalignant lesions.<br>f. Oncogenes and antioncogenes.<br>g. Common tumors: Squamous cell papilloma, squamous cell carcinoma, basal cell carcinoma, adenoma, adenocarcinoma, fibroma, fibrosarcoma, lipoma, Liposarcoma |          | MK | Lecture<br>ITL<br>Lecture |
| <b>XII</b>  | <b>Diseases of Bone</b>                                                                                                                                                                                                                                                                                                                                                                                                                                    | <b>2</b> |    |                           |
|             | Metabolic bone diseases, Osteomyelitis, tumours and tumours like lesions of bone.<br>(Aneurysmal bone cyst, Fibrous dysplasia, osteoma, Osteoclastoma, osteosarcoma, chondrosarcoma, Ewing's sarcoma.                                                                                                                                                                                                                                                      |          | MK | ITL<br>Lecture            |
| <b>XIII</b> | <b>CVS</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>3</b> |    |                           |
|             | Hypertension, Atherosclerosis, IHD. Infective endocarditis, RHD, Cardiac Failure                                                                                                                                                                                                                                                                                                                                                                           |          | MK | Lecture                   |
|             | <b>Congenital heart diseases (ASD, VSD, PDA, Fallot's tetralogy).</b>                                                                                                                                                                                                                                                                                                                                                                                      |          | NK |                           |
| <b>XIV</b>  | <b>Diabetes mellitus</b>                                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>2</b> |    |                           |

|             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |           |    |                                     |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|----|-------------------------------------|
|             | a. Definition, Classification<br>Aetiopathogenesis,<br>morphological changes in<br>different organs<br>b. Complications and lab<br>investigations.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |           | MK | Lecture &<br>Integrated<br>teaching |
| <b>XV</b>   | <b>Diseases of Blood</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <b>12</b> |    |                                     |
|             | a. Anaemia: Iron Deficiency,<br>megaloblastic anemia and lab<br>investigations <del>Hemolytic,</del><br><del>Aplastic, Pernicious, Sickle cell</del><br><del>anaemia</del><br>b. Pathologic variations in white<br>cells counts and leukemoid<br>reactions.<br>c. Leukemias : Acute & Chronic &<br>clinical features <del>and lymphomas</del><br><del>with investigations.</del><br>d. Haemorrhagic disorders<br>(Coagulation cascade, vascular,<br>platelet and coagulation<br>disorders) with their lab<br>investigations.<br>e. Basics of blood banking- Blood<br>grouping, Cross matching & uses<br>of various blood components.<br>Diseases transmitted by blood. |           | MK | Lecture                             |
| <b>XVI</b>  | <b>Urine analysis</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <b>2</b>  |    |                                     |
|             | Physical, chemical and microscopy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |           | MK |                                     |
| <b>XVII</b> | <b>Introduction to diseases of Oral<br/>Cavity &amp; Salivary glands</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <b>3</b>  |    |                                     |
|             | a. Stomatitis, lichen<br>planus and<br>leukoplakia.<br>b. Dental caries,<br>dentigerous cyst<br>c. Normal Structure,<br>sialadenitis and tumors<br>of salivary gland<br>d. Ameloblastoma,<br>Squamous cell<br>carcinoma                                                                                                                                                                                                                                                                                                                                                                                                                                                |           | MK | Lecture                             |

| Sr. No. | Topic - PRACTICALS                                                                                                                                                                                                                                                                                                                                | Teaching hours | Must know / Desirable to know / Nice to Know | Suggested teaching methodology |
|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------------------------------------|--------------------------------|
| I       | <b>Haematology Exercise</b>                                                                                                                                                                                                                                                                                                                       | <b>18</b>      |                                              |                                |
|         | a. Anti coagulants, Packed cell volume and calculation of blood indices with their clinical importance.<br>b. Bleeding time, Coagulation time and Erythrocyte sedimentation rate with their significance.<br>c. Study of Anaemias - Iron deficiency anaemia and dimorphic anaemia<br>d. Study of acute Leukemias<br>e. Study of chronic Leukemias |                | MK                                           | Interpretation charts<br>DOAP  |
| II      | <b>Instruments</b>                                                                                                                                                                                                                                                                                                                                | <b>2</b>       |                                              |                                |
|         | Neubauer's Counting chamber, Haemoglobinometer, W.B.C. Pipette, Wintrobe's tube, Urinometer                                                                                                                                                                                                                                                       |                |                                              | DOAP                           |
| III     | <b>Clinical Pathology</b>                                                                                                                                                                                                                                                                                                                         | <b>4</b>       |                                              |                                |
|         | a. Urine Examination – Physical Examination<br>b. Chemical Examination – Sugar, Ketone bodies, albumin & blood - Biles salts and pigments (Demonstration)                                                                                                                                                                                         |                |                                              | DOAP                           |
| IV      | <b>Histopathology Slides</b>                                                                                                                                                                                                                                                                                                                      | <b>22</b>      |                                              |                                |
|         | a. Tissue processing & staining<br>b. Acute appendicitis, Acute sialadenitis, Granulation tissue.<br>c. Actinomycosis<br>d. Tubercular Lymphadenitis, Fatty liver.                                                                                                                                                                                |                |                                              | DOAP                           |

|          |                                                                                                                                                                                                                                                                                                                                                                                                                                                               |          |  |      |
|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|--|------|
|          | <ul style="list-style-type: none"> <li>e. Chronic Venous congestion (CVC) liver, spleen and lung.</li> <li>f. Squamous papilloma, Squamous cell carcinoma</li> <li>g. Capillary and cavernous haemangioma.</li> <li>h. Lipoma</li> <li>i. Basal cell carcinoma, Malignant melanoma</li> <li>j. Pleomorphic adenoma, Warthins tumour, Adenocarcinoma</li> <li>k. Osteosarcoma, Osteoclastoma, Ameloblastoma</li> </ul>                                         |          |  |      |
| <b>V</b> | <b>Specimens</b>                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>6</b> |  |      |
|          | <ul style="list-style-type: none"> <li>a. Acute Appendicitis.</li> <li>b. Tuberculous lymph node.</li> <li>c. Fatty liver.</li> <li>d. Infarction Heart.</li> <li>e. Chronic Venous Congestion (C.V.C) Liver.</li> <li>f. Squamous papilloma.</li> <li>g. Pleomorphic adenoma.</li> <li>h. Lipoma.</li> <li>i. Squamous cell carcinoma.</li> <li>j. Malignant Melanoma.</li> <li>l. Osteosarcoma.</li> <li>m. Osteoclastoma.</li> <li>n. Gangrene.</li> </ul> |          |  | DOAP |

|           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |          |  |               |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|--|---------------|
|           | List of Charts:<br>1. Microcytic hypochromic anaemia<br>2. Dimorphic anaemia<br>3. Acute myeloid leukemia<br>4. Acute lymphoblastic leukemia<br>5. Chronic myeloid leukemia<br>6. Chronic lymphoid leukemia<br>7. Hemophilia A & B<br>8. Diabetes<br>9. Fatty liver<br>10. Chronic venous congestion of liver<br>11. Squamous cell carcinoma oral cavity<br>12. Acute appendicitis<br>13. TB lymphadenitis<br>14. Basal cell carcinoma<br>15. Malignant melanoma<br>16. FNAC( cytology)- a) squamous cell carcinoma oral cavity<br>OR Buccal smear for Barr bodies |          |  |               |
| <b>VI</b> | <b>Cytologic techniques</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <b>2</b> |  |               |
|           | Fine Needle Aspiration Cytology,<br>Buccal Smear                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |          |  | Demonstration |
|           | <b>Revision Classes</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <b>6</b> |  |               |

## SCHEME OF EXAMINATION

### A THEORY : 35 Marks

**Duration of paper – 1 Hour 30 mins.**

**Distribution of Topics, Questions & Marks :**

| Sl. No | Question Topics                                                                                                                                                                                                                                                                                                                                                   | Type and No. of Questions & Marks | Total Marks |
|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|-------------|
|        | Multiple Choice Questions                                                                                                                                                                                                                                                                                                                                         | MCQ<br>10 x 1 Mark                | 10          |
| 1      | Inflammation<br>Healing of wound & fracture bone Growth disturbances & Neoplasia<br>Anaemias & Leukaemias Hemorrhagic disorders Circulatory disturbances<br>Necrosis, gangrene, Amyloidosis<br>Bone lesions<br>Diseases of oral cavity & salivary glands<br>Infectious diseases                                                                                   | Long Essays<br>1 x 10 marks       | 10          |
| 2      | Inflammation<br>Healing of wound & fracture bone<br>Hemorrhagic disorders<br>Immunity & Hypersensitivity<br>Diabetes mellitus.<br>Anaemias & Leukaemias<br>Necrosis, gangrene, Amyloidosis<br>Growth disturbances & Neoplasia Diabetes mellitus.<br>Bone lesions<br>Diseases of oral cavity & salivary glands<br>Circulatory disturbances,<br>Infectious diseases | Short Answers<br>5 x 3 marks      | 15          |
|        |                                                                                                                                                                                                                                                                                                                                                                   | <b>Total</b>                      | <b>35</b>   |

**B. PRACTICALS : 45 Marks**

- |                                                                                                           |                   |
|-----------------------------------------------------------------------------------------------------------|-------------------|
| 1. Spotters                                                                                               | <b>10 Marks</b>   |
| Haematology                                                                                               | - 01 Marks        |
| Histopathology Slides                                                                                     | - 02 Marks        |
| Specimens                                                                                                 | - 02 Marks        |
| Instruments                                                                                               | - 02 Marks        |
| Charts                                                                                                    | - 03 Marks        |
| 2. To examine given sample of urine for abnormal constituents                                             | <b>- 10 Marks</b> |
| 3. To do differential count on the given stained peripheral blood smears                                  | <b>- 10 Marks</b> |
| 4. To estimate haemoglobin percentage in the given sample of blood / Blood grouping of given blood sample | <b>10 Marks</b>   |
| 5. Records :                                                                                              | <b>05 Marks</b>   |
| <b>Total Marks: 45 Marks</b>                                                                              |                   |

**C. VIVA VOCE: 10 Marks****D. INTERNAL ASSESSMENT : Theory Examination : 5 Marks & Practical : 5 Marks****THEORY : 50 Marks**

|                            |                   |
|----------------------------|-------------------|
| Theory Examination         | : 35 Marks        |
| Theory Internal Assessment | : 05 Marks        |
| Viva Voce                  | : 10 Marks        |
|                            | <b>: 50 Marks</b> |

**PRACTICAL : 50 Marks**

|                               |                   |
|-------------------------------|-------------------|
| Practical Examination         | : 45 Marks        |
| Practical Internal Assessment | : 05 Marks        |
|                               | <b>: 50 Marks</b> |

**Recommended Books :**

| Sl. No. | Title                                                      | Author                                                                   | Edition         | Yr. of Publ. | Publisher                            |
|---------|------------------------------------------------------------|--------------------------------------------------------------------------|-----------------|--------------|--------------------------------------|
| 1.      | Robbin's pathologic basis of disease                       | Cotran & Kumar, Robins                                                   | 7 <sup>th</sup> | 2004         | Prism & Saunders<br>Bangalore        |
| 2.      | De. Gruchy Clinical Haematology in Medical Practice        | Frank Firskin<br>Colin<br>Chesterman<br>David<br>Penington<br>Bryan Rush | 5 <sup>th</sup> | 2005         | Oxford University Press<br>New Delhi |
| 3.      | Pathology for dental students                              | Harsh Mohan                                                              | 1 <sup>st</sup> | 1994         | Jaypee Brothers<br>New Delhi         |
| 4.      | Medical Laboratory Technology (Methods and Interpretation) | Ramnik Sood                                                              | 5 <sup>th</sup> | 1994         | Jaypee Brothers<br>New Delhi         |
| 5.      | Text book of Medical Laboratory Technology                 | Godkar                                                                   | 2 <sup>nd</sup> | 2003         | Bhalani Bombay                       |
| 6.      | Text book of Hematology                                    | Tejinder Singh                                                           |                 |              | Arya<br>Publication                  |

**Reference Books :**

| Sl. No. | Title                                  | Author                                      | Edition                      | Yr. of Publ. | Publisher                                             |
|---------|----------------------------------------|---------------------------------------------|------------------------------|--------------|-------------------------------------------------------|
| 1.      | Haematology an illustrated colour text | Martin R,<br>Howard<br>Peter J,<br>Hamilton | 1 <sup>st</sup>              | 1997         | Churchill<br>Livingston USA                           |
| 2.      | General Pathology Vol. I & II          | S.G.<br>Deodhare                            | 6 <sup>th</sup>              | 2002         | Popular<br>Prakashan<br>Bombay                        |
| 3.      | Colour Atlas of Histopathology         | R.C. Curran                                 | 4 <sup>th</sup><br>(Revised) | 2000         | Harvey<br>Miller<br><br>Oxford<br>University<br>Press |



## **2.2.2 MICROBIOLOGY**

### **GOAL :**

To introduce the students to the world of microbes so as to make the students aware of various branches of microbiology, its importance, significance and contribution to mankind and other fields of medicine.

### **OBJECTIVES :**

#### **a) KNOWLEDGE**

At the end of the II BDS course the student is expected to :

1. Describe relationship between host and parasite.
2. List the pathogenic organisms and describe the pathogenesis of infectious diseases.
3. State methods of transmission, source of infection & vectors of transmission.
4. Describe the immunological reaction of the body.
5. Knowledge of Anti Microbial Drugs.
6. Methods of disinfection and sterilization relevant to dental practice.
7. Recommend laboratory investigations regarding testing of water, air etc.

#### **b) SKILLS**

At the end of the II BDS course the student is expected to :

1. Plan and interpret laboratory investigations for the diagnosis of infectious diseases and also to correlate the clinical symptoms with etiological agent.
2. Identify common infectious agents with the laboratory aid and use of anti microbial susceptibility test to select drugs for treatment.
3. Perform commonly employed bed side tests like making the smear for diagnosis and staining procedures -
4. Know correct method of collection, storage and transportation of clinical material for investigation.

### Course Outcomes - Theory

| At the end of General Pathology & Microbiology course, the students should be able to: |                                                                                                                                                                                                                                                                                                                                           |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| T 2.2.2.1                                                                              | Describe the structure and ultra-structure of cell in injury, mechanisms of cell degeneration, cell death and repair and be able to correlate structural and functional alterations and to state the infective micro-organisms of the human body and describe the host parasite relationship.                                             |
| T 2.2.2.2                                                                              | Describe the normal homeostasis & hemopoiesis. Explain the clinical manifestations, pathogenesis, pathology of deranged states of common diseases (RBC, WBC, Platelet disorders)                                                                                                                                                          |
| T 2.2.2.3                                                                              | Explain the morphological and clinical manifestations, pathophysiological processes and pathogenesis associated with bacteria, viruses, parasites and fungi infection. Describe the modes of transmission of pathogenic and opportunistic organisms and their sources, including insect vectors responsible for transmission of infection |
| T 2.2.2.4                                                                              | Discuss methods of disinfection and sterilization to control and prevent hospital and community acquired infections.                                                                                                                                                                                                                      |
| T 2.2.2.5                                                                              | Correlate normal and altered morphology (gross and microscopic) of different organ systems in common diseases and tumours, with disease processes, clinical significance and describe the mechanisms of immunity to infections.                                                                                                           |
| T 2.2.2.6                                                                              | Describe the antimicrobial agents used for treatment of common infections and scope of immunotherapy and vaccines for prevention of communicable diseases.                                                                                                                                                                                |

### Matrix of Programme Outcome & Course Outcome (POCO) - Theory

| Course Outcomes      | PO1      | PO2        | PO3        | PO4      | PO5        | PO6      | PO7      |
|----------------------|----------|------------|------------|----------|------------|----------|----------|
| T 2.2.2.1            | 2        | 1          | 1          | 2        | 2          | 2        | 2        |
| T 2.2.2.2            | 2        | 2          | 1          | 2        | 2          | 2        | 2        |
| T 2.2.2.3            | 2        | 2          | 2          | 2        | 1          | 2        | 2        |
| T 2.2.2.4            | 2        | 2          | 2          | 2        | 2          | 2        | 2        |
| T 2.2.2.5            | 2        | 1          | 1          | 2        | 2          | 2        | 2        |
| T 2.2.2.6            | 2        | 2          | 2          | 2        | 2          | 2        | 2        |
| <b>Average Score</b> | <b>2</b> | <b>1.6</b> | <b>1.5</b> | <b>2</b> | <b>1.5</b> | <b>2</b> | <b>2</b> |

### Course Outcomes - Practical

| At the end of General Pathology & Microbiology course, the students should be able to: |                                                                                                                                             |
|----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| P 2.2.2.1                                                                              | Identify the various methods of disinfection and sterilization to control and prevent hospital and community acquired infections            |
| P 2.2.2.2                                                                              | Identify the various culture media – aerobic and anaerobic used for in Bacteriology.                                                        |
| P 2.2.2.3                                                                              | Identify the Albert-stained slide and describe the morphology of CBD                                                                        |
| P 2.2.2.4                                                                              | Identify the Fontana-stained slide and describe the morphology of spirochetes.                                                              |
| P 2.2.2.5                                                                              | Perform Gram stain and interpret the slide. Discuss the various morphological forms of bacteria observed in gram stain and its application. |
| P 2.2.2.6                                                                              | Perform Ziehl Neelsen stain and interpret the slide. Discuss the various modifications of Ziehl Neelsen stain and its application.          |
| P 2.2.2.7                                                                              | Perform staining of hematology smear, Identify and interpret the common hematological disorders.                                            |
| P 2.2.2.8                                                                              | Identify and describe the organ pathology of common diseases and tumors.                                                                    |
| P 2.2.2.9                                                                              | Perform common tests in hematology & clinical pathology and interpret the results.                                                          |

### Matrix of Programme Outcome & Course Outcome (POCO) - Practical

| <b>Course Outcomes</b> | <b>PO1</b> | <b>PO2</b> | <b>PO3</b> | <b>PO4</b> | <b>PO5</b> | <b>PO6</b> | <b>PO7</b> |
|------------------------|------------|------------|------------|------------|------------|------------|------------|
| P 2.2.2.1              | 2          | 2          | 1          | 1          | 1          | 2          | 2          |
| P 2.2.2.2              | 2          | 2          | 1          | 1          | 1          | 2          | 2          |
| P 2.2.2.3              | 3          | 2          | 1          | 1          | 1          | 2          | 2          |
| P 2.2.2.4              | 3          | 2          | 1          | 1          | 1          | 2          | 2          |
| P 2.2.2.5              | 3          | 2          | 1          | 1          | 1          | 2          | 2          |
| P 2.2.2.6              | 3          | 2          | 1          | 1          | 1          | 2          | 2          |
| P 2.2.2.7              | 3          | 3          | 1          | 3          | 1          | 3          | 3          |
| P 2.2.2.8              | 3          | 3          | 1          | 1          | 1          | 3          | 3          |
| P 2.2.2.9              | 3          | 3          | 1          | 3          | 1          | 3          | 3          |
| <b>Average Score</b>   | <b>2.7</b> | <b>2.3</b> | <b>1</b>   | <b>1.4</b> | <b>1</b>   | <b>2.3</b> | <b>2.3</b> |

**Curriculum and Course Content for II BDS**  
**Theory – 65 Hours ; Practical – 50 Hours**

| Sr. No.   | Topic - THEORY                                                                                                                                                                                                                                                                     | Teaching hours | Must know / Desirable to know / Nice to Know | Suggested teaching methodology |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------------------------------------|--------------------------------|
| <b>I</b>  | <b>GENERAL BACTERIOLOGY</b>                                                                                                                                                                                                                                                        | <b>6</b>       |                                              |                                |
|           | a. Morphology and Physiology of bacteria.<br>b. Bacterial genetics – Mechanism of genetic transfer, drug resistance.<br>c. Infection - Definition, Classification, Source, Mode of transmission and types of Infectious disease                                                    |                | MK                                           | Lecture                        |
|           | d. <i>Borrelia vincentii</i> :morphology , diseases produced, laboratory diagnosis<br>e. Typhoid fever : pathogenesis, lab diagnosis, prophylaxis                                                                                                                                  |                | DK                                           |                                |
|           | f. Introduction.<br>g. Historical aspects.<br>h. Classification of Different classes of Microorganisms                                                                                                                                                                             |                | DK                                           | Lecture                        |
| <b>II</b> | <b>IMMUNOLOGY</b>                                                                                                                                                                                                                                                                  | <b>13</b>      |                                              |                                |
|           | a. Immunity – Definition, classification, factors, mechanisms, examples<br>b. Antigens – definition, types and properties.<br>c. Antibodies – structure, functions of diff. types of Immuno globulins.<br>d. Immune system – structure, function of T cells, B cells, differences. |                | MK                                           | Lecture                        |

|  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |    |         |
|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----|---------|
|  | <p>e. Immune response – factors responsible for immune variations, adjuvants, mechanism.</p> <p>f. Antigen – Antibody reactions – definition, mechanism, examples, clinical applications of Ag-Ab reactions like agglutination, precipitation, ELISA test.</p> <p>g. Hypersensitivity – definition, classification, mechanisms.</p> <p>h. Autoimmune disorders - Basic knowledge of various types - sound knowledge of autoimmune disorders of oral cavity and related structures.</p> |  |    |         |
|  | <p>i. Complement – properties and functions.</p> <p>j. Antigen and Antibody reaction<br/>Complement Fixation Test (CFT),<br/>Neutralisation, Fluorescent Immunetest, Opsonisation</p> <p>k. Immuno deficiency diseases, enumerating the diseases.</p> <p>l. Immunology of transplantation, classification and brief description of transplantation</p>                                                                                                                                 |  | DK | Lecture |

| III | SYSTEMIC BACTERIOLOGY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 25 |    |                                           |
|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----|-------------------------------------------|
|     | <p>a. Pyogenic cocci - Staphylococcus, Streptococcus, Pneumococcus, Gonococcus, Meningococcus –brief account of each coccus - detailed account of mode of spread, laboratory diagnosis, Chemo therapy and prevention - Detailed account of Cariogenic Streptococci</p> <p>b. Upper respiratory tract infection – Streptococcus Pyogenes , Corynebacterium diphtheriae - mode of spread, important clinical feature, Laboratory diagnosis, Chemotherapy and Active immunisation</p> <p>c. Clostridia - Classification, pathogenesis, lab diagnosis of gas gangrene, tetanus, food poisoning prophylaxis and clinical features.</p> <p>d. Nonsporing anaerobes – Classification, pathogenesis, lesions, Lab diagnosis in respect to dental infections.</p> |    | MK | Lecture                                   |
|     | e. Mycobacterium tuberculosis: morphology, cultural characters, pathogenesis, lab diagnosis, susceptibility test and prophylaxis.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |    |    | Integration with pathology & pharmacology |

|           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |           |    |         |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|----|---------|
|           | <p>f. Actinomycosis – Morphology, lesions in respect to orofacial lesions, lab diagnosis.</p> <p>g. Spirochaets – classification, morphology, pathogenesis and lab diagnosis of Treponema.</p> <p>h. Normal Bacterial flora of the oral cavity – Enumerating the importance of opportunistic organisms in dental practice.</p>                                                                                                                                     |           |    | Lecture |
|           | <p>i. <i>Borrelia vincentii</i> : morphology, diseases produced, laboratory diagnosis</p> <p>j. Typhoid fever: pathogenesis, lab diagnosis, prophylaxis</p>                                                                                                                                                                                                                                                                                                        |           | DK | Lecture |
| <b>IV</b> | <b>VIROLOGY</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <b>11</b> |    |         |
|           | <p>a. General virology – general properties, definition, classification, structure, pathogenesis, cultivation, lab diagnosis, antiviral agents immunology.</p> <p>b. Herpes viruses – classifications, lesions and lab diagnosis HSV 1,2, EBV, CMV, Virus Zoster (VZ) virus.</p> <p>c. Mumps , Measles and Rubella Virus: lesions, prophylaxis, lab diagnosis.</p> <p>d. Hepatitis B Virus - structure, route of entry, lesions, lab diagnosis and prophylaxis</p> |           | MK | Lecture |



|            |                                                                                                                                                                                                                                         |          |              |                        |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|--------------|------------------------|
|            | e. Human Immunodeficiency Virus (HIV) -classification, structure, pathogenesis, route of entry opportunistic infection in AIDS, lab diagnosis – prophylaxis                                                                             |          |              |                        |
|            | f. Hepatitis viruses – ACDE in brief                                                                                                                                                                                                    |          | DK           | Lecture                |
| <b>V</b>   | <b>PARASITOLOGY</b>                                                                                                                                                                                                                     | <b>4</b> |              |                        |
|            | Brief introduction - protozoans and helminthes                                                                                                                                                                                          |          | MK           | Lecture                |
|            | Malaria: mode of transmission, morphology clinical features, pathogenesis and lab diagnosis and prevention                                                                                                                              |          | DK           | Lecture                |
| <b>VI</b>  | <b>MYCOLOGY</b>                                                                                                                                                                                                                         | <b>4</b> |              |                        |
|            | a. Brief Introduction to Mycology<br>b. Candida – Morphology, lesions, lab diagnosis, diff. species in relation to oral candidiasis.                                                                                                    |          | MK           | Lecture                |
| <b>VII</b> | <b>APPLIED MICROBIOLOGY</b>                                                                                                                                                                                                             | <b>2</b> |              |                        |
|            | Hospital infections                                                                                                                                                                                                                     |          | MK           | Lecture                |
|            | a. Immunization schedule- prophylaxis.<br>b. Collection of materials- for lab diagnosis<br>c. Immunohematology<br>d. Mycobacterium leprae<br>Bacteriophage – structure and Significance.<br>Briefly on oral lesions of systemic mycoses |          | DK<br><br>NK | Lecture<br><br>Lecture |

| Sr. No. | Topic - PRACTICAL                                                                                                                                                     | Teaching hours | Must know / Desirable to know / Nice to Know | Suggested teaching methodology |
|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------------------------------------|--------------------------------|
|         | <b>Practical Demonstrations</b>                                                                                                                                       |                |                                              |                                |
|         | a. Sterilisation and Disinfection in detail.                                                                                                                          | 6              | MK                                           | DOAP                           |
|         | b. Culture media.                                                                                                                                                     | 4              | MK                                           | DOAP                           |
|         | c. Culture methods & Anaerobic methods.                                                                                                                               | 2              | MK                                           | DOAP                           |
|         | d. Identification of bacteria & demonstration.                                                                                                                        | 2              | MK                                           | DOAP                           |
|         | e. Microscopy.                                                                                                                                                        | 2              | MK                                           | DOAP                           |
|         | <b>Practicals</b>                                                                                                                                                     |                |                                              |                                |
|         | a. Simple stain and Hanging drop ( Not for exams)                                                                                                                     | 7              | MK                                           | Demonstration                  |
|         | b. Gram's stain.                                                                                                                                                      | 9              | MK                                           | DOAP                           |
|         | c. Albert's stain demonstration                                                                                                                                       | 9              | MK                                           | Demonstration                  |
|         | d. Ziehl Neelsen's stain.                                                                                                                                             | 9              | MK                                           | DOAP                           |
|         | <b>Slides for demonstration</b>                                                                                                                                       |                |                                              |                                |
|         | Staphylococcus.<br>Streptococcus<br>Gonococcus<br>Pneumococcus<br>M tuberculosis.<br>M leprae.<br>Spirochaetes.<br>Gram Negative Bacilli.<br>Candida.<br>Actinomyces. |                |                                              | DOAP                           |
|         | Slides for practical exercises                                                                                                                                        |                |                                              |                                |

|  |                                                                                                                                                                                                                                                             |  |  |               |
|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|---------------|
|  | Grams stain - Staphylococci.<br>- Gram negative bacilli.<br>- Mixture of any two organisms.<br>- Gram stain of the oral cavity.<br>Alberts stain_ Kleb's Loeffler's Bacilli (KLB) culture slide. Ziehl-Neelsen's stain- Sputum positive for AFB             |  |  | DOAP          |
|  | <b>Media for demonstration</b>                                                                                                                                                                                                                              |  |  |               |
|  | <b>Uninoculated media</b>                                                                                                                                                                                                                                   |  |  |               |
|  | Nutrient agar plate.<br>Blood agar plate.<br>Chocolate agar plate.<br>Mac Conkey agar plate.<br>Lowenstein Jenson's Media slope.<br>Loefflers serum slope.<br>Sabourauds slope.<br>Milk agar plate.<br>Robertson's Cooked Meat broth.                       |  |  | Demonstration |
|  | <b>INOCULATED MEDIA</b>                                                                                                                                                                                                                                     |  |  |               |
|  | Nutrient agar with staphylococci.<br>Blood Agar with Alpha Haemolytic Streptococci.<br>Blood Agar with Beta Haemolytic Streptococci.<br>Potassium Tellurite with growth of C.diphtheriae.<br>Milk agar with Staphylococci.<br>Antibiotic sensitivity plate. |  |  | Demonstration |

|  |                                                                                                                                                                                     |  |  |               |
|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|---------------|
|  | INSTRUMENTS                                                                                                                                                                         |  |  |               |
|  | VDRL slide.<br>Tuberculin syringe.<br>Sterile swab<br>Seitz filter<br>MacIntosh fields jar.<br>Widal rack with tubes.<br>Microtitre plate<br>Disposable syringe<br>Surgical gloves. |  |  | Demonstration |

## SCHEME OF EXAMINATION

**A) Theory : 50 Marks.**

**Duration of Paper : 1 Hour 30 Mins.**

**Distribution of Topics and Type of Questions:**

| Sl. No | Question Topics                                                                                                                                 | Type and No. of Questions & Marks | Total Marks |
|--------|-------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|-------------|
| 1      | Multiple Choice Questions                                                                                                                       | MCQ<br>10 x 1 Mark                | 10          |
| 2      | One long Essay question from<br>Systematic bacteriology /<br>General bacteriology / Immunology<br>Mycology / Parasitology                       | Long Essays<br>1 x 10 marks       | 10          |
| 3      | One question from General bacteriology /<br>Immunology / Systematic Bacteriology /<br>Virology / Oral Microbiology /<br>Mycology / Parasitology | Short Answers<br>5 x 3 marks      | 15          |
|        |                                                                                                                                                 | <b>Total</b>                      | <b>35</b>   |

**B. PRACTICALS : 45 Marks**

|                             |                 |
|-----------------------------|-----------------|
| i) Spotters                 | <b>15 Marks</b> |
| Slides (6)                  | — 09 Marks      |
| Media (2)                   | — 03 Marks      |
| Instruments (2)             | — 03 Marks      |
| i) Gram's Stain             | 10 Marks        |
| ii) Ziehl – Neelsen's Stain | 15 Marks        |
| iii) Records                | 05 Marks        |
| Total : 45 Marks            |                 |

**C. VIVA VOCE: 10 Marks****D. INTERNAL ASSESSMENT : Theory Examination : 5 Marks & Practical : 5 Marks****THEORY : 50 Marks**

|                            |                   |
|----------------------------|-------------------|
| Theory Examination         | : 35 Marks        |
| Theory Internal Assessment | : 05 Marks        |
| Viva Voce                  | : 10 Marks        |
|                            | <b>: 50 Marks</b> |

**PRACTICAL : 50 Marks**

|                               |                   |
|-------------------------------|-------------------|
| Practical Examination         | : 45 Marks        |
| Practical Internal Assessment | : 05 Marks        |
|                               | <b>: 50 Marks</b> |

**Recommended Books :**

| Sl. No. | Title                                         | Author                                    | Edn                 | Yr. of Publ. | Publisher                                                         |
|---------|-----------------------------------------------|-------------------------------------------|---------------------|--------------|-------------------------------------------------------------------|
| 1       | Text Book of Microbiology                     | R. Anantha Narayan & C.K. Jayaram Panikar | 6 <sup>th</sup>     | 2000         | Orient Longman Madras                                             |
| 2       | Essential of Medical Microbiology             | Apurva S Sastry Sandhya Bhat              | 2 <sup>nd</sup>     | 2018         | Jaypee Brothers Medical                                           |
| 3       | Text book of Microbiology for Dental Students | Prof. C. P. Baveja                        | 1 <sup>st</sup> Ed. | 2003         | Arya Publications                                                 |
| 4       | Text Book of Microbiology for Dental Students | Dr. Arora                                 | 1 <sup>st</sup> Ed. | 1999         | CBS Publishers & Distributors, 4596/1A "Daryaganj" New Delhi –02. |

**Reference Books :**

| Sl. No. | Title                              | Author                             | Edn             | Yr. of Publ. | Publisher                                           |
|---------|------------------------------------|------------------------------------|-----------------|--------------|-----------------------------------------------------|
| 1       | Immunology                         | Donald M Weir                      | 7th             | 1993         | Longman Singapore Pub. Lt. Singapore                |
| 2       | Medical Parasitology               | N.C. Dey and T.K. Dey              | 10th            | 1997         | New Central Book Agency Pvt. Ltd. Calcutta          |
| 3       | Notes on Medical Virology          | Morag C. Timbury                   | 7th Ed.         | 1983         | Longman Group Ltd. Churchill Livingstone, Singapore |
| 4       | Medical Mycology                   | NcDey HLE Grueber TK Dey           | 1st Central     | 2006 Ed.     | New Central Book Agency Howrah.                     |
| 5       | A Text Book of Microbiology        | P.C. Chakraborty                   | 1st Ed. Reprint | 2005         | Central Book Agency (P) Ltd Kolkata                 |
| 6       | Essentials of Medical Microbiology | Rajcooh Bhatia Rattanlal Ichhpujam | 3rd Ed.         | 2004         | Jaypee Brothers New Delhi                           |

## **2.2.3. DENTAL MATERIALS**

### **GOAL :**

Goal is to emphasize on the basic properties of Dental materials and to provide certain criteria for selection, which will enable to discriminate between facts and propaganda with regards to claims of manufacturers. It also enables the students to apply these materials for clinical practice and keep the students updated with further research, as the knowledge of dental materials is fundamental to the dental education.

### **OBJECTIVES :**

#### **a) Knowledge**

At the end of the II BDS course the student is expected to :

1. Understand the evolution and development of science of dental materials.
2. Explain purpose of course in dental materials to personnels concerned with dentistry.
3. Know the physical, chemical and biomechanical properties of various materials used in dentistry.
4. Lay down the standards or specifications of various materials to guide manufacturers as well as to help professionals.
5. Search for newer and better materials, which may answer our requirements with greater satisfaction.
6. Understand and evaluate the claims made by manufacturers of dental materials.
7. Know the biohazards of various dental materials used.

#### **b) Skills**

At the end of the II BDS course the student is expected to :

1. Acquire skills to manipulate various dental materials used in dentistry.
2. Possess skills to apply dental materials for clinical use.
3. Know the merits and demerits of dental materials.

### Course Outcomes - Theory

| At the end of Dental Materials course, the students should be able to: |                                                                                                 |
|------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
| T 2.2.3.1                                                              | Recall and explain about the use and properties of all dental materials                         |
| T 2.2.3.2                                                              | Describe and explain about biocompatibility of dental materials and their clinical applications |
| T 2.2.3.3                                                              | Describe the evolution and development of various scientific aspects of the material science.   |
| T 2.2.3.4                                                              | Describe physical, chemical, mechanical and biological behavior of various dental materials     |
| T 2.2.3.5                                                              | Discuss the clinical application of various dental materials                                    |

### Matrix of Programme Outcome & Course Outcome (POCO) - Theory

| Course Outcome       | PO1      | PO2        | PO3      | PO4        | PO5      | PO6      | PO7        |
|----------------------|----------|------------|----------|------------|----------|----------|------------|
| T 2.2.3.1            | 2        | 3          | 1        | 2          | 1        | 3        | 3          |
| T 2.2.3.2            | 2        | 3          | 2        | 1          | 1        | 2        | 3          |
| T 2.2.3.3            | 2        | 2          | 2        | 2          | 1        | 2        | 2          |
| T 2.2.3.4            | 3        | 2          | 2        | 1          | 1        | 2        | 2          |
| T 2.2.3.5            | 1        | 2          | 3        | 2          | 2        | 1        | 3          |
| <b>Average Score</b> | <b>2</b> | <b>2.5</b> | <b>2</b> | <b>1.5</b> | <b>1</b> | <b>2</b> | <b>2.5</b> |



### Course Outcomes - Practical

| At the end of Dental Materials course, the students should be able to: |                                                                                                                                          |
|------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| P 2.2.3.1                                                              | Classify, manipulate and use appropriate dental materials in given clinical scenario and laboratory procedures                           |
| P 2.2.3.2                                                              | Understand how to use dental materials without causing injury to the patient and use the material without wastage                        |
| P 2.2.3.3                                                              | Perform newer methods and techniques of various dental materials from time based scientific research which is in patient's best interest |
| P 2.2.3.4                                                              | Chart and integrate the applications of these materials to meet high quality prosthodontics demands for the patient                      |
| P 2.2.3.5                                                              | Respect the patients' rights about biohazards of various dental materials and privileges including patient's right to information.       |

### Matrix of Programme Outcome & Course Outcome (POCO) - Practical

| Course Outcome       | PO 1     | PO 2       | PO 3     | PO 4     | PO 5       | PO 6       | PO 7       |
|----------------------|----------|------------|----------|----------|------------|------------|------------|
| P 2.2.3.1            | 3        | 2          | 1        | 2        | 1          | 2          | 2          |
| P 2.2.3.2            | 2        | 3          | 2        | 2        | 2          | 2          | 3          |
| P 2.2.3.3            | 2        | 2          | 2        | 3        | 2          | 1          | 2          |
| P 2.2.3.4            | 2        | 3          | 2        | 2        | 1          | 2          | 3          |
| P 2.2.3.5            | 1        | 3          | 3        | 1        | 2          | 1          | 3          |
| <b>Average Score</b> | <b>2</b> | <b>2.5</b> | <b>2</b> | <b>2</b> | <b>1.5</b> | <b>1.5</b> | <b>2.5</b> |

**Curriculum and Course Content for I BDS**  
**Theory – 20 Hours ; Practical – 40 Hours**

| Sr. No. | Topic - THEORY                                                                                                                                                                                                                                                                                                              | Teaching hours | Must know / Desirable to know / Nice to Know | Suggested teaching methodology               |
|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------------------------------------|----------------------------------------------|
| I       | <b>Introduction</b>                                                                                                                                                                                                                                                                                                         | <b>2</b>       | <b>DK</b>                                    | -Didactic lectures in ICT enabled classrooms |
|         | a. Brief History of the development of the science of Dental Materials.<br>b. Aim of studying the science of Dental Materials.<br>c. Scope and requirements of Dental materials.<br>d. Spectrum of materials – Clinical and laboratory applications (Classification of materials).                                          |                |                                              |                                              |
| II      | <b>Structure of matter and mechanical properties of Dental Materials</b>                                                                                                                                                                                                                                                    | <b>3</b>       | <b>DK</b>                                    | -Didactic lectures in ICT enabled classrooms |
|         | a. Basic principles – Physical, mechanical, chemical, biological, rheological and thermal properties of various dental materials and esthetics.<br>b. Enamel, dentine and bone.<br>c. Polymers.<br>d. Metals and alloys.<br>e. Dental porcelain.<br>f. Composites.<br>g. Standardisation and assessment of dental materials |                |                                              |                                              |

|     |                                                                                                                                                                                                                                                                                                                                                 |   |    |                                              |
|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|----|----------------------------------------------|
| III | <b>Physical properties of Dental Materials:</b>                                                                                                                                                                                                                                                                                                 | 3 | MK | -Didactic lectures in ICT enabled classrooms |
|     | <b>Gypsum products:</b> <ul style="list-style-type: none"> <li>Gypsum products (Detail),</li> <li>Die, cast and model materials (including brief account of electroformed dies).</li> <li>Setting and hygroscopic expansion. Infection control. Die spacers</li> <li>Investment materials</li> </ul>                                            |   |    |                                              |
| IV  | <b>Impression materials - I</b>                                                                                                                                                                                                                                                                                                                 | 1 | MK | -Didactic lectures in ICT enabled classrooms |
|     | <ul style="list-style-type: none"> <li>Requirements and classification.</li> <li>Tray compound, impression compound, Low fusing compound, Impression plaster, Zinc oxide Eugenol impression paste, Non Eugenol paste, Desirable properties, composition, setting properties, advantages, disadvantages, indications and manipulation</li> </ul> |   |    |                                              |
| V   | <b>Impression materials – II</b>                                                                                                                                                                                                                                                                                                                | 2 | MK | -Didactic lectures in ICT enabled classrooms |
|     | <ul style="list-style-type: none"> <li>Requirements and classification.</li> <li>Alginate, Agar, Desirable properties, composition, setting properties, advantages, disadvantages, indications and manipulation.</li> </ul>                                                                                                                     |   |    |                                              |

|             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |          |           |                                              |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-----------|----------------------------------------------|
| <b>VI</b>   | <b>Impression materials - III</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <b>2</b> | <b>MK</b> | -Didactic lectures in ICT enabled classrooms |
|             | Requirements and classification. <ul style="list-style-type: none"> <li>(Elastomeric impression materials - Desirable properties, composition, setting properties, advantages, disadvantages, indications and manipulation.</li> </ul>                                                                                                                                                                                                                                                               |          |           |                                              |
| <b>VII</b>  | <b>Waxes and baseplate materials</b><br>Properties, manipulation and uses of modelling casting, boxing, utility, undercut blocking, sticky, impression, carding and preformed wax patterns                                                                                                                                                                                                                                                                                                           | <b>2</b> | <b>MK</b> | Didactic lectures in ICT enabled classrooms  |
|             | Properties, manipulation and uses of modelling, casting, boxing, utility, undercut blocking, sticky, impression, carding and preformed wax patterns                                                                                                                                                                                                                                                                                                                                                  |          |           |                                              |
| <b>VIII</b> | <b>Denture base resins</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>5</b> | <b>MK</b> | -Didactic lectures in ICT enabled classrooms |
|             | a. Tray materials.<br>b. Temporary base materials – contents, properties, manipulation, advantages and disadvantages.<br>c. Permanent base materials – types, composition, properties and technical consideration (Flasking, packing, curing, deflasking and processing errors).<br>d. Comparative studies between metallic and nonmetallic denture base.<br>e. Others-Tissue conditioners, soft and hard liners.<br>f. Artificial tooth material.<br>g. Articulating paper.<br>h. Separating media. |          |           |                                              |

| Sr. No. | Topic - PRACTICALS                                                                                                                                                                                                                 | Teaching hours | Must know / Desirable to know / Nice to Know | Suggested teaching methodology                                                       |
|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------------------------------------|--------------------------------------------------------------------------------------|
| I       | <b>Exercise 1 – Manipulation of Gypsum products</b>                                                                                                                                                                                | 10             | MK                                           | Demonstration<br><br>-Interactive small group discussion<br><br>-Pre-recorded videos |
|         | 1. Manipulation of dental plaster<br>2. Manipulation of dental stone<br>3. Making of plaster& Dental Stone cube of dimension 1 inch x 1 inch<br>4. Making of plaster& Dental Stone Rectangle of dimension 2 inch x 1 inch X 1 inch |                |                                              |                                                                                      |
| 2       | 1. <b>Exercise 2 – Manipulation of Impression compound</b>                                                                                                                                                                         | 10             | MK                                           | Demonstration<br><br>-Interactive small group discussion<br><br>-Pre-recorded videos |
|         | 1. Selection of Impression tray and modification<br>2. Manipulation of impression compound<br>3. Maxillary Impression making with impression compound<br>4. Mandibular Impression making with impression compound                  |                |                                              |                                                                                      |

|   |                                                                                                                                                                                                                               |   |    |                                                                                      |
|---|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|----|--------------------------------------------------------------------------------------|
| 3 | <b>Exercise – 3 Manipulation of Irreversible hydrocolloid (Alginate) impression material</b>                                                                                                                                  | 4 | MK | Demonstration<br><br>-Interactive small group discussion<br><br>-Pre-recorded videos |
|   | 1. Selection of Impression tray and modification<br>2. Manipulation of Irreversible hydrocolloid (Alginate) impression material<br>3. Making impression of coin with Irreversible hydrocolloid (Alginate) impression material |   |    |                                                                                      |
| 4 | <b>Exercise – 4 Elastomeric impression material</b>                                                                                                                                                                           | 2 | DK | Demonstration<br><br>-Interactive small group discussion<br><br>-Pre-recorded videos |
|   | 1. Manipulation of elastomeric impression material<br>(a) Light body (Consistency)<br>(b) Putty ( Consistency)                                                                                                                |   |    |                                                                                      |
| 5 | <b>Exercise – 5 Manipulation of modeling wax</b>                                                                                                                                                                              | 5 | MK | Demonstration<br><br>-Interactive small group discussion<br><br>-Pre-recorded videos |

|   |                                                                                                          |   |    |                                                                                      |
|---|----------------------------------------------------------------------------------------------------------|---|----|--------------------------------------------------------------------------------------|
|   | 1. Manipulation of modeling wax<br>2. Preparation of wax block of dimension 2 x 1 x 1 cm                 |   |    |                                                                                      |
| 6 | <b>Exercise 6 Manipulation of Zinc oxide eugenol impression material</b>                                 | 2 | MK | Demonstration<br><br>-Interactive small group discussion<br><br>-Pre-recorded videos |
|   | Manipulation of Zinc oxide – Eugenol impression paste                                                    |   |    |                                                                                      |
| 7 | <b>Exercise – 7 Manipulation of heat cure acrylic resin</b>                                              | 5 | DK | Demonstration<br><br>-Interactive small group discussion<br><br>-Pre-recorded videos |
|   | 1. Investing of wax blocks in dental flask<br>2. Dewaxing<br>3. Acrylization<br>4. Finishing & polishing |   |    |                                                                                      |
| 8 | <b>Exercise – 8 – Self cure acrylic resin</b>                                                            | 2 | MK | Demonstration<br><br>-Interactive small group discussion<br><br>-Pre-recorded videos |
|   | Manipulation of self cure acrylic resin                                                                  |   |    |                                                                                      |

**Curriculum and Course Content for II BDS**  
**Theory – 20 Hours ; Practical – 200 Hours**

| Sr. No.    | Topic - THEORY                         | Teaching hours | Must know / Desirable to know / Nice to Know | Suggested teaching methodology            |
|------------|----------------------------------------|----------------|----------------------------------------------|-------------------------------------------|
| <b>I</b>   | Denture Base Resins                    | <b>1</b>       |                                              |                                           |
|            | a. Classification                      |                | MK                                           | Didactic lecture with ICT enabled classes |
|            | b. Manipulation                        |                | DK                                           | -do-                                      |
|            | c. Uses                                |                | MK                                           | -do-                                      |
|            | d. Properties                          |                | DK                                           | -do-                                      |
| <b>II</b>  | Soldering brazing & Welding Procedures | <b>1</b>       |                                              |                                           |
|            | a. Soldering                           |                | MK                                           | -do-                                      |
|            | b. Brazing                             |                | MK                                           | -do-                                      |
|            | c. Flux                                |                | MK                                           | -do-                                      |
|            | d. Anti –flux                          |                | MK                                           | -do-                                      |
|            | e. Techniques                          |                | DK                                           | -do-                                      |
|            | f. Uses                                |                | DK                                           | -do-                                      |
| <b>III</b> | Tarnish & corrosion                    | <b>1</b>       |                                              |                                           |
|            | a. Definition                          |                | MK                                           | -do-                                      |
|            | b. Classification                      |                | MK                                           | -do-                                      |
|            | c. Prevention                          |                | DK                                           | -do-                                      |
|            | d. Passivation                         |                | MK                                           | -do-                                      |
| <b>IV</b>  | Constitution of alloys                 | <b>2</b>       |                                              |                                           |
|            | a. Classification                      |                | MK                                           | -do-                                      |



|           |                                                                                  |          |    |      |
|-----------|----------------------------------------------------------------------------------|----------|----|------|
|           | b. Composition                                                                   |          | DK | -do- |
|           | c. Alloys for all metal                                                          |          | DK | -do- |
|           | d. Gold alloys                                                                   |          | DK | -do- |
|           | e. Silver palladium alloy                                                        |          | MK | -do- |
|           | f. Metal ceramic alloys                                                          |          | MK | -do- |
|           | g. High noble alloys                                                             |          | DK | -do- |
|           | h. Base metal alloys                                                             |          | DK | -do- |
|           | i. RPD alloys                                                                    |          | DK | -do- |
| <b>V</b>  | Wrought Alloys                                                                   | <b>2</b> |    |      |
|           | a. Manufacture of wrought alloys                                                 |          | NK | -do- |
|           | b. Structure                                                                     |          | NK | -do- |
|           | c. Annealing                                                                     |          | MK | -do- |
|           | d. Uses                                                                          |          | DK | -do- |
|           | e. Ortho wires                                                                   |          | NK | -do- |
|           | f. Wrought gold alloys                                                           |          | NK | -do- |
|           | g. Wrought base metal alloys<br>wrought cobalt Cr – ni alloys, ni –<br>ti alloys |          | MK | -do- |
| <b>VI</b> | Casting procedures                                                               | <b>3</b> |    |      |
|           | a. Tooth preparation                                                             |          | NK | -do- |
|           | b. Die preparation                                                               |          | NK | -do- |
|           | c. Die spacer                                                                    |          | DK | -do- |
|           | d. Wax pattern sprue former                                                      |          | NK | -do- |
|           | e. Casting ring liner                                                            |          | MK | -do- |
|           | f. Investing                                                                     |          | MK | -do- |
|           | g. Burnout                                                                       |          | DK | -do- |

|             |                                         |          |    |      |
|-------------|-----------------------------------------|----------|----|------|
|             | h. Thermal expansion                    |          | DK | -do- |
|             | i. Casting process                      |          | MK | -do- |
|             | j. Equipment                            |          | MK | -do- |
|             | k. CAD – CAM milling copy milling       |          | DK | -do- |
|             | l. Capillary casting technique          |          | NK | -do- |
|             | m. 3D printing                          |          | NK | -do- |
| <b>VII</b>  | Casting defects                         | <b>1</b> |    |      |
|             | Types of casting defects                |          | MK | -do- |
| <b>VIII</b> | Dental Ceramics                         | <b>2</b> |    |      |
|             | a. Uses                                 |          | NK | -do- |
|             | b. Evaluation                           |          | NK | -do- |
|             | c. Classification                       |          | MK | -do- |
|             | d. Basic constituents                   |          | MK | -do- |
|             | e. Manufacture porcelain systems        |          | DK | -do- |
|             | f. Metal ceramic restorations           |          | MK | -do- |
| <b>IX</b>   | Dental Ceramics                         | <b>1</b> |    |      |
|             | a. All ceramic restorations             |          | DK | -do- |
|             | b. Recent advances                      |          | DK | -do- |
| <b>X</b>    | Die Materials                           | <b>1</b> |    |      |
|             | a. Types                                |          | MK | -do- |
|             | b. Requirements alternate die materials |          | MK | -do- |

|             |                                          |          |    |      |
|-------------|------------------------------------------|----------|----|------|
|             | c. Die stone                             |          | MK | -do- |
|             | d. Electroformed dies                    |          | DK | -do- |
|             | e. Polyurethane dies                     |          | DK | -do- |
| <b>XI</b>   | Die Materials                            | <b>1</b> |    |      |
|             | a. Epoxy resin dies                      |          | DK | -do- |
|             | b. Refractory cast, and<br>divestment    |          | MK | -do- |
| <b>XII</b>  | Finishing & Polishing                    | <b>1</b> |    |      |
|             | a. Define abrasives                      |          | MK | -do- |
|             | b. Classifications                       |          | MK | -do- |
|             | c. Burs                                  |          | DK | -do- |
|             | d. Polishing procedure                   |          | DK | -do- |
|             | e. Dentifrices                           |          | MK | -do- |
|             | f. Prophylactic abrasives                |          | DK | -do- |
|             | g. Denture liners                        |          | DK | -do- |
| <b>XIII</b> | Dental Implants Materials                | <b>1</b> |    |      |
|             | a. Define types Materials                |          | DK | -do- |
|             | b. Parts                                 |          | NK | -do- |
|             | c. Osseointegration implant<br>coating's |          | NK | -do- |
| <b>XIV</b>  | Miscellaneous                            | <b>1</b> |    |      |
|             | a. Maxillofacial prosthetic<br>materials |          | NK | -do- |

|           |                      |          |    |      |
|-----------|----------------------|----------|----|------|
| <b>XV</b> | Miscellaneous        | <b>1</b> |    |      |
|           | a. Denture adhesives |          | NK | -do- |
|           | b. Liners            |          | NK | -do- |

**Curriculum and Course Content of Dental Materials for II BDS  
(Conservative) Theory – 25 Hours**

| SL No | Topics                                          | Hours | Must know/Desirable to know/ Nice to know | Suggested teaching methodology            |
|-------|-------------------------------------------------|-------|-------------------------------------------|-------------------------------------------|
| 1.    | Overview of Dental Material                     | 01    | MK                                        | Didactic lecture with ICT enabled classes |
| 2.    | Zinc Phosphate + Zinc Silico Phosphate Cement   | 01    | MK                                        |                                           |
| 3.    | Zinc Polycarboxylate Cement                     | 01    | MK                                        |                                           |
| 4.    | Zinc Oxide Eugenol                              | 01    | MK                                        |                                           |
| 5.    | Zinc Oxide Eugenol Modifications                | 01    | MK                                        |                                           |
| 6.    | Glass Ionomer Cement and its Modifications      | 03    | MK                                        |                                           |
| 7.    | Dental Amalgam                                  | 02    | MK                                        |                                           |
| 8.    | Amalgam Properties                              | 02    | MK                                        |                                           |
| 9.    | Mercury Management                              | 01    | MK                                        |                                           |
| 10.   | Liner and Bases , Varnish and Calcium hydroxide | 01    | MK                                        |                                           |
| 11.   | Resin Cement and Principles of cementations     | 01    | MK                                        |                                           |
| 12.   | Guttapercha                                     | 01    | MK                                        |                                           |
| 13.   | Composite Resin                                 | 03    | MK                                        |                                           |
| 14.   | Indirect Composites                             | 01    | MK                                        |                                           |
| 15.   | Dentin Bonding Systems                          | 02    | MK                                        |                                           |
| 16.   | Direct Filling Gold                             | 02    | DK                                        |                                           |
| 17.   | Silicate and copper Cement                      | 01    | MK                                        |                                           |

| Sr. No. | Topic - PRACTICALS                                                                                                                                                                                                                                                                                                                                                                                     | Teaching hours | Must know / Desirable to know / Nice to Know | Suggested teaching methodology                                                 |
|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------------------------------------|--------------------------------------------------------------------------------|
| I       | Impression materials                                                                                                                                                                                                                                                                                                                                                                                   | 50             | MK                                           | Demonstration<br><br>Interactive small group discussion<br>Pre-recorded videos |
|         | 1. Manipulation of Impression compound.<br>2. Manipulation of irreversible hydrocolloid.<br>3. Manipulation of zinc oxide eugenol and making impression and identifying setting time and defects.<br>4. Demonstration of Resin Cement<br>5. Manipulation of Calcium hydroxide                                                                                                                          |                |                                              |                                                                                |
| II      | Manipulation and curing of self and heat cure acrylic resin                                                                                                                                                                                                                                                                                                                                            | 20             | MK                                           | Demonstration<br><br>Interactive small group discussion<br>Pre-recorded videos |
| III     | <b>Dental Cements</b><br><br><b>Manipulation of Dental cements</b><br>Zinc Phosphate, Zinc Poly carboxylate<br>Zinc Oxide Eugenol<br><b>IRM Glass Ionomer Cement</b><br>and its modifications, Resin Cement,<br>Dental Varnish and Calcium hydroxide<br><b>Cement which are mixed for Base or Restorative consistency should be filled in a prepared cavity or extracted natural tooth / Typhodont</b> | 50             | MK                                           | Demonstration<br><br>Interactive small group discussion<br>Pre-recorded videos |
| IV      | <b>Dental Amalgam</b><br><br><b>Manipulation of Dental Amalgam</b><br>Manual trituration and condensation into a prepared cavity                                                                                                                                                                                                                                                                       | 30             | MK                                           | Demonstration -<br>Interactive small group discussion<br>-Pre-recorded videos  |

|             |                                                 |           |    |                                                                                    |
|-------------|-------------------------------------------------|-----------|----|------------------------------------------------------------------------------------|
| <b>V</b>    | Manipulation of Agar                            | <b>10</b> | NK | Demonstration<br><br>Interactive small group discussion<br><br>Pre-recorded videos |
| <b>VI</b>   | Manipulation of Elastomeric impression material | <b>10</b> | DK | Demonstration<br><br>Interactive small group discussion<br><br>Pre-recorded videos |
| <b>VII</b>  | Manipulation of Composite Resins                | <b>10</b> | MK | Demonstration<br><br>Interactive small group discussion<br><br>Pre-recorded videos |
| <b>VIII</b> | Casting machines and casting procedure          | <b>10</b> | DK | Demonstration<br><br>Interactive small group discussion<br><br>Pre-recorded videos |
| <b>IX</b>   | Porcelain furnace and ceramic build-up          | <b>10</b> | NK | Demonstration<br><br>Interactive small group discussion<br><br>Pre-recorded videos |

## SCHEME OF EXAMINATION

**For 2nd Year B.D.S.**

**A Theory : 70 Marks : Duration of paper – 3 Hours**

| CONTENTS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Type of Questions & Marks    | Marks     |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|-----------|
| <b>Multiple Choice Questions</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | M.C.Q. 20 x 1 Mark           | <b>20</b> |
| <b>Conservative Dentistry topics</b> <ol style="list-style-type: none"> <li>1. Dental cements.</li> <li>2. Dental Amalgam</li> <li>3. Dental Bonding systems</li> <li>4. Composite Resins</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                     | Long Essays<br>1 x 10 marks  | <b>10</b> |
| <b>Prosthodontics topics</b> <ol style="list-style-type: none"> <li>1. Impression materials.</li> <li>2. Gypsum products.</li> <li>3. Denture base resins.</li> <li>4. Dental Porcelain.</li> <li>5. Investment materials.</li> <li>6. Base metal casting alloys.</li> <li>7. Casting procedures.</li> <li>8. Waxes &amp; base plate materials.</li> <li>9. Metals and alloys.</li> <li>10. Casting gold alloys.</li> <li>11. Base metal casting alloys.</li> </ol>                                                                                                                                      | Long Essays<br>1 x 10 marks  | <b>10</b> |
| <b>Conservative and Prosthetic topics</b> <ol style="list-style-type: none"> <li>1. Structure and behavior of matter</li> <li>2. Introduction to dental materials</li> <li>3. Dental cements</li> <li>4. Dental Amalgam</li> <li>5. Dental Bonding systems</li> <li>6. Composite Resins</li> <li>7. Direct filling Gold</li> <li>8. Waxes &amp; base plate materials.</li> <li>9. Metals and alloys.</li> <li>10. Finishing and polishing material.</li> <li>11. Dental Implant materials.</li> <li>12. Casting gold alloys.</li> <li>13. Impression materials.</li> <li>14. Gypsum products.</li> </ol> | Short Essays<br>3 x 10 marks | <b>30</b> |

|                                                                                                                                                                                                                     |  |           |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-----------|
| 15. Denture base resins.<br>16. Dental Porcelain.<br>17. Investment materials.<br>18. Base metal casting alloys.<br>19. Casting procedures.<br>20. Materials used in orthodontia<br>21. Dental casting investments. |  |           |
| <b>Grand total</b>                                                                                                                                                                                                  |  | <b>70</b> |

## **B. Practicals : 90 Marks**

- a. 15 Spotters carrying 1 mark each : 15x1 = 15 marks**
- b. Major exercises : 20x1 = 20 Marks**
- Manipulation of impression compound and preparation of a plaster cast of U/L arch.
- c. Minor Exercises (Any one of them 20x1 = 20 Marks)**
- Manipulation of alginate impression material.
  - Manipulation of Zinc Oxide Eugenol impression paste and making of thumb impression.
- d. Major exercises : 20x1 = 20 Marks**
- Manual Trituration of Dental Amalgam and Condensation into the prepared cavity on extracted natural tooth / typhodont.
- e. Minor Exercises ( Any one of them 15x1 = 15 marks)**
- Manipulation of any of the following cements
  - Zinc Phosphate Cement (Luting and Base consistency)
  - Zinc Polycarboxylate Cement (Luting and base consistency)
  - Zinc Oxide Eugenol (Luting and Restorative consistency)
  - Glass Ionomer Cement Type I/II (Luting / base / Restorative Consistency)

(Cements which are mixed for Base or Restorative consistency should be filled in prepared cavity on the extracted natural tooth / typhodont.

**Total = 90 Marks**



| <b>THEORY : 100 MARKS</b>             | <b>PRACTIAL : 100 Marks</b>        |
|---------------------------------------|------------------------------------|
| Theory examination : 70 Marks         | Practical Exam : 90                |
| Viva Voce : 20 Marks                  | Marks                              |
| Theory Internal Assessment : 10 Marks | Practical Internal Assessment : 10 |
|                                       | Marks                              |

**RECOMMENDED BOOKS :**

| <b>Sr no</b> | <b>Title</b>                                            | <b>Author</b>                                        | <b>Edition</b>   | <b>Year of publication</b> | <b>Publisher</b>          |
|--------------|---------------------------------------------------------|------------------------------------------------------|------------------|----------------------------|---------------------------|
| 1.           | Philips Science of Dental Materials                     | Shen, Rawls, Esquivel-Upshaw                         | 13 <sup>th</sup> | 2021                       | Elsevier, India, Pvt. Ltd |
| 2.           | Philips Science of Dental Materials South Asian edition | Shenoy, Nair                                         | 2 <sup>nd</sup>  | 2021                       | Elsevier, India, Pvt. Ltd |
| 3.           | Craigs Restorative Dental Materials                     | Carmen Pfeifer<br>Jack Ferracane<br>Ronald Sakaguchi | 15 <sup>th</sup> | 2018                       | Elsevier                  |
| 4.           | Restorative dental materials – South Asian edition      | Craigs, R.<br>Sakaguchi, J<br>Feraccane, J<br>Powers | 1st              | 2018                       | Elsevier                  |

## **2.2.4 PRE CLINICAL PROSTHODONTICS AND CROWN & BRIDGE**

### **GOAL:**

Goal is to emphasize on basic principles of teeth arrangement as related to natural dentition and to provide certain criteria for teeth selection and arrangement. It also enables the student to utilize these concepts for their clinical and laboratory applications.

### **OBJECTIVES:**

#### **a) Knowledge**

At the end of the II BDS course the student should be able to:

Present basic principles of teeth arrangement and provide certain criteria of selection of teeth and arrangement in relation to surrounding oral structures.

#### **b) Skills**

At the end of the II BDS course the student is expected to :

1. Acquire basic skills of teeth arrangement in class I, class II, class III molar relationship.
2. Possess skills of teeth selection.

### Course Outcomes - Practical

| At the end of Pre-Clinical Prosthodontics course,<br>the students should be able to: |                                                                                                                                |
|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| P 2.2.4.1                                                                            | Recall and explain appropriate terminologies and components pertaining to the rehabilitation of various edentulous conditions. |
| P 2.2.4.2                                                                            | Summarize the properties and use of various materials used in Prosthodontics.                                                  |
| P 2.2.4.3                                                                            | Describe and demonstrate effective use of various instruments and equipment's involved in the fabrication of the prosthesis.   |
| P 2.2.4.4                                                                            | Demonstrate various preclinical and laboratory procedures to fabricate complete and partial dentures.                          |
| P 2.2.4.5                                                                            | Use materials carefully without causing any injury to the patient.                                                             |
| P 2.2.4.6                                                                            | Manipulate required dental materials for complete and partial dentures without any wastage.                                    |

### Matrix of Programme Outcome & Course Outcome (POCO) - Practical

| Course Outcome       | PO1        | PO2        | PO3      | PO4      | PO5        | PO6        | PO7        |
|----------------------|------------|------------|----------|----------|------------|------------|------------|
| P 2.2.4.1            | 2          | 2          | 2        | 2        | 1          | 2          | 2          |
| P 2.2.4.2            | 2          | 2          | 2        | 2        | 1          | 2          | 2          |
| P 2.2.4.3            | 3          | 3          | 2        | 2        | 2          | 1          | 3          |
| P 2.2.4.4            | 3          | 3          | 2        | 2        | 2          | 2          | 3          |
| P 2.2.4.5            | 3          | 3          | 2        | 2        | 2          | 2          | 3          |
| P 2.2.4.6            | 3          | 2          | 2        | 2        | 2          | 1          | 2          |
| <b>Average Score</b> | <b>2.5</b> | <b>2.5</b> | <b>2</b> | <b>2</b> | <b>1.5</b> | <b>1.5</b> | <b>2.5</b> |

### Course Outcomes - Practical

| At the end of Pre-Clinical Operative Dentistry course,<br>the students should be able to: |                                                                                                       |
|-------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|
| P 2.2.5.1                                                                                 | Utilize appropriate knowledge of dental terminology and normal anatomy and morphology of teeth.       |
| P 2.2.5.2                                                                                 | Apply etiology and pathophysiology of dental caries in diagnosis, prevention and treatment planning.  |
| P 2.2.5.3                                                                                 | Apply usage of dental instruments [Hand & Rotary] in management of such lesions on simulation models. |
| P 2.2.5.4                                                                                 | Select, manipulate & use of various restorative dental materials.                                     |
| P 2.2.5.5                                                                                 | Use skills necessary to deliver quality treatment to patients.                                        |

### Matrix of Programme Outcome & Course Outcome (POCO) - Practical

| Course Outcome       | PO1        | PO2        | PO3      | PO4        | PO5      | PO6        | PO7        |
|----------------------|------------|------------|----------|------------|----------|------------|------------|
| P 2.2.5.1            | 3          | 1          | 1        | 1          | 1        | 2          | 1          |
| P 2.2.5.2            | 2          | 2          | 1        | 1          | 1        | 1          | 1          |
| P 2.2.5.3            | 2          | 2          | 1        | 2          | 1        | 1          | 1          |
| P 2.2.5.4            | 2          | 2          | 1        | 2          | 1        | 1          | 1          |
| P 2.2.5.5            | 2          | 2          | 1        | 1          | 1        | 2          | 2          |
| <b>Average Score</b> | <b>2.2</b> | <b>1.8</b> | <b>1</b> | <b>1.4</b> | <b>1</b> | <b>1.4</b> | <b>1.2</b> |

**Curriculum and Course Content for I BDS**  
**Practical – 100 Hours**

| Sr. No. | Topic - PRACTICAL                                                                                                                                                                                                      | Teaching hours | Must know / Desirable to know / Nice to Know | Suggested teaching methodology                                                                     |
|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------------------------------------|----------------------------------------------------------------------------------------------------|
| I       | Exercise – 1 Marking the maxillary & mandibular landmarks<br>1. Making of maxillary & mandibular dental cast with dental plaster<br>2. Marking of Maxillary landmark.<br>3. Marking of Mandibular landmark.            | 5              | MK                                           | -Demonstration<br>-Interactive small group discussion<br>-Pre-recorded videos<br>Hands on exercise |
| II      | Exercise – 2 Making of Primary impression ( Impression compound)<br>1. Tray selection for maxillary & mandibular metal dies<br>2. Making of maxillary primary impression<br>3. Making of mandibular primary impression | 8              | MK                                           | -Demonstration<br>-Interactive small group discussion<br>-Pre-recorded videos<br>Hands on exercise |
| III     | Exercise - 3 Beading & Boxing<br>Beading & boxing of maxillary primary impression<br>Beading & boxing of mandibular primary impression                                                                                 | 6              | DK                                           | -Demonstration<br>-Interactive small group discussion<br>-Pre-recorded Videos<br>Hands on exercise |
| IV      | Exercise – 4 Making of Primary Cast<br>1. Making of Maxillary Primary Cast with Dental Plaster<br>2. Making of Mandibular Primary Cast with Dental Plaster                                                             | 8              | MK                                           | -Demonstration<br>-Interactive small group discussion<br>-Pre-recorded Videos<br>Hands on exercise |
| V       | Exercise – 5 Spacer design<br>Maxillary spacer design<br>Mandibular spacer design                                                                                                                                      | 6              | DK                                           | -Demonstration<br>-Interactive small group discussion<br>-Pre-recorded Videos<br>Hands on exercise |
| VI      | Exercise - 6 Custom tray fabrication<br>1. Custom tray Fabrication on Maxillary Primary cast.<br>2. Custom tray Fabrication on Mandibular Primary cast.                                                                | 8              | DK                                           | -Demonstration<br>-Interactive small group discussion<br>-Pre-recorded videos<br>Hands on exercise |

|      |                                                                                                                                                                                                                                                             |           |    |                                                                                                    |
|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|----|----------------------------------------------------------------------------------------------------|
| VII  | Exercise – 7 Fabrication of Master Cast<br>1. Making of Maxillary Master cast with Dental Stone.<br>2. Making of Mandibular Master cast with Dental Stone.                                                                                                  | 6         | DK | -Demonstration<br>-Interactive small group discussion<br>-Pre-recorded videos<br>Hands on exercise |
| VIII | Exercise – 8 Fabrication of denture base on Ideal cast<br>1. Fabrication of maxillary denture base by Self cure acrylic resin with sprinkle on technique<br>2. Fabrication of mandibular denture base by Self cure acrylic resin with sprinkle on technique | 8         | MK | -Demonstration<br>-Interactive small group discussion<br>-Pre-recorded videos<br>Hands on exercise |
| IX   | Exercise – 9 Fabrications of Occlusal Rims<br>1. Fabrication of maxillary Occlusal Rim<br>2. Fabrication of mandibular Occlusal Rim                                                                                                                         | 8         | MK | -Demonstration<br>-Interactive small group discussion<br>-Pre-recorded videos<br>Hands on exercise |
| X    | Exercise – 10 Articulation<br>Articulation of maxillary & mandibular occlusal rims in Class – I molar relation.                                                                                                                                             | 7         | MK | -Demonstration<br>-Interactive small group discussion<br>-Pre-recorded videos<br>Hands on exercise |
| XIII | Exercise – 11 Arrangement of artificial teeth in Class – I molar relation                                                                                                                                                                                   | 20        | MK | -Demonstration<br>-Interactive small group discussion<br>-Pre-recorded Videos<br>Hands on exercise |
| XIV  | Exercise - 12 Acrylization of Trial Denture with class I molar relation.                                                                                                                                                                                    | 10        | DK | -Demonstration<br>-Interactive small group discussion<br>-Pre-recorded Videos<br>Hands on exercise |
| XV   | Exercise – 13 Early Clinical Exposure                                                                                                                                                                                                                       | 2 ½ Hours | MK | -Demonstration<br>-Interactive small Group discussion                                              |

**Curriculum and Course Content for II BDS**  
**Theory – 25 Hours ; Practical – 200 Hours**

| <b>Sr. No.</b> | <b>Topic - THEORY</b>                                   | <b>Teaching hours</b> | <b>Must know / Desirable to know / Nice to Know</b> | <b>Suggested teaching methodology</b>                     |
|----------------|---------------------------------------------------------|-----------------------|-----------------------------------------------------|-----------------------------------------------------------|
| <b>I</b>       | Introduction to CD                                      | <b>1</b>              | <b>MK</b>                                           | -Didactic lectures in ICT enabled classrooms<br>-Seminars |
|                | Anatomical Landmarks Maxilla                            | <b>2</b>              | <b>MK</b>                                           | -Didactic lectures in ICT enabled classrooms<br>-Seminars |
|                | Anatomical Landmarks Mandible                           | <b>2</b>              | <b>MK</b>                                           | -Didactic lectures in ICT enabled classrooms<br>-Seminars |
|                | Posterior Palatal Seal area                             | <b>2</b>              | <b>DK</b>                                           | -Didactic lectures in ICT enabled classrooms<br>-Seminars |
|                | Diagnosis & Treatment Planning                          | <b>2</b>              | <b>MK</b>                                           | -Didactic lectures in ICT enabled classrooms<br>-Seminars |
|                | Impression making in CD                                 | <b>3</b>              | <b>MK</b>                                           | -Didactic lectures in ICT enabled classrooms<br>-Seminars |
|                | Maxilla Mandibular Relation<br>Orientation Jaw Relation | <b>2</b>              | <b>MK</b>                                           | -Didactic lectures in ICT enabled classrooms<br>-Seminars |
|                | Vertical Jaw Relation                                   | <b>2</b>              | <b>MK</b>                                           | -Didactic lectures in ICT enabled classrooms<br>-Seminars |
|                | Horizontal Jaw Relation                                 | <b>2</b>              | <b>MK</b>                                           | -Didactic lectures in ICT enabled classrooms<br>-Seminars |

|  |                         |   |    |                                                           |
|--|-------------------------|---|----|-----------------------------------------------------------|
|  | Articulators & face bow | 2 | DK | -Didactic lectures in ICT enabled classrooms<br>-Seminars |
|  | Teeth Selection in CD   | 1 | DK | -Didactic lectures in ICT enabled                         |
|  | Try In of CD            | 1 | NK | -Didactic lectures in ICT enabled classrooms<br>-Seminars |
|  | Occlusion in CD         | 1 | DK | -Didactic lectures in ICT enabled classrooms<br>-Seminars |
|  | Processing of CD        | 2 | NK | -Didactic lectures in ICT enabled classrooms<br>-Seminars |

| Sr. No. | Topic - PRACTICAL                                                       | Teaching hours | Must know / Desirable to know / Nice to Know | Suggested teaching methodology                        |
|---------|-------------------------------------------------------------------------|----------------|----------------------------------------------|-------------------------------------------------------|
| 1       | Arrangement of teeth in class I molar relation - 10 nos                 | 150            | MK                                           | -Demonstration<br>-Interactive small group discussion |
| 2       | Arrangement of teeth in class II molar relation - 01 nos.               | 20             | DK                                           | -Demonstration<br>-Interactive small group discussion |
| 3       | Arrangement of teeth in class III molar relation - 01 nos.              | 20             | DK                                           | -Demonstration<br>-Interactive small group discussion |
| 4       | Demonstration of Cast partial denture framework and casting procedures. | 10             | NK                                           | -Demonstration<br>-Interactive small group discussion |

**Note :**

Students shall submit one processed denture mounted on an articulator to present on university practical exam along with record book.



## **SCHEME OF EXAMINATION**

### **A. Practical Exercise: (Duration – 3 hrs) : 60 Marks**

Arrangement of teeth in class I relation, Waxing Carving, Polishing.

### **B. Viva – Voce : 20 Marks**

### **C. Internal Assessment : 20 Marks**

**Note :** As per DCI this subject has only Practical examination and no theory examination.

### **RECOMMENDED BOOKS:**

| <b>Sl. No.</b> | <b>Title</b>                                   | <b>Author</b> | <b>Edn</b>       | <b>Yr. of Publ.</b> | <b>Publisher</b>         |
|----------------|------------------------------------------------|---------------|------------------|---------------------|--------------------------|
| 1.             | Prosthodontic treatment of Edentulous patients | Boucher       | 12 <sup>th</sup> | 2004                | Mosby                    |
| 2.             | Syllabus of complete denture                   | Heartwell     | 5 <sup>th</sup>  | 1993                | Lea &Febiger             |
| 3.             | Theory and practice of fixed Prosthodontics    | Tylman        | 8 <sup>th</sup>  | 1993                | Ishiyaku EuroSouth Asian |
| 4.             | Removable partial denture                      | Mc Cracker    | 11 <sup>th</sup> | 2005                | CBS                      |
| 5              | Sciences of dental materials                   | Skinner       | 12 <sup>th</sup> | 2012                | W. B. Saunders Co.       |
| 6              | Dental materials Properties and manipulation   | Craig         | 14 <sup>th</sup> | 2018                | Mosby                    |

## 2.2.5 PRE CLINICAL CONSERVATIVE DENTISTRY

### Course Outcomes – Practical

| At the end of Pre-Clinical Operative Dentistry course,<br>the students should be able to: |                                                                                                       |
|-------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|
| P 2.2.5.1                                                                                 | Utilize appropriate knowledge of dental terminology and normal anatomy and morphology of teeth.       |
| P 2.2.5.2                                                                                 | Apply etiology and pathophysiology of dental caries in diagnosis, prevention and treatment planning.  |
| P 2.2.5.3                                                                                 | Apply usage of dental instruments [Hand & Rotary] in management of such lesions on simulation models. |
| P 2.2.5.4                                                                                 | Select, manipulate & use of various restorative dental materials.                                     |
| P 2.2.5.5                                                                                 | Use skills necessary to deliver quality treatment to patients.                                        |

### Matrix of Programme Outcome & Course Outcome (POCO) - Practical

| Course Outcome       | PO1        | PO2        | PO3      | PO4        | PO5      | PO6        | PO7        |
|----------------------|------------|------------|----------|------------|----------|------------|------------|
| P 2.2.5.1            | 3          | 1          | 1        | 1          | 1        | 2          | 1          |
| P 2.2.5.2            | 2          | 2          | 1        | 1          | 1        | 1          | 1          |
| P 2.2.5.3            | 2          | 2          | 1        | 2          | 1        | 1          | 1          |
| P 2.2.5.4            | 2          | 2          | 1        | 2          | 1        | 1          | 1          |
| P 2.2.5.5            | 2          | 2          | 1        | 1          | 1        | 2          | 2          |
| <b>Average Score</b> | <b>2.2</b> | <b>1.8</b> | <b>1</b> | <b>1.4</b> | <b>1</b> | <b>1.4</b> | <b>1.2</b> |

**Curriculum and Course Content for II BDS**  
**Theory – 25 Hours ; Practical – 200 Hours**

| Sr. No. | Topic - THEORY                                                                                                                                                           | Teaching hours | Must know / Desirable to know / Nice to Know | Suggested teaching methodology |
|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------------------------------------|--------------------------------|
| 1.      | Fundamentals of tooth preparation                                                                                                                                        | 02             | MK                                           | Didactic lectures              |
| 2.      | Caries – Definition, Etiology, Classification, Theories, Diagnosis, Treatment and Prevention                                                                             | 03             | MK                                           | Didactic lectures              |
| 3.      | Various Chair side Positions                                                                                                                                             | 01             | MK                                           | Didactic lectures              |
| 4.      | Instruments(Hand cutting) Classifications, Nomenclature, Design, Formula, Care, Grasp, Rest                                                                              | 02             | MK                                           | Didactic lectures              |
| 5.      | Rotary cutting instruments-Burs, Diamond points, Design and Use                                                                                                          | 02             | MK                                           | Didactic lectures              |
| 6.      | Isolation –Classification, Different aids used, Rubber dam kit                                                                                                           | 02             | MK                                           | Didactic lectures              |
| 7.      | Matrices and Retainers                                                                                                                                                   | 01             | MK                                           | Didactic lectures              |
| 8.      | Wedges and Separators                                                                                                                                                    | 01             | MK                                           | Didactic lectures              |
| 9.      | Pulp Protection                                                                                                                                                          | 02             | MK                                           | Didactic lectures              |
| 10.     | Inlay-Definitions (Inlay, Onlay, Crown), Indications, Advantages, Disadvantages, Principles of cavity preparation, Wax pattern fabrication (Direct and Indirect methods) | 02             | DK                                           | Didactic lectures              |
| 11.     | Anterior aesthetic restorative materials – Composites, GIC, Compomers, Ceramics                                                                                          | 03             | DK                                           | Didactic lectures              |
| 12.     | Management of Deep Carious Lesions-Indirect pulp capping, Direct pulp capping, Pulpotomy                                                                                 | 02             | MK                                           | Didactic lectures              |
| 13.     | Introduction to Endodontics-Access cavity preparation and brief introduction of root canal instruments & materials                                                       | 02             | DK                                           | Didactic lectures              |

| Sr. No. | Topic - PRACTICALS                    |                       |                       | Teaching hours | Must know / Desirable to know / Nice to Know | Suggested teaching methodology |
|---------|---------------------------------------|-----------------------|-----------------------|----------------|----------------------------------------------|--------------------------------|
| 1.      | <b>Preparations On Plaster Models</b> |                       |                       | 20             |                                              |                                |
|         | <b>Cavities</b>                       | <b>Preparation</b>    | <b>Restorations</b>   |                |                                              |                                |
|         | Class – I                             | 4 With 2 Extensions   | Wax                   |                | MK                                           | Discussion & Demonstration     |
|         | Class – II                            | 4                     | Wax                   |                | MK                                           | ''                             |
| 2.      | Preparations on Extracted teeth :     |                       |                       | 40             |                                              |                                |
|         | <b>Cavities</b>                       | <b>Preparation</b>    | <b>Material</b>       |                |                                              |                                |
|         | Class – I                             | 4 with 2 extension    | Silver amalgam        |                | MK                                           | Discussion & Demonstration     |
|         | Class – II                            | 4                     | Silver amalgam        |                | MK                                           | ''                             |
|         | Class– V                              | 2                     | GIC                   |                | MK                                           | ''                             |
| 3.      | Preparations on Typhodont Teeth       |                       |                       | 140            |                                              |                                |
|         | <b>Cavities</b>                       | <b>Preparation</b>    | <b>Material</b>       |                |                                              |                                |
|         | Class –I                              | 2                     | Silver-amalgam        |                | MK                                           | Discussion & Demonstration     |
|         | Class –I Extension                    | 2                     | Silver-amalgam        |                |                                              | ''                             |
|         | Class –II                             | 6 MO<br>6 DO<br>2 MOD | Silver-amalgam        |                | MK                                           | ''                             |
|         | Class I                               | 2                     | Light cured Composite |                | MK                                           | ''                             |
|         | Class V                               | 4                     | GIC                   |                | MK                                           | Discussion & Demonstration     |
|         | INLAY (Till cementation)              |                       |                       |                |                                              |                                |

|    |                                                                                                                   |          |            |  |    |                            |
|----|-------------------------------------------------------------------------------------------------------------------|----------|------------|--|----|----------------------------|
|    | Class –II                                                                                                         | <b>2</b> | Cast Metal |  | DK | Discussion & Demonstration |
| 4. | <b>Demonstrations – Extracted Teeth</b>                                                                           |          |            |  | DK |                            |
|    | 1. Pulp Capping –Direct and Indirect                                                                              |          |            |  | DK | Demonstration              |
|    | 2. Root Canal Access Cavity opening on Central incisor                                                            |          |            |  | NK | Demonstration              |
|    | 3. Instrumentation and Obturation of root canal                                                                   |          |            |  | NK | Demonstration              |
| 5. | <b>Spotters</b><br>Matrices and retainers, Dental Materials, Instruments, Isolation kit, Endodontic Armamentarium |          |            |  | MK | Discussion                 |

## **SCHEME OF EXAMINATION**

### **A University Practicals : 60 Marks**

#### **Practical exercise no 1: 10 marks**

Spotters :10 Nos, Marks 01 Each, Time : 02 Minutes Each Spotters

- a. Hand instruments used to prepare cavity and restorative materials
- b. Identification of Root Canal Instruments

#### **Practical exercise no.2 : 50 Marks**

Preparation of Class II Conventional cavity for Silver amalgam in Maxillary or Mandibular I or II Molar Tooth(Typhodont/Natural Tooth)

Cavity preparation 45 Minutes : 25 Marks

Lining and Matrix 15 Minutes : 10 Marks

Filling and Carving 30 Minutes : 15 Marks

### **B. University Viva Voce : 20 Marks**

### **C. Internal Assessment : 20 Marks**

**Total (A+B+C) : 100 Marks**

### **TEXT BOOKS RECOMMENDED**

| Sl. No | Title                                             | Author            | Edition       |
|--------|---------------------------------------------------|-------------------|---------------|
| 1      | Art & Science of Operative Dentistry              | Sturdevant        | V             |
| 2      | Principles & Practice of Operative Dentistry      | Charbeneau        | III           |
| 3      | Endodontic practice                               | Louis J .Grossman | XIII          |
| 4      | Sturdevant's Art & Science of Operative Dentistry | Andre V. Ritter   | II South Asia |

# COMMUNICATION SKILLS

## PREAMBLE

*Communication is the key to education, understanding and peace.*

## **Communication**

Oral communication is the process of expressing information or ideas by word of mouth. This book will help you to find out how you can improve your own oral communication abilities while dealing with patients and relatives. Great communication skills are your ticket to success in the clinical work in urban & rural set and academic. But have you ever been overcome by fear or anxiety prior to speaking in front of patients? Knowing when to choose oral communication and polishing your speaking skills can help you at every stage of your career.

‘Communication’ comes from Latin *commûnicâre*, meaning “to share” which is the purposeful activity of information exchange between two or more participants in order to convey or receive the intended meanings through a shared system of signs and semiotic rules.

Communication takes place inside and between three main subject categories: human beings, living organisms in general and communication-enabled devices (for example sensor networks and control systems). Communication in living organisms (studied in the field of biosemiotics) often occurs through visual, auditory, or biochemical means. Human communication is unique for its extensive use of language.

Human language can be defined as a system of symbols (sometimes known as lexemes) and the grammars (rules) by which the symbols are manipulated. The word “language” also refers to common properties of languages. Language learning normally occurs most intensively during human childhood. Most of the thousands of human languages use patterns of sound or gesture for symbols which enable communication with others around them. Languages tend to share certain properties, although there are exceptions. There is no defined line between a language and a dialect. The communication is two way process instead of one way.

The “information communication revolutions”:

1. Written communication first emerged through the use of pictographs. The pictograms were made in stone, hence written communication was not yet mobile.
2. The next step occurred when writing began to appear on paper, papyrus, clay, wax, etc. with common alphabets. Communication became mobile.
3. The final stage is characterized by the transfer of information through controlled waves of electromagnetic radiation (i.e., radio, microwave, infrared) and other electronic signals.

Communication is thus a process by which meaning is assigned and conveyed in an attempt to create shared understanding. This process, which requires a vast repertoire of skills in interpersonal processing, listening, observing, speaking, questioning, analyzing, gestures, and evaluating enables collaboration and cooperation.

Misunderstandings can be anticipated and solved through formulations, questions and answers, paraphrasing, examples, and stories of strategic talk. '*Good Communication is the bridge between confusion and clarity*'. Written communication can be clarified by planning follow-up talks on critical written communication as part of the everyday way of doing business. A few minutes spent talking in the present will save valuable time later by avoiding misunderstandings in advance. A frequent method for this purpose is reiterating what one heard in one's own words and asking the other person if that really was what was meant.

*'Communication works for those who work at it'.*

(compiled from <https://en.wikipedia.org/wiki/Communication>)

## **OBJECTIVES**

1. To formally impart education on communication skills.
2. To enhance the capacity of students in communicating with patients, relatives, colleagues and facilitators.
3. To conduct interactive session and workshop to augment the skills acquired.
4. To develop effective communication skills required in academics, practice of Dentistry and in general.

## **DURATION OF COURSE : 72 Hours**

Course will contain 3 phases

**Phase I** will be conducted during I BDS Course : Total 22 hours. (16 days)

**Phase II** will be conducted in II BDS : Total 18 hours. (16 days)

**Phase III** will be conducted in III and Final BDS : Total 32 hours – (16 days)

## **ELIGIBILITY**

1. Phase I will be for all I BDS Students.
2. Phase II will be for all II BDS Students.
3. Phase III will be for III and Final BDS students



## **LIST OF MODULES AND COURSE CONTENT**

### **\*\* Phase II \*\***

#### **Module IV : 10 Hours**

##### **Time management**

- Planning : Understanding the difference between urgent and important
- Time management skill
  - i) Delegate tasks
  - ii) Prioritize work
  - iii) Schedule task
  - iv) Set up deadlines
  - v) Avoid Procrastination
  - vi) Avoid stress
  - vii) Avoid multitasking
  - viii) Start Early
  - ix) Take regular breaks
  - x) Learn to say no
- Increase in effectiveness and efficiency

#### **Module V : 8 Hours**

1. Interactive Session and group activity with Resource Person and participants.
2. Oral presentations by the students.
3. Assessment of Log Book by Resource Person.

##### **Note :**

**Phase I will consist of modules I, II and III**

**Phase II will consist of modules IV & V**

**Phase III will consist of modules VI**

**Assessment Method**

1. Interactive Sessions will be graded throughout the programme.
2. At the end of Phase I the log book of activities will be assessed and signed off by the Resource Person.
3. At the end of Phase II the log book of activities will be assessed and signed off by the Resource Person and by the Principal.

**About the Resource Person**

- Resource person is a well-known trainer on communication and soft skills with deep knowledge and wide experience in areas of business communication, oral presentation and public speaking.

## **EARLY CLINICAL EXPOSURE**

### **Aim :**

As there is tectonic changes in Dental knowledge, skill, technology, and practice and with changes in the clinical environment, patients expectation, need for accountability of stakeholders, there is need for understanding these basis demand. Early effective approach to the learning and the preparation of learners will be of immense benefit.

### **Objectives :**

- To acquire knowledge about common dental diseases
- To assess knowledge pertaining to oral hygiene aids
- To know the status of dental disease in the community
- Orientation to several aspects of dental practice
- Introduction to clinical skills (history taking, oral examination)
- To learn communication skills, patients perspectives and aspects of professionalism
- To understand oral health and disease
- Orientation to community health education

## **EARLY CLINICAL EXPOSURE**

### **II BDS**

#### **Phase I – Sensitization Lecture : 2 hours (1 day)**

1. Research – Cross-sectional studies/Questionnaire studies
  - In-vitro studies
  - In-vivo studies
2. Paper/Poster
  - Presentation - Scientific Convention
  - Conferences – IDA
3. Publication – Preparation of article for publication in the Journal

**Phase II – Visit to Dental and other Laboratories : 5 hours (1 day)**

A group of 50 students each in two batches will be taken to :

1. Prosthodontics Laboratories
2. Oral Pathology and Microbiology Laboratories
3. Dr. Prabhakar Kore Basic Science Research Centre, Belagavi (BSRC)
4. National Institute of Traditional Medicine, Belagavi (RMRC/NITM)

**Phase III : 3 hours (1 day)**

In divided batches students will visit to all departments of Dentistry to observe the ongoing treatment procedures and to have more insight during surgical operation (OT) procedures.

**Evaluation of students participation :**

1. Attendance of students for every phase to be recorded
2. Recording in log book and preparation of summary report
3. Concerned Teacher in-charge to approve every phase
4. Final approval and completion certificate with grades by the HOD.

## **2.3.1. GENERAL MEDICINE**

### **Goal :**

The students should be in position to identify common medical disorders that are important for dentistry. He should be able to carry out dental treatment with co-existing medical disorders, he should be in position to identify, treat or refer emergencies in time.

### **OBJECTIVES :**

#### **a. Knowledge**

At the end of the III BDS course the student is expected to ;

1. Know the applied anatomy and physiology of systems
2. Understand the natural history of common medical diseases.
3. Should know relevant investigations to be ordered / sent.
4. Interpretation of investigation's.
5. Broad outline of principles of management
6. Drug interactions and drug induced complications
7. Pre-operative evaluations

#### **b. Skills**

At the end of III BDS expected to acquire

1. Communication skill
  - a. Good history taking
  - b. Counseling the patient about treatment out come and complications
2. Examination
  - a. General Physical examination
  - b. Systemic examination
3. Interpretation skill
  - a. Interpretation of important clinical finding
  - b. Interpretation of history

#### 4. Procedure skill

##### a. Cardiopulmonary resuscitation

Special emphasis should be given throughout on the importance of various diseases as applicable to dentistry e.g. indications and contraindications for anesthesia in oral and dental procedures in different diseases. A dental student should be taught in such a manner that he is able to record the pulse, blood pressure and be capable of suspecting by sight and superficial examination of the patient, diseases of the heart, lungs, kidneys, liver, GI tract, blood, etc. he should be capable of handling medical emergencies encountered in dental practice. Too much details and treatment aspects (therapeutics) should be avoided.

### Course Outcomes - Theory

| At the end of General Medicine course, the students should be able to: |                                                                                                                                                              |
|------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| T 2.3.1.1                                                              | Describe the applied anatomy and physiology of various systems of the human body.                                                                            |
| T 2.3.1.2                                                              | Describe the natural history of common medical diseases. Broad outline of principles of management and the drug interactions and drug induced complications. |
| T 2.3.1.3                                                              | Describe & interpret investigations relevant to most common diseases.                                                                                        |
| T 2.3.1.4                                                              | Describe lifestyle diseases like diabetes, hypertension and ischemic heart disease                                                                           |

### Matrix of Programme Outcome & Course Outcome (POCO) – Theory

| Course Outcomes      | PO1        | PO2      | PO3        | PO4      | PO5        | PO6      | PO7        |
|----------------------|------------|----------|------------|----------|------------|----------|------------|
| T 2.3.1.1            | 1          | 2        | 1          | 2        | 1          | 2        | 1          |
| T 2.3.1.2            | 2          | 2        | 2          | 2        | 2          | 2        | 2          |
| T 2.3.1.3            | 2          | 2        | 2          | 2        | 1          | 2        | 2          |
| T 2.3.1.4            | 2          | 2        | 2          | 2        | 2          | 2        | 2          |
| <b>Average Score</b> | <b>1.7</b> | <b>2</b> | <b>1.7</b> | <b>2</b> | <b>1.5</b> | <b>2</b> | <b>1.7</b> |

### Course Outcomes - Clinical

| At the end of General Medicine course, the students should be able to: |                                                                                                        |
|------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|
| C 2.3.1.1                                                              | Record proper history and counsel the patient about treatment outcomes and complications.              |
| C 2.3.1.2                                                              | Perform systematic general physical examination, systemic examination & diagnose the common condition. |
| C 2.3.1.3                                                              | Identify medical emergencies and provide primary care & offer timely referral to higher centers        |
| C 2.3.1.4                                                              | Manage medical emergencies like syncope, anaphylaxis and perform cardio pulmonary resuscitation        |

### Matrix of Programme Outcome & Course Outcome (POCO) - Clinical

| Course Outcomes      | PO1        | PO2      | PO3      | PO4        | PO5        | PO6      | PO7      |
|----------------------|------------|----------|----------|------------|------------|----------|----------|
| C 2.3.1.1            | 1          | 2        | 2        | 1          | 2          | 2        | 2        |
| C 2.3.1.2            | 2          | 2        | 2        | 2          | 2          | 2        | 2        |
| C 2.3.1.3            | 2          | 2        | 2        | 2          | 1          | 2        | 2        |
| C 2.3.1.4            | 2          | 2        | 2        | 1          | 1          | 2        | 2        |
| <b>Average Score</b> | <b>1.7</b> | <b>2</b> | <b>2</b> | <b>1.5</b> | <b>1.5</b> | <b>2</b> | <b>2</b> |

**Curriculum and Course Content for III BDS**  
**Theory – 60 Hours ; Practical – 90 Hours**

| Sr. No. | Topic - THEORY                                                                                                                                                                                                               | Teaching hours | Must know /<br>Desirable to know /<br>Nice to Know | Suggested teaching methodology |
|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------------------------------------------|--------------------------------|
| 1.      | <b>Aims of medicine</b> : History taking, physical examination of the medical patient, diagnosis and management of disease and in general prognostication.                                                                   | 2              |                                                    |                                |
| 2.      | <b>Infections</b> : Enteric fever, Syphilis, Tuberculosis, Diphtheria, Malaria, Viral hepatitis, HIV, Herpes simplex, Herpes zoster, Mumps. Fungal infections of oral cavity – candidiasis.                                  | 5              |                                                    |                                |
| 3.      | <b>GIT</b> : Stomatitis, Gingival hyperplasia, Dysphagia, Acid peptic disease, Jaundice, Acute and chronic hepatitis, Cirrhosis of liver - Ascitis, portal hypertension, Amoebiasis, Tender hepatomegaly, hepatotoxic drugs. | 5              |                                                    |                                |
| 4.      | <b>C.V.S</b> : Acute rheumatic fever, valvular heart disease, hypotension, ischemic heart disease (myocardial infarction), infective endocarditis, common arrhythmias, classification of congenital heart disease.           | 7              |                                                    |                                |
| 5.      | <b>Respiratory system</b> : Applied anatomy and physiology of RS, pneumonia, COPD, pulmonary tuberculosis, bronchial asthma, pleural effusion, acute respiratory tract infections, bronchiectasis, lung abscess.             | 5              |                                                    |                                |



|     |                                                                                                                                                                       |   |    |  |
|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|----|--|
| 6.  | <b>Hematology</b> : Hematopoiesis, Anaemias, Clotting and bleeding disorders, Acute and chronic myeloid leukemias, agranulocytosis and neutropenia, thrombocytopenia. | 6 |    |  |
| 7.  | <b>Renal system</b> : Acute Nephritis and ARF, Nephrotic syndrome, UTI.                                                                                               | 4 |    |  |
| 8.  | <b>Nutrition</b> : Balanced diet, PEM, Vitamin deficiency disease, calcium and phosphate metabolism.                                                                  | 4 |    |  |
| 9.  | <b>CNS</b> : Facial Palsy, Facial pain, Trigeminal neuralgia, Epilepsy, Headache including migraine.                                                                  | 5 |    |  |
| 10. | <b>Endocrine and Metabolic Diseases</b> : Diabetes Mellitus, Acromegaly, hypothyroidism, hyperthyroidism, flurosis.                                                   | 5 |    |  |
| 11. | <b>Critical care medicine</b> : Syncope, Cardiac Pulmonary resuscitation (CPR), Anaphylaxis, Allergy, Angioneurotic edema.                                            | 3 |    |  |
| 12. | <b>Miscellaneous</b> : Adverse drug reactions, drug interactions, preoperative assessment of patients with medical diseases.                                          | 1 |    |  |
|     | a. Genetic diseases and medical ethics                                                                                                                                |   | DK |  |
|     | b. Infectious mononucleosis, Mumps, Measles, Rubella, leprosy, Organization and functions of the immune system                                                        |   | DK |  |
|     | c. Diarrhea and dysentery including malabsorption syndromes.                                                                                                          |   | DK |  |
|     | d. Heart failure, Fallot's tetralogy, ASD, VSD                                                                                                                        |   | DK |  |
|     | e. Lung cancer, sleep apnea, ARDs, respiratory failure                                                                                                                |   | DK |  |

|                   |                                                                                                                                                                                                            |   |    |  |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|----|--|
| f.                | Principles of blood and blood products transfusion, Thromboembolic disease, oncogenesis, hemolytic anemia, lymphomas, DIC, (disseminated intravascular coagulation)                                        |   | DK |  |
| g.                | Renal function test, CRF                                                                                                                                                                                   |   | DK |  |
| h.                | Osteomalacia, Osteoporosis                                                                                                                                                                                 |   | DK |  |
| i.                | Meningitis (acute and chronic), Anticonvulsants                                                                                                                                                            |   | DK |  |
| j.                | Addison's disease, Cushing's syndrome, parathyroid disease and calcium metabolism. Preoperative assessment of diabetic patients, acute adrenal deficiency                                                  |   | DK |  |
| k.                | Acute LVF, Cardiogenic Shock, Coma                                                                                                                                                                         |   | DK |  |
| <b>Psychology</b> |                                                                                                                                                                                                            | 8 |    |  |
| 1                 | Introduction to behavioural sciences : Definition Over lapping of social, behavioural and biological sciences,                                                                                             | 1 |    |  |
| 2                 | Pain Behavioural, emotional, autonomic, conscious and unconscious, components of pain Role of anxiety in worsening pain (vicious circle)                                                                   | 1 |    |  |
| 3                 | Interview technique Doctor-patient relation, listening and questioning Pre and post treatment counseling, probing of the fears, anxiety and anger, guilt in cases of extraction, surgery, HIV, cancer etc. | 1 |    |  |
| 4                 | Psychiatric disorders Classification of mental illnesses Aetiology – Biopsychological aspects                                                                                                              | 2 |    |  |

|  |                                                                                                                                                                                                                                            |   |    |  |
|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|----|--|
|  | <b>5</b> Neurotic disorders and psychosomatic : Definition, classification, aetiology, clinical manifestations (anxiety, depression, phobia, somatoform disorders, conversion reaction, adjustment reaction), stress, coping, alexithymia. | 2 |    |  |
|  | <b>6</b> Liaison psychiatry Dental care in mental retardation, dementia, Schizophrenia Eating disorders – deficiencies. Psychotropic drugs – side effects and drug interactions                                                            | 1 |    |  |
|  | (Also see Child Psychology under Paedodontics)                                                                                                                                                                                             |   |    |  |
|  | 1. Holistic approach to medical care                                                                                                                                                                                                       |   | DK |  |
|  | 2. Psychosis psychosomatic illnesses, alcoholism and drug dependence, dementia, illness behaviour, socio cultural aspects stressing on personalities (anxiusus, obsessive)<br>Management – stress                                          |   | DK |  |

| Sr. No. | Topic - THEORY                                                                                                                                                                                                                                                                                                                    | Teaching hours | Must know /<br>Desirable to know /<br>Nice to Know | Suggested teaching methodology |
|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------------------------------------------|--------------------------------|
| 1.      | 1. Infections - COVID-19.<br>2. RS - ARDS.<br>3. RS - Signs of tension pneumothorax.<br>4. CVS - Signs of heart failure.<br>5. CVS - Drugs used in Hypertension.<br>6. CNS - Clinical signs of meningitis.<br>7. Miscellaneous - Classification of antibiotics.                                                                   |                | MK                                                 |                                |
| 2.      | 1. COVID Vaccine.<br>2. Uses of Heparin and Warfarin.<br>3. Uses of Lab tests PT/INR, APTT.                                                                                                                                                                                                                                       |                | DK                                                 |                                |
| 3.      | 1. Radiological signs of COVID-19.<br>2. Uses of blood products like FFP, RDP & SDP.                                                                                                                                                                                                                                              |                | NK                                                 |                                |
| Sr. No. | Topic - CLINICAL                                                                                                                                                                                                                                                                                                                  | Teaching hours | Must know /<br>Desirable to know /<br>Nice to Know | Suggested teaching methodology |
|         | <b>Clinical : 90 Hours (Posting in a General Hospital )</b>                                                                                                                                                                                                                                                                       |                |                                                    |                                |
| 1.      | Ten complete cases must be written in a record book before the student takes the final examination                                                                                                                                                                                                                                |                |                                                    |                                |
| 2.      | The student must be able to take history, do general physical examination (including build, nourishment, pulse, BP, temperature, edema, cyanosis, clubbing, jaundice, lymphadenopathy, oral cavity) and be able to examine cardiovascular and respiratory systems, abdomen and the facial nerve and signs of meningeal irritation |                |                                                    |                                |

## SCHEME OF EXAMINATION

### A. Theory : 100 Marks

#### Distribution of Topics and Type of Questions

| Contents                                                                  | Type of questions and marks   | Marks |
|---------------------------------------------------------------------------|-------------------------------|-------|
| I. MCQ                                                                    | MCQ<br>20x1 Marks             | 20    |
| II. Long Essays :<br>Topics from serial No. 1 to 11 of the course content | Long Essays 2 x<br>10 Marks   | 20    |
| III. Short Answers From all the chapters                                  | Short Answers 10 x 3<br>Marks | 30    |

### B. Viva voce : 20 Marks

### C. Internal Assessment – Theory : 10 Marks, Practical : 10 Marks

### D. Clinical : 90 Marks

- i. Case History : 20 Marks
- ii. Clinical examination : 30 Marks
- iii. Investigation : 15 Marks
- iv. Diagnosis & D.D. : 15 Marks
- v. Management : 10 Marks

| THEORY : 100 Marks         |                         | PRACTICAL : 100 Marks         |            |
|----------------------------|-------------------------|-------------------------------|------------|
| Theory examination         | : 70 Marks              | Practical Examination         | : 90 Marks |
| Theory Internal Assessment | : 10 Marks              | Practical Internal Assessment | : 10 Marks |
| Viva Voce                  | : 20 Marks<br>100 Marks |                               | :100 Marks |

## RECOMMENDED BOOKS

| Sl. No. | Title                                                 | Author                             | Edn              | Year | Publishers Name and place of Publ | Price     |
|---------|-------------------------------------------------------|------------------------------------|------------------|------|-----------------------------------|-----------|
| 1       | Davidson's Principles of Practice of Medicine         | Edward Christopher                 | 18 <sup>th</sup> | 1991 | Churchill livingstone UK          | Rs 1168/- |
| 2       | Hutchison's Clinical Practice                         | Swash Michael                      | 21 <sup>st</sup> | 2001 | Churchill livingstone UK          | Rs 595/-  |
| 3       | Principles of Internal Medicine (for further reading) | Harrison                           | 15 <sup>th</sup> | 2001 | Mc. Graw Hill US                  | Rs 1895/- |
| 4       | API Textbook of Medicine                              | Association of Physicians of India |                  | 1999 | India                             | Rs 900/-  |

## 2.3.2 GENERAL SURGERY

### Goal :

The broad goal of teaching general surgery to BDS students is to provide comprehensive knowledge of common surgical conditions, to identify pathology and facilitate the overall management of the case especially applied to region of head and neck.

### Objective :

#### a. Knowledge

At the end of III BDS course, the students should be able to

- i. Acquire adequate knowledge of clinical methods in surgery.
- ii. Examine the patient and identify common surgical conditions which merit reference.

#### b. Skills :

At the end of III BDS Course, students is expected to

- i. Diagnose, know the management of common surgical problems encountered in general dental practice keeping in mind the expectations of society to receive the best possible treatment available wherever possible.
- ii. Acquire skill to carry out required surgical investigate procedure, to prevent and provide emergency care to manage complications if encountered.

### Course Outcomes - Theory

| At the end of General Surgery course, the students should be able to: |                                                                                                                                                                                              |
|-----------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| T 2.3.2.1                                                             | Describe etiology, pathophysiology and principle of diagnosis and treatment of common surgical conditions (I&D of abscess, debridement and suturing of open wounds) affecting head and neck. |
| T 2.3.2.2                                                             | Define asepsis, disinfection and sterilization along with the understanding of universal precautions and judicious use of antibiotics.                                                       |
| T 2.3.2.3                                                             | Understand and give initial management of shock/anaphylaxis.                                                                                                                                 |

### Matrix of Programme Outcome & Course Outcome (POCO) - Theory

| Course Outcomes      | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|----------------------|-----|-----|-----|-----|-----|-----|-----|
| T 2.3.2.1            | 2   | 2   | 1   | 1   | 1   | 1   | 1   |
| T 2.3.2.2            | 2   | 2   | 1   | 1   | 1   | 1   | 1   |
| T 2.3.2.3            | 2   | 2   | 1   | 1   | 1   | 1   | 1   |
| <b>Average Score</b> | 2   | 2   | 1   | 1   | 1   | 1   | 1   |

### Course Outcomes - Clinical

| At the end of <b>General Surgery</b> course, the students should be able to: |                                                                                                                                                                               |
|------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| C 2.3.2.1                                                                    | Record appropriate history, comprehensive Head and Neck examinations, ulcers & swellings examination, diagnosis and surgical treatment of common general surgical conditions. |
| C 2.3.2.2                                                                    | Record & document history and clinical examination findings of the patients.                                                                                                  |
| C 2.3.2.3                                                                    | Examine, diagnose and plan initial management of patients with shock / anaphylaxis.                                                                                           |
| C 2.3.2.4                                                                    | Examine, diagnose and plan treatment of common general surgery conditions like ulcer and swelling.                                                                            |
| C 2.3.2.5                                                                    | A apply splints, bandages and POP slabs                                                                                                                                       |
| C 2.1.2.6                                                                    | Perform I & D of abscesses & suturing of superficial wounds                                                                                                                   |



**Matrix of Programme Outcome & Course Outcome (POCO) – Clinical**

| <b>Course Outcomes</b> | <b>PO1</b> | <b>PO2</b> | <b>PO3</b> | <b>PO4</b> | <b>PO5</b> | <b>PO6</b> | <b>PO7</b> |
|------------------------|------------|------------|------------|------------|------------|------------|------------|
| C 2.3.2.1              | 3          | 3          | 3          | 2          | 2          | 2          | 3          |
| C 2.3.2.2              | 3          | 3          | 3          | 2          | 2          | 2          | 3          |
| C 2.3.2.3              | 3          | 2          | 3          | 2          | 2          | 2          | 3          |
| C 2.3.2.4              | 3          | 3          | 3          | 2          | 2          | 2          | 3          |
| C 2.3.2.5              | 2          | 2          | 3          | 2          | 2          | 2          | 2          |
| C 2.1.2.6              | 2          | 2          | 3          | 2          | 2          | 2          | 2          |
| <b>Average Score</b>   | <b>2.6</b> | <b>2.5</b> | <b>3</b>   | <b>2</b>   | <b>2</b>   | <b>2</b>   | <b>2.6</b> |

## Curriculum and Course Content for III BDS

**Theory – 60 Hours ; Practical – 90 Hours**

**Theory : 60 Hours :** (General Surgery : 55 Hrs Ophthalmology : 3 Hrs ENT : 2 Hrs)

General Surgery: 55 Hours

| Sr. No. | Topic - THEORY                                                                                                                                                           | Teaching hours | Must know / Desirable to know / Nice to Know | Suggested teaching methodology |
|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------------------------------------|--------------------------------|
| 1.      | Introduction - History of Surgery                                                                                                                                        | 1              | MK                                           | Didactic lecture               |
| 2.      | Principles of surgery, Tissue care, Asepsis and anti sepsis, Theatre technique, Sterilization, Suture materials, diathermy, Laser.                                       | 2              | MK                                           | Didactic lecture               |
| 3.      | Classification of Diseases, General Scheme of Studying a disease – Etio-pathology, Clinical features, Investigations, Diagnosis, Management, Complications and Prognosis | 1              | MK                                           | Didactic lecture               |
| 4.      | Wounds - Classification, Clinical Assessment, Treatment, Complications and Wound Healing.                                                                                | 1              | MK                                           | Didactic lecture / Case Based  |
| 5.      | Skin grafting                                                                                                                                                            | 1              | MK                                           | Didactic lecture               |
| 6.      | Inflammation and Infection – Definition, Etiology, Pathology and Classification                                                                                          | 1              | MK                                           | Didactic lecture               |
| 7.      | Acute Infections                                                                                                                                                         | 2              | MK                                           | Didactic lecture               |
|         | <ul style="list-style-type: none"> <li>Non-specific - Abscess, Cellulites,</li> </ul>                                                                                    |                |                                              |                                |
|         | <ul style="list-style-type: none"> <li>Specific - Aerobic and Anaerobic</li> </ul>                                                                                       |                |                                              |                                |

|     |                                                                                                                                                                                                                                   |     |    |                                  |
|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|----|----------------------------------|
|     | Carbuncle, Erysipelas, Anthrax, gas gangrene, Tetanus, Cancrum Oris and Ludwig's Angina.                                                                                                                                          |     |    |                                  |
| 8.  | Chronic Infections                                                                                                                                                                                                                | 1+1 | MK | Didactic lecture                 |
|     | <ul style="list-style-type: none"> <li>Nonspecific infections,</li> </ul>                                                                                                                                                         |     |    |                                  |
|     | <ul style="list-style-type: none"> <li>Specific infections like - Tuberculosis, Syphilis, Actinomycosis and Leprosy.</li> </ul>                                                                                                   |     |    |                                  |
| 9.  | Bacteraemia, Septicemia, Pyaemia and Toxaemia                                                                                                                                                                                     | 1   | MK | Didactic lecture                 |
| 10. | Hemorrhage - Classification, emergency management, definitive Treatment and assessment of blood loss.                                                                                                                             | 1   | MK | Didactic lecture                 |
| 11. | Bleeding Disorders – Haemophilia, Thrombocytopenia, Purpura Disseminated Intra Vascular Coagulation.                                                                                                                              | 1   | MK | Didactic lecture                 |
| 12. | Syncope, Shock, Cardiac Arrest - Causes, clinical features, haemodynamic changes, emergency care, monitoring, definitivetreatment, septic shock (warm shock) and Anaphylaxis.                                                     | 2   | MK | Didactic lecture                 |
| 13. | Ulcers - Definition, classification, etiology, · Specific ulcers – Tuberculous ulcers, Syphilitic ulcer, Marjolin's ulcer, Diabetic ulcer, malignant ulcers of Squamous cell carcinoma, Basal cell carcinoma, malignant melanoma. | 2   | MK | Didactic lecture /<br>Case Based |
| 14. | Sinus and fistula : Definition, Etiology and types                                                                                                                                                                                | 1   | MK | Didactic lecture /<br>Case Based |

|     |                                                                                                                                                                                                                                                                                                        |   |    |                                  |
|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|----|----------------------------------|
| 15. | Gangrene – Causes and management of gas gangrene, dry gangrene, moist gangrene.                                                                                                                                                                                                                        | 1 | MK | Didactic lecture /<br>Case Based |
| 16. | Cysts - Definition, Classification, Clinical Features, Complications, Management of common cysts - mucous cyst, sebaceous cyst, dermoid cyst, ranula, cystic hygroma, branchial cyst, thyroglossal cyst.                                                                                               | 1 | MK | Didactic lecture /<br>Case Based |
| 17. | Tumours – Definition and classification. Common benign and malignant tumours of head and neck region - lipoma, fibroma, neurofibroma, haemangioma, lymphangioma, osteoma, leukoplakia, squamous cell carcinoma, osteosarcoma, fibrosarcoma, Burkitt's Lymphoma Tumors of the jaw - Odontogenic tumors. | 4 | MK | Didactic lecture /<br>Case Based |
| 18. | Etiology of cancer, spread of cancer, early diagnosis, investigations, modalities of treatment and prognosis.                                                                                                                                                                                          | 2 | MK | Didactic lecture                 |
| 19. | Biopsy - Indications and Methods                                                                                                                                                                                                                                                                       | 1 | MK | Didactic lecture                 |
| 20. | Diseases of lymphatic and lymphnodes –                                                                                                                                                                                                                                                                 | 3 | MK | Didactic lecture                 |
|     | Lymphangitis - Acute and Chronic,                                                                                                                                                                                                                                                                      |   |    |                                  |
|     | Lymphoedema                                                                                                                                                                                                                                                                                            |   |    |                                  |
|     | Lymphadenopathy – Classification                                                                                                                                                                                                                                                                       |   |    | Case Based                       |

|     |                                                                                                                           |     |    |                                  |
|-----|---------------------------------------------------------------------------------------------------------------------------|-----|----|----------------------------------|
|     | Inflammatory - Acute and chronic, non-specific and specific tubercular lymphadenitis, cold abscess - collar stud abscess. |     |    | Case Based                       |
|     | Malignant Tumours Primary Hodgkin's Disease, Non Hodgkin's Lymphoma, secondary carcinoma                                  |     |    |                                  |
| 21. | Salivary Glands                                                                                                           | 2+1 | MK | Didactic lecture                 |
|     | Acute and Chronic Infections – Parotid Abscess, Salivary Calculus                                                         |     |    |                                  |
|     | Sjogren's syndrome                                                                                                        |     |    |                                  |
|     | Salivary Tumours – Classification, pleomorphic adenoma adenoid cystic carcinoma, adenolymphoma                            |     |    | Didactic lecture /<br>Case Based |
| 22. | Neck Swellings - Midline and lateral swellings,                                                                           | 2   | MK | Didactic lecture /<br>Case Based |
|     | Cystic and solid swellings.                                                                                               |     |    |                                  |
|     | Classification, differential diagnosis, treatment.                                                                        |     |    | Case Based                       |
| 23. | Head Injury management                                                                                                    | 1   | MK | Didactic lecture                 |
| 24. | Facio-maxillary injuries – Types and management                                                                           | 2   | MK | Didactic lecture                 |
| 25. | Management of severely injured patient – Resuscitation                                                                    | 1   | MK | Didactic lecture                 |
| 26. | Fractures and dislocations – Causes, general principles of Management, Healing of fractures and complications             | 1   | MK | Didactic lecture                 |
| 27. | Fractures of Mandible – Classification and management                                                                     | 1   | MK | Didactic lecture                 |

|     |                                                                                                                                                                                          |   |    |                                  |
|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|----|----------------------------------|
| 28. | Osteomyelitis of Mandible                                                                                                                                                                | 1 | MK | Didactic lecture                 |
| 29. | Thyroid Gland - Development, congenital anomalies, classification of goitres, acute and chronic Thyroiditis, Hashimoto's disease, Reidel's Thyroiditis, hyperthyroidism, hypothyroidism. | 2 | MK | Didactic lecture /<br>Case Based |
| 30. | Parathyroid – Hyperparathyroidism, Tetany                                                                                                                                                | 1 | MK | Didactic lecture                 |
| 31. | Tracheostomy- Indications, Steps of operation, Post operative care                                                                                                                       | 1 | MK | Didactic lecture                 |
| 32. | Burns and scalds                                                                                                                                                                         | 1 | MK | Didactic lecture                 |
| 33. | Development of face - Cleft lip and palate repair                                                                                                                                        | 1 | MK | Didactic lecture                 |
| 34. | Principles of Anaesthesia Basics                                                                                                                                                         | 1 | MK | Didactic lecture                 |
|     | Brief surgical anatomy of Pharynx, Oesophagus, Paranasal air sinuses. Diseases - related to obstructive ones in pharynx and Oesophagus.                                                  |   | DK |                                  |
|     | Introduction to – Oncology, Radiotherapy, Surgery and Genetic Engineering.                                                                                                               |   | DK |                                  |
|     | AIDS - Definition, clinical features and treatment                                                                                                                                       |   | DK |                                  |
|     | Blood Groups - Blood Transfusion - Complications of transfusion and Management and massive transfusion.                                                                                  | 1 | MK | Didactic lecture                 |
|     | Blood Fractions and their uses.                                                                                                                                                          | 1 | MK | Didactic lecture                 |

|  |                                                                                                                                   |   |    |                  |
|--|-----------------------------------------------------------------------------------------------------------------------------------|---|----|------------------|
|  | Diseases of Arteries and veins in general -- Varicose veins, Atherosclerosis, Aneurysm, Carotid body tumour                       | 2 | MK | Didactic lecture |
|  | Nervous System – Nerve Injury, Regeneration, Repair, Nerve Grafting. Diseases of Nerve - Facial Nerve Palsy, Trigeminal Neuralgia | 1 | MK | Didactic lecture |

### Ophthalmology (Theory : 3 Hours)

| Sr. No. | Topic - THEORY                                                                                                                                                                                                                                                                                                                                            | Teaching hours | Must know / Desirable to know / Nice to Know | Suggested teaching methodology |
|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------------------------------------|--------------------------------|
| 1.      | <b>Brief outline of Surgical Anatomy of Eye and Orbit</b><br><br>An outline of Ocular and Orbital Involvement in relation to Oral Diseases<br>: 1 Infections, inflammations of the eye like Uveitis, Exophthalmitis,<br><br>Optic Neuritis. Post – operative infections of the eye due to Dental sepsis. Invasion of tumours of Oral Cavity to the Orbit. | 1              |                                              |                                |
| 2.      | Clinical Assessment of Ocular / Orbital Involvement<br><br>Recognition of common symptoms and signs of ocular and orbital involvement like Ecchymosis of lids, sub-conjunctival haematoma, Conjunctival Chemosis, Proptosis, Diplopias                                                                                                                    | 1              |                                              |                                |

|    |                                                                                                                                                                                                                                                                                                                  |   |  |  |
|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|--|--|
| 3. | Management of superficial foreign bodies in the eye. Prevention by protection through eye wash with normal saline. Removal of superficial conjunctival foreign bodies. For corneal or intraocular foreign bodies to refer immediately<br><br>Timely referral to Ophthalmologist for any ocular / orbital problem | 1 |  |  |
|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|--|--|

### ENT (Theory : 2 Hours)

| Sr. No. | Topic - THEORY                                                                                                  | Teaching hours | Must know / Desirable to know / Nice to Know | Suggested teaching methodology |
|---------|-----------------------------------------------------------------------------------------------------------------|----------------|----------------------------------------------|--------------------------------|
| 1.      | Ear: Middle Ear Infection<br>Nose: Para nasal sinuses infection<br>Throat : Tonsillitis & peritonsillar abscess | 1              |                                              |                                |

### CLINICAL POSTINGS : 90 Hours

#### General hospital

| Sr. No. | Topic - THEORY                                                             | Teaching hours | Must know / Desirable to know / Nice to Know | Suggested teaching methodology |
|---------|----------------------------------------------------------------------------|----------------|----------------------------------------------|--------------------------------|
| a.      | Physical examination<br><br>- Inspection<br>- Palpitation<br>- Occultation |                |                                              |                                |
| b.      | Recording of case history                                                  |                |                                              |                                |
| c.      | Case presentation                                                          |                |                                              |                                |
| d.      | Discussion                                                                 |                |                                              |                                |



## SCHEME OF EXAMINATION

### A Theory : 100 Marks

Distribution of Topics and type of Questions :

| Contents                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Type of Questions and Marks  | Marks |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|-------|
| I. MCQ                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | MCQ<br>20 x 1 Marks          | 20    |
| II. Long Essay : From the following : -<br>Principles of surgery, Tissue care, asepsis and antisepsis theatre technique, sterilization, suture materials, diathermy, laser<br>Wounds – Classification, clinical assessment, treatment, complications, wound healing<br>Acute infections – Non-specific, and Specific – Aerobic and Anaerobic abscess, Cellulites, Carbuncle, Erysipelas, Anthrax, Gonorrhea, Gas gangrene, Tetanus, Cancrum oris, Ludwig's angina.<br>Bacteraemia, septicemia, pyaemia, toxemia<br>Hemorrhage – Classification, emergency management, definitive treatment, assessment of blood loss<br>Syncope, shock, cardiac arrest – causes, clinical features, haemodynamic changes, emergency care, monitoring, definitive treatment, septic shock (warm shock), anaphylaxis | Long Essays 2<br>X 10 marks  | 20    |
| III. Short Essay : Questions may be asked from all the above topics, other than the once from which the long essays are asked                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Short Essays<br>10 X 3 marks | 30    |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Total                        | 70    |

### B. Viva voce : 20 Marks

### C. Internal Assessment – Theory : 10 Marks, Practical : 10 Marks

### D. Clinical : 90 Marks

**Long Case : One which includes**

Case History : 15 Marks

Clinical examination : 30 Marks

Suggested investigation : 15 Marks

Diagnosis & DD : 20 Marks

Management : 10 Marks

| <b>THEORY : 100 Marks</b>  |                         | <b>PRACTICAL : 100 Marks</b>  |            |
|----------------------------|-------------------------|-------------------------------|------------|
| Theory examination         | : 70 Marks              | Practical Examination         | : 90 Marks |
| Theory Internal Assessment | : 10 Marks              | Practical Internal Assessment | : 10 Marks |
| Viva Voce                  | : 20 Marks<br>100 Marks |                               | :100 Marks |

**RECOMMENDED BOOKS**

| <b>Sl. No.</b> | <b>Author</b>   | <b>Title</b>                                                         | <b>Edn</b> | <b>Publisher</b>         | <b>Year of Pub</b> | <b>Price</b>             |
|----------------|-----------------|----------------------------------------------------------------------|------------|--------------------------|--------------------|--------------------------|
| 1              | Somen Das       | A Manual on Clinical surgery                                         | Latest     | Dr S. Das Calcutta       | 2021               | (Rs. 1258 Approximately) |
| 2              | Charles V. Mann | Bailey & Love's Short Practice of Surgery                            | Latest     | Oxford Press University  | 2018               | (Rs. 4950 Approximately) |
| 3              | Hamilton Bailey | Hamilton Bailey Demonstrations of Physical signs in clinical surgery | Latest     | Butterworth Heinemann UK | 2016               | (Rs. 1350 Approximately) |

## **REFERENCES BOOKS**

1. Oxford Text book of surgery
2. Text book of surgery by Devita
3. Surgery by Sebastin
4. Surgery by Somalal
5. Text book of Surgery by Chatterjee
6. Surgical Anatomy by Lee Mc Gregor
7. Diseases of Eye by Parson
8. Text book of Ophthalmology by Vasudev
9. E.N.T. Diseases by Mohammed Muqbool
10. E.N.T. Diseases by N. C. Day
11. E. N. T. Diseases by K. K. Ramalingam Anand Rao

### 2.3.3. ORAL PATHOLOGY AND MICROBIOLOGY

The Syllabus of Oral pathology and microbiology will be taught in II and III BDS. The University Examination will be held at the end the III Year

#### **GOAL:**

To make the learners aware of different pathologies involving the oral cavity and oral manifestations of systemic diseases.

#### **OBJECTIVES:-**

##### **a. Knowledge :**

At the end of Oral Pathology & Microbiology course , the student shall be able to comprehend

1. The different types of Pathologies processes, that involve the oral cavity
2. The manifestations of common diseases, their diagnosis & correlation with clinical pathological processes
3. An understanding of the oral manifestation of systemic diseases should help in correlating with the systemic physical signs & laboratory findings.
4. The student should understand the underling biological principles governing treatment of oral diseases.
5. The principles of certain basic aspects of Forensic Odontology

##### **b. Skills :**

1. Microscopic study of common lesions affecting oral cavity through microscopic Slides.
2. Study of the disease process by surgical specimens
3. Study of teeth anomalies /polymorphisms through tooth specimens & plaster casts
4. Microscopic study of plaque pathogens
5. Study of hematological preparation (blood films) of anaemias & leukemias
6. Basic exercise in Forensic Odontology such as histological methods of age estimation and appearance of teeth in injuries.

### Course Outcomes – Theory II & III BDS

| At the end of Oral Pathology and Microbiology course,<br>the students should be able to: |                                                                                                                                                                               |
|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| T 2.3.3.1                                                                                | Recall the appropriate definitions, terminologies related to pathologies affecting head and neck (Knowledge)                                                                  |
| T 2.3.3.2                                                                                | Describe the Characteristics and oral manifestations related to developmental disturbances of oral and paraoral structures (Comprehension)                                    |
| T 2.3.3.3                                                                                | Describe the clinical features, etiopathogenesis, histopathological features, treatment and diagnostic methods related to dental caries and its sequelae (Comprehension)      |
| T 2.3.3.4                                                                                | Describe the clinical features, etiopathogenesis, histopathological features treatment and diagnostic methods related to diseases affecting the head and neck (Comprehension) |
| T 2.3.3.5                                                                                | Describe the basic aspects of forensic odontology in respect to age estimation and identification (Knowledge)                                                                 |

### Matrix of Programme Outcome & Course Outcome (POCO) - Theory

| Course Outcomes      | PO1      | PO2        | PO3        | PO4        | PO5      | PO6      | PO7        |
|----------------------|----------|------------|------------|------------|----------|----------|------------|
| T 2.3.3.1            | 1        | 3          | 1          | 1          | 1        | 2        | 1          |
| T 2.3.3.2            | 3        | 3          | 2          | 2          | 1        | 2        | 2          |
| T 2.3.3.3            | 2        | 3          | 2          | 2          | 1        | 3        | 1          |
| T 2.3.3.4            | 2        | 3          | 2          | 2          | 1        | 2        | 2          |
| <b>T 2.3.3.5</b>     | <b>2</b> | <b>1</b>   | <b>2</b>   | <b>2</b>   | <b>1</b> | <b>1</b> | <b>2</b>   |
| <b>Average Score</b> | <b>2</b> | <b>2.6</b> | <b>1.8</b> | <b>1.8</b> | <b>1</b> | <b>2</b> | <b>1.6</b> |

### Course Outcomes - Practicals

| At the end of Oral Pathology and Microbiology course,<br>the students should be able to: |                                                                                                                   |
|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| P 2.3.3.1                                                                                | Interpret special stains of oral tissues under microscope and illustrate the diagrams of the same in record book  |
| P 2.3.3.2                                                                                | Identify the common oral diseases under microscope and illustrate diagrams of the same in record book             |
| P 2.3.3.3                                                                                | Identify the developmental anomalies in tooth specimens and cast models and illustrate in record book excitation. |

### Matrix of Programme Outcome & Course Outcome (POCO) - Practicals

| Course Outcomes      | PO1      | PO2        | PO3      | PO4      | PO5      | PO6      | PO7        |
|----------------------|----------|------------|----------|----------|----------|----------|------------|
| P 2.3.3.1            | 2        | 2          | 1        | 1        | 1        | 2        | 1          |
| P 2.3.3.2            | 2        | 2          | 2        | 1        | 1        | 2        | 2          |
| P 2.3.3.3            | 2        | 3          | 3        | 1        | 1        | 2        | 2          |
| <b>Average Score</b> | <b>2</b> | <b>2.3</b> | <b>2</b> | <b>1</b> | <b>1</b> | <b>2</b> | <b>1.6</b> |

**Curriculum and Course Content for II BDS**  
**Theory – 29 Hours ; Practical – 50 Hours**

| Sr. No. | Topic - THEORY                                                                                                                                                                    | Teaching hours | Must know /<br>Desirable to know /<br>Nice to Know | Suggested teaching methodology            |
|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------------------------------------------|-------------------------------------------|
| 1.      | <b>Development Disturbances of Oral and Paraoral Structures</b>                                                                                                                   | 10             |                                                    | Blended Learning                          |
|         | Terminologies and Definitions in Genetics                                                                                                                                         |                | MK                                                 | Blended Learning                          |
|         | b. Developmental Disturbances of Hard Tissues (Jaw and Teeth)                                                                                                                     |                | MK                                                 | Blended Learning                          |
|         | c. Developmental Disturbances of Soft Tissues of Oral Paraoral Structures (Lip, Oral Mucosa, Gingiva, Tongue, Oral Lymphoid Tissue Salivary Gland and Palate)                     |                | MK                                                 | Didactic lecture with ICT enabled classes |
|         | Influence of hormones on the developmental disturbances of Oral & Paraoral structures                                                                                             |                |                                                    | Didactic lecture with ICT enabled classes |
| 2.      | <b>Dental Caries</b>                                                                                                                                                              | 4              |                                                    |                                           |
|         | Definition, Classification, Etiopathogenesis, theories, microbiology, clinical features, diagnosis, radiology, histopathology, prevention of dental caries, caries activity tests |                | MK                                                 | Didactic lecture with ICT enabled classes |
| 3.      | <b>Diseases of Pulp &amp; Periapical tissues</b>                                                                                                                                  | 4              |                                                    |                                           |
|         | Etiopathogenesis, classification, clinical features, histopathology & radiological features (as appropriate) of pulp & periapical lesions                                         |                | MK                                                 | Didactic Lecture with ICT enabled Classes |

|    |                                                                                                                                                  |   |    |                                           |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------|---|----|-------------------------------------------|
|    | Interrelationships of Periapical Infection                                                                                                       |   | MK | Didactic Lecture with ICT enabled Classes |
|    | Osteomyelitis                                                                                                                                    |   | MK | Didactic Lecture with ICT enabled Classes |
| 4. | Diseases of Periodontium                                                                                                                         | 2 |    |                                           |
|    | Etiopathogenesis, microbiology, clinical features, histo-pathology & radiological features of gingivitis, gingival enlargements & periodontitis. |   | MK | Didactic Lecture with ICT enabled Classes |
| 5. | Microbial infections of the Oral Cavity                                                                                                          | 5 |    |                                           |
|    | Viral - Herpes Simplex, Varicella zoster, Measles, Mumps, HIV infection and Oral manifestation of AIDS, COVID-19                                 |   | MK | Didactic Lecture with ICT enabled Classes |
|    | Bacterial - Scarlet fever, Diphtheria, Tuberculosis, Leprosy, Syphilis, Actinomycoses & its complications – Cancrum Oris, Tetanus, Noma          |   | MK | Didactic Lecture with ICT enabled Classes |
|    | Fungal infections -Candidiasis, Histoplasmosis, Mucormycosis                                                                                     |   | MK | Didactic Lecture with ICT enabled Classes |
| 6. | Spread of Oral Infection - Cellulitis, Infection of Specific tissue spaces, Foci and Focus of infection, Ludwig's Angina                         | 1 | MK | Didactic Lecture with ICT enabled Classes |
| 7. | Special Stains                                                                                                                                   | 1 | DK | Didactic Lecture with ICT enabled Classes |



|    |                                         |   |    |                                                    |
|----|-----------------------------------------|---|----|----------------------------------------------------|
| 8. | Normal Oral Microflora                  | 1 | NK | Didactic<br>Lecture with<br>ICT enabled<br>Classes |
| 9. | Defense Mechanism of the Oral<br>Cavity | 1 | NK | Didactic<br>Lecture with<br>ICT enabled<br>Classes |

| <b>Sr.<br/>No.</b> | <b>Topic - PRACTICALS</b>                                                                                                     | <b>Teaching<br/>hours</b> | <b>Must know /<br/>Desirable to<br/>know /<br/>Nice to Know</b> | <b>Suggested<br/>teaching<br/>methodology</b>                                                                                                                                              |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------|---------------------------|-----------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.                 | Identification of normal cells:<br>Fibroblast, Osteoblast, Osteoclast,<br>Blood cells                                         | 2                         | DK                                                              | Visualization of<br>histology slides<br>under<br>binocular light<br>microscope<br><br>Display of soft<br>copy of<br>histology of<br>slides in TV<br>Monitors.<br>Small group<br>discussion |
| 2.                 | Routine and Special stains: Haematoxylin and eosin, Mallory, PAS, Van - geison, PAP stain, Masson's Trichrome, Toluidene Blue | 7                         | DK                                                              | Visualization of<br>histology slides<br>under<br>binocular light<br>microscope<br><br>Display of soft<br>copy of<br>histology of<br>slides in TV<br>Monitors.<br>Small group<br>discussion |

|    |                                                                                                                                                               |    |    |                                                                                                                                                                 |
|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3. | Identification of tooth and cast models of various development anomalies                                                                                      | 18 | MK | Visualization of histology slides under binocular light microscope<br><br>Display of soft copy of histology of slides in TV Monitors.<br>Small group discussion |
| 4. | Identification of histopathology of                                                                                                                           |    |    |                                                                                                                                                                 |
|    | a. Dental caries<br><br>Pit & Fissure Caries<br>Smooth surface caries                                                                                         | 8  | MK | Visualization of histology slides under binocular light microscope<br><br>Display of soft copy of histology of slides in TV Monitors.<br>Small group discussion |
|    | b. Pulp and periapical Pathology<br>Pulp Hyperemia<br><br>Periapical Granuloma<br><br>Radicular cyst<br>Cholesterol clefts<br>Rushton Bodies<br>Osteomyelitis | 9  | MK | Visualization of histology slides under binocular light microscope<br><br>Display of soft copy of histology of slides in TV Monitors.<br>Small group discussion |

|  |                                                                                             |   |    |                                                                                                                                                                 |
|--|---------------------------------------------------------------------------------------------|---|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <b>c.</b> Microbial infections of Oral soft tissues Tuberculous lymph node<br>Actinomycosis | 6 | MK | Visualization of histology slides under binocular light microscope<br><br>Display of soft copy of histology of slides in TV Monitors.<br>Small group discussion |
|--|---------------------------------------------------------------------------------------------|---|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|

### RECOMMENDED BOOKS:

| Sl. No. | Name of the book recommended                              | Author             | Publisher |
|---------|-----------------------------------------------------------|--------------------|-----------|
| 1       | A Text book of Oral Pathology                             | Shafer Hine & Levy | Elsevier  |
| 2.      | Manual of Oral histology and oral pathology : Color Atlas | Maji-Jose          | CBS       |

| Sl. No. | Name of the Reference Book                       | Author              | Publisher |
|---------|--------------------------------------------------|---------------------|-----------|
| 1       | Oral & Maxillofacial Pathology                   | Neville, Damm Allen | Elsevier  |
| 2.      | Oral Pathology – Clinical Pathologic Correlation | Regezi & Sciubba    | Saunders  |
| 3       | Color atlas of Oral Pathology                    | Cawson              | Mosby     |

**Curriculum and Course Content for III BDS**  
**Theory – 120 Hours ; Practical – 80 Hours**

| Sr. No. | Topic - THEORY                                                                                                                                                                 | Teaching hours | Must know / Desirable to know / Nice to Know | Suggested teaching methodology                                                              |
|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------------------------------------|---------------------------------------------------------------------------------------------|
| 1.      | <b>Tumours of the Oral Cavity</b>                                                                                                                                              | 25             |                                              |                                                                                             |
|         | a. Benign and Malignant Epithelial Tumors of Oral Cavity                                                                                                                       |                | MK                                           | Didactic Lecture / Integrated Teaching with Oral Pathology , Oral Medicine and Oral Surgery |
|         | b. Premalignant Lesions and Conditions of Epithelial Tissue Origin                                                                                                             |                | MK                                           | Didactic Lecture / Integrated Teaching with Oral Pathology, Oral Medicine and Oral Surgery  |
|         | c. Benign and Malignant non-Epithelial Tumors/ Connective tissue tumors of Oral Cavity                                                                                         |                | MK                                           | Didactic Lecture                                                                            |
| 2.      | <b>Salivary Gland Diseases</b>                                                                                                                                                 | 10             |                                              |                                                                                             |
|         | a. Benign & Malignant salivary gland tumors, classification, Etiopathogenesis, Clinical features, histopathology, radiological features and laboratory diagnosis and treatment |                | MK                                           | Integrated Teaching with Oral Pathology , Oral Medicine and Oral Surgery                    |

|    |                                                                                                                                                                                                 |    |    |                                                                          |
|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----|--------------------------------------------------------------------------|
|    | b. Non neoplastic salivary gland diseases. Inflammatory salivary gland diseases. Lymphoepithelial lesion, Cysts of the salivary gland, autoimmune disorders, Functional disorders, sialadenosis |    | MK | Integrated Teaching with Oral Pathology , Oral Medicine and Oral Surgery |
| 3. | <b>Odontogenic Tumors</b>                                                                                                                                                                       | 15 |    |                                                                          |
|    | a. Introduction to odontogenic tumors : Development of tooth, etiopathogenesis of odontogenic tumors                                                                                            |    | MK | Integrated Teaching with Oral Pathology , Oral Medicine and Oral Surgery |
|    | b. Classification, clinical features histopathology, radiological features laboratory diagnosis, treatment and prognosis                                                                        |    | MK | Integrated Teaching with Oral Pathology , Oral Medicine and Oral Surgery |
| 4. | <b>Cysts of Orofacial Region</b>                                                                                                                                                                | 12 |    |                                                                          |
|    | a. Definition, classification                                                                                                                                                                   |    | MK | Integrated Teaching with Oral Pathology , Oral Medicine and Oral Surgery |
|    | b.Etiopathogenesis,clinical features, histopathology, radiological features, laboratory diagnosis and treatment of odontogenic Cysts                                                            |    | MK | Integrated Teaching with Oral Pathology , Oral Medicine and Oral Surgery |
|    | c.Etiopathogenesis,clinical features, histopathology, radiological features, laboratory diagnosis and treatment of non- odontogenic Cysts / Fissural cyst                                       |    | MK | Integrated Teaching with Oral Pathology , Oral Medicine and Oral Surgery |

|    |                                                                                                                                                                                                                                                                        |   |    |                                                                                              |
|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|----|----------------------------------------------------------------------------------------------|
|    | Etiopathogenesis, clinical features, histopathology, radiological features, laboratory diagnosis and treatment of miscellaneous cysts                                                                                                                                  |   | DK | Integrated Teaching with Oral Pathology , Oral Medicine and Oral Surgery                     |
| 5. | <b>Physical and chemical injuries</b>                                                                                                                                                                                                                                  | 4 | MK | Didactic Lecture with ICT enabled Classes                                                    |
| 6. | <b>Regressive alterations</b>                                                                                                                                                                                                                                          | 3 | MK | Didactic Lecture with ICT enabled Classes                                                    |
| 7. | <b>Diseases of Bone and TMJ</b>                                                                                                                                                                                                                                        | 8 |    |                                                                                              |
|    | <b>a.</b> Etiopathogenesis, clinical features, histo-pathology. Radiological features & laboratory diagnosis of fibrous dysplasia, cherubism, osteogenesis imperfecta, paget's disease, cleidocranial dysplasia, achondroplasia, Marfan's syndrome and Down's syndrome |   | MK | Integrated Teaching with Oral Pathology , Oral Medicine and Oral Surgery and other topics as |
|    | <b>b.</b> Ankylosis, summary of different type of arthritis and other developmental malformation traumatic injuries and myofascial pain dysfunction syndrome. Osteopetrosis, Pierre robins syndrome                                                                    |   | DK | Didactic Lecture with ICT enabled Classes                                                    |
| 8. | <b>Systemic Diseases involving Oral Cavity</b>                                                                                                                                                                                                                         | 5 |    |                                                                                              |
|    | Brief review and oral manifestations, diagnosis and significance of common blood, nutritional, hormonal and metabolic diseases of oral cavity                                                                                                                          |   | DK | Didactic Lecture with ICT enabled Classes                                                    |

|     |                                                                                                                                                                                                                                                                                                |    |    |                                                                                             |
|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----|---------------------------------------------------------------------------------------------|
| 9.  | <b>Diseases of Skin</b>                                                                                                                                                                                                                                                                        | 10 |    |                                                                                             |
|     | Etiopathogenesis, clinical features, histopathology of the following common skin diseases. Lichen Planus, lupus erythematosus, pemphigus and pemphigoid . Erythema multiforme psoriasis, scleroderma ectodermal dysplasia, epidermolysis bullosa and white sponge nevus, Ehler Dahlos syndrome |    | MK | Integrated Teaching with Oral Pathology , Oral Medicine and Oral Surgery / Didactic Lecture |
| 10. | <b>Diseases of the Nerves</b>                                                                                                                                                                                                                                                                  | 4  |    |                                                                                             |
|     | Facial neuralgias – Trigeminal and Glossopharyngeal, sphenopalatine neuralgia, Facial nerve paralysis, Frey's Syndrome, Eagle's Syndrome                                                                                                                                                       |    | DK | Didactic Lecture                                                                            |
| 11. | <b>Biopsy of oral tissues</b>                                                                                                                                                                                                                                                                  | 4  |    |                                                                                             |
|     | Types of biopsy, cytology, histochemistry and frozen section in diagnosis of oral diseases.                                                                                                                                                                                                    |    | DK | Didactic Lecture with ICT enabled Classes                                                   |
| 12. | <b>Forensic Odontology</b>                                                                                                                                                                                                                                                                     | 12 |    |                                                                                             |
|     | Introduction, definition, aims and scope. Age, Sex and ethnic differences in tooth morphology and dental profiling                                                                                                                                                                             |    | MK | Didactic Lecture with ICT enabled Classes                                                   |
|     | Dental Age Estimation                                                                                                                                                                                                                                                                          |    | MK | Didactic Lecture with ICT enabled Classes                                                   |
|     | Disaster Management                                                                                                                                                                                                                                                                            |    | DK | Didactic Lecture with ICT enabled Classes                                                   |

|     |                                                                                                                                                            |   |    |                                                    |
|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------|---|----|----------------------------------------------------|
|     | Bite marks Analysis                                                                                                                                        |   | MK | Didactic<br>Lecture with<br>ICT enabled<br>Classes |
|     | Palatal rugae pattern, analysis,<br>classification                                                                                                         |   | MK | Didactic<br>Lecture with<br>ICT enabled<br>Classes |
|     | Lip prints-classification and<br>analysis                                                                                                                  |   | MK | Didactic<br>Lecture with<br>ICT enabled<br>Classes |
| 13. | <b>Healing of oral wounds</b><br><br>Healing of extraction wounds,<br>healing of fractures, healing of<br>biopsy wound, factors affecting<br>wound healing | 3 | MK | Didactic<br>Lecture with<br>ICT enabled<br>Classes |
| 14. | Allergic & Immunological diseases<br>of oral cavity                                                                                                        | 5 | DK | Didactic<br>Lecture with<br>ICT enabled<br>Classes |



| Sr. No. | Topic - PRACTICAL                                                                                                                                                                              | Teaching hours | Must know / Desirable to know / Nice to Know | Suggested teaching methodology                                                                                                                                  |
|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
|         | <b>Identification of histopathology slides of the following lesions</b>                                                                                                                        |                |                                              |                                                                                                                                                                 |
|         | a. Odontogenic cyst                                                                                                                                                                            | 6              |                                              |                                                                                                                                                                 |
|         | Illustration of Mechanism of Cystic Expansion<br><br>Calcify epithelial Odontology cyst<br><br>Dentigerous cyst,<br><br>Odontogenic keratocyst                                                 |                | MK                                           | Visualization of histology slides under binocular light microscope<br><br>Display of soft copy of histology of slides in TV Monitors.<br>Small group discussion |
|         | <b>b. Odontogenic tumors</b>                                                                                                                                                                   | 12             |                                              |                                                                                                                                                                 |
|         | Ameloblastoma (Follicular, Plexiform, Granular Cell, Acanthomatous) Adenomatoid odontogenic tumor<br><br>Calcifying epithelial Odontogenic tumor Ameloblastic Fibroma<br><br>Compound Odontome |                | MK                                           | Visualization of histology slides under binocular light microscope<br><br>Display of soft copy of histology of slides in TV Monitors.<br>Small group discussion |

|  |                                                                                                                                            |    |    |                                                                                                                                                                 |
|--|--------------------------------------------------------------------------------------------------------------------------------------------|----|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <b>c. Salivary gland tumor and diseases</b>                                                                                                | 12 |    |                                                                                                                                                                 |
|  | Pleomorphic Adenoma<br>Warthin's Tumour<br>Mucoepidermoid Carcinoma<br>Adenoid cystic carcinoma<br>Mucocele<br>Necrotizing sialometaplasia |    | MK | Visualization of histology slides under binocular light microscope<br><br>Display of soft copy of histology of slides in TV Monitors.<br>Small group discussion |
|  | <b>d. Benign and Malignant Tumors</b>                                                                                                      | 1  |    |                                                                                                                                                                 |
|  | <b>Benign tumors of epithelial tissue origin</b> Papilloma, Nevus                                                                          |    | MK | Visualization of histology slides under binocular light microscope<br><br>Display of soft copy of histology of slides in TV Monitors.<br>Small group discussion |
|  | <b>e. Premalignant lesions and conditions</b><br>hyperkeratosis with dysplasia<br>carcinoma in situ<br>oral submucous fibrosis             | 3  | MK | Visualization of histology slides under binocular light microscope<br><br>Display of soft copy of histology of slides in TV Monitors.<br>Small group discussion |

|  |                                                                                                                                                                                                                                                                                                                        |    |    |                                                                                                                                                             |
|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <b>f. Malignant tumors of epithelial tissue origin</b>                                                                                                                                                                                                                                                                 | 8  |    |                                                                                                                                                             |
|  | Oral squamous cell carcinoma<br>Basal cell carcinoma<br>Verrucous Carcinoma<br>Malignant Melanoma                                                                                                                                                                                                                      |    | MK | Visualization of histology slides under binocular light microscope<br>Display of soft copy of histology of slides in TV Monitors.<br>Small group discussion |
|  | <b>g. Benign tumors of connective tissue origin</b>                                                                                                                                                                                                                                                                    | 18 |    |                                                                                                                                                             |
|  | Fibroma<br>Peripheral Giant Cell Granuloma ,<br>Central Giant Cell Granuloma<br>Peripheral cemento ossifying fibroma<br>Central cemento ossifying fibroma<br>Pyogenic granuloma<br>Lipoma<br>Capillary hemangioma<br>Cavernous hemangioma<br>Lymphangioma<br>Cancellous Osteoma<br>Neurilemmoma<br>Chondroma<br>Myxoma |    | MK | Visualization of histology slides under binocular light microscope<br>Display of soft copy of histology of slides in TV Monitors.<br>Small group discussion |

|  |                                                                              |   |    |                                                                                                                                                                 |
|--|------------------------------------------------------------------------------|---|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <b>h. Malignant tumors of non epithelial tissue /connectivetissue origin</b> | 8 |    |                                                                                                                                                                 |
|  | Fibrosarcoma<br>Osteosarcoma<br>Burkitts lymphoma<br>Hodgkins lymphoma       |   | MK | Visualization of histology slides under binocular light microscope<br><br>Display of soft copy of histology of slides in TV Monitors.<br>Small group discussion |
|  | <b>i. Diseases of Bone</b>                                                   | 5 |    |                                                                                                                                                                 |
|  | Fibrous Dysplasia                                                            |   | MK | Visualization of histology slides under binocular light microscope<br><br>Display of soft copy of histology of slides in TV Monitors.<br>Small group discussion |
|  | <b>j. Diseases of Skin</b>                                                   | 7 |    |                                                                                                                                                                 |
|  | Lichen plans<br>Pemphigus                                                    |   | MK | Visualization of histology slides under binocular light microscope<br><br>Display of soft copy of histology of slides in TV Monitors.<br>Small group discussion |

## SCHEME OF EXMINATION

### A. THEORY 100 Marks

**University written exam : 70 Marks**

**Viva Voce : 20 Marks**

**Internal Assessment : 10 Marks**

Distribution of Topic and Type of Question.

| Contents                                                                                                                                                                                  | Type of Questions and Marks   | Marks     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|-----------|
| MCQ ( Full portion)                                                                                                                                                                       | MCQ 20 x 1 Marks              | 20        |
| Long essay<br>Dental Caries, Developmental anamolies,<br>Benign and Malignant tumors ,<br>Odontogenic cysts and tumours,<br>Salivary gland tumors, Diseases of skin,<br>Diseases of bone. | Long Essay<br>2 x 10 Marks    | 20        |
| Short answer<br>Questions from full syllabus except from<br>the topics, from which the long essays are<br>taken.                                                                          | Short Answers<br>10 x 3 Marks | 30        |
|                                                                                                                                                                                           | <b>Total</b>                  | <b>70</b> |

### B. Practical : 100 Marks

**University exam : 90 Marks**

**Internal Assessment : 10 Marks**

### OSPE Pattern for 2<sup>nd</sup> Internals Examination

| Contents                                                                                                                                                                                                                                                                                      | Marks                                                               | Time   |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|--------|
| <b>A. Spotters:</b><br>i. Histopathology slides : identification , diagrams with labeling – 8 Nos<br><br>ii. Hard tissue specimen including cast, teeth specimen : identification and salient features - 6 Nos<br><br>iii. Soft tissue specimens : Identification and salient feature - 2 Nos | $8 \times 5 = 40$<br><br>$6 \times 5 = 30$<br><br>$2 \times 5 = 10$ | 1 Hour |
| <b>B. Records</b>                                                                                                                                                                                                                                                                             | 10                                                                  |        |
| <b>Total</b>                                                                                                                                                                                                                                                                                  | <b>90</b>                                                           |        |

### RECOMMENDED BOOKS

| Sl. No | Name of the Books Recommended                              | Author           | Publisher |
|--------|------------------------------------------------------------|------------------|-----------|
| 1      | A Text Book of Oral Pathology                              | Shafer Hine Levy | Elsevier  |
| 2      | Manual of oral histology and oral pathology : colour atlas | Maji jose        | CBS       |

### REFERENCE BOOKS

| Sl. No | Name of the Books Recommended                    | Author                | Publisher |
|--------|--------------------------------------------------|-----------------------|-----------|
| 1      | Reference Oral and maxillofacial Pathology       | Newville, Damma Allen | Elsevier  |
| 2      | Oral Pathology – Clinical Pathology Correlations | Regezi & Sciubba      | Saunders  |
| 3      | Colour atlas of Oral Pathology                   | Cawson                | Mobsby    |

# COMMUNICATION SKILLS

## **\*\* Phase III \*\***

### **Preamble**

Communication skill plays an important role in health care. Effective communication helps establish rapport with patient and helps to obtain information, explain the findings of the diseases to patient, explain need for any further investigation. It also helps to discuss various treatment options to patient and the family member / relative and obtain informed consent before examination or any procedures. The effectiveness of treatment depends on post treatment and follow-up instructions. Patient care could be multidisciplinary, it necessary for student to understand and develop sound interpersonal relationship so as to provide holistic management. An effective communication will help in case presentation and scientific deliberation. Hence communication has become a core clinical skill rather than an optional curricular component. Thus including formal training in communication skills is an integral part of the undergraduate dental curriculum. Students can be trained through series of skill that can be taught, learned and retained. In the light of above knowledge an informal program to impart communication skill is planned.

**Target Learners** – III BDS and Final BDS students

(Module to be conducted during the clinical postings in each department)

**Aim** : To impart training on communication skills which includes listening, observing, speaking understanding interpersonal process, questioning, analyzing, non-verbal and written communication.

**Course objectives** – Every under graduate will understand and use communication (verbal and written) effectively.

**Objectives** – By end of the training session every student will be able to

- a. Collect relevant information for diagnosis and effective management of patient
- b. Convey relevant information (before / during and after) pertaining to effective management
- c. Communicate written information / write notes about patient care including clinical observations, lab notes, referral notes for other investigations, prescription etc.
- d. Demonstrate an appropriate non-verbal communication during entire procedure of patient care. (body language and gestures)
- e. Demonstrate effective interpersonal skill during team work with colleagues, paramedics and support staff.

## **Educational strategies**

### **Module VI (Continued from the previous modules done in I & II BDS)**

The III BDS students will have refresher programme at the beginning of the course. The students will be trained for effective communication for the following : -

1. Counselling – for diet, oral health care and tobacco
2. Case history taking
3. Consent and assent
4. Advising chair side lab investigations
5. Advise for radiography
6. Instructions during treatment procedures
7. Post treatment instructions
8. Conveying and handling mishaps

### **Protocol for Training**

1. Counselling – for diet, oral health care and tobacco – will be taken by the Department of Public Health Dentistry
2. Case history taking – will be taken by the Department of Periodontics
3. Consent - will be taken by the Department of Oral Surgery
4. Assent - will be taken by the Department of Pedodontics
5. Advising chair side lab investigations - will be taken by the Department of Oral Pathology and Microbiology
6. Advise for radiography - will be taken by the Department of Oral Medicine and Radiology
7. Instructions during treatment procedures - will be taken by the Department of Orthodontics
8. Post treatment instructions - will be taken by the Department of Prosthodontics
9. Conveying and handling mishaps - will be taken by the Department of Conservative Dentistry

Students will be instructed about the various communication skills required in each dental department and about the criteria of assessment. Every student will receive feedback on their performance in the clinic.



1. History taking – relevant to each dental department
2. Informed consent – for diagnostic and treatment procedures
3. Advising investigations – referral writing
4. Interpreting investigations and advising treatment
5. Explain the procedure to the patient / relative (before and during treatment)
6. Post treatment instructions
7. Counseling for tobacco / stress related diseases, diet, oral hygiene
8. Breaking bad news (fracture of instruments, accidental trauma from burs, chemical burns etc)

**Assessment** - Through checklist, log books and feedbacks

#### **Programme evaluation**

1. Department-wise assessment
  - a. Immediate outcome for understanding the skill and use effectively
  - b. Mid-term outcome : fair well in assessment conducted
  - c. Long-term outcome : communication skill will be integral part of dental curriculum and all the objectives will be achieved.

Feed back of students on training – Department wise

Feedback by patients – randomly in each department

Necessary revisions in the program as per feed back

#### **References**

1. Hannah A. Milli Champ CJ, Ayers KM. A communication skills course for undergraduate dental students. J Dental Educ 2004 ; 68(9) ; 970-7
2. Oh J, Segal R, Gordon J, Boal J, Jotkowitz A Retention and use of patient centered interviewing skills after intensive training. Acad Med 2001 ; 76(6) : 647-50

## **2.4.1. PROSTHODONTICS AND CROWN AND BRIDGE**

### **GOALS :**

Goal is to train the students for treating completely edentulous patients Emphasis is placed on understanding the effects of edentulism, needs of the patient's and patients attitude which influences the treatment planning. Goal is also to make the students accustomed with the art of the science involved in the fabrication of complete dentures.

### **OBJECTIVES:**

#### **a. Knowledge**

At the end of the III B.D.S. course the student is expected to:

1. Understand the needs of the patients and to plan the treatment accordingly
2. Understand the anatomy and Histology of supporting structures for complete dentures.
3. To diagnose unfavorable situations and to modify the treatment plan accordingly.

#### **b. Skills :**

At the end of the III B.D.S. course the student is expected to:

1. Acquire the skills to communicate with the patients and to understand the needs of the patients.
2. To develop skills to perform clinical procedures.
3. To get acquainted with the laboratory procedures.

### Course Outcomes - Theory

| At the end of Prosthodontics and Crown and Bridge course, the students should be able to: |                                                                                                                                                                                     |
|-------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| T 2.4.1.1                                                                                 | Identify and explain various edentulous conditions; outline the different treatment modalities and treatment planning to restore missing dentition                                  |
| T 2.4.1.2                                                                                 | Demonstrate the skills in the selection and manipulation of various dental materials and techniques related to rehabilitation of various missing oral and maxillofacial structures. |
| T 2.4.1.3                                                                                 | Recall and explain about pharmacology and effect of drugs on the oral tissues and their significance in prosthodontic treatment                                                     |
| T 2.4.1.4                                                                                 | Analyze effect of systematic conditions on the oral tissues and their significance in prosthodontic treatment.                                                                      |
| T 2.4.1.5                                                                                 | Discuss various newer dental materials and techniques                                                                                                                               |

### Matrix of Programme Outcome & Course Outcome (POCO) - Theory

| Course Out come      | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|----------------------|-----|-----|-----|-----|-----|-----|-----|
| T 2.4.1.1            | 3   | 2   | 2   | 1   | 2   | 2   | 2   |
| T 2.4.1.2            | 3   | 2   | 2   | 2   | 2   | 2   | 2   |
| T 2.4.1.3            | 3   | 3   | 1   | 2   | 2   | 1   | 3   |
| T 2.4.1.4            | 2   | 3   | 2   | 1   | 2   | 2   | 2   |
| T 2.4.1.5            | 2   | 3   | 1   | 3   | 2   | 3   | 3   |
| <b>Average Total</b> | 2.6 | 2.6 | 1.6 | 1.8 | 2   | 2   | 2.4 |

### Course Outcomes - Clinical

| At the end of Prosthodontics And Crown And Bridge course, the students should be able to: |                                                                                                                                                                                                       |
|-------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| C 2.4.1.1                                                                                 | Carry out various clinical and laboratory procedures to fabricate complete and partial dentures.                                                                                                      |
| C 2.4.1.2                                                                                 | Implement personal hygiene, infection control, prevention of cross infection and safe disposal of waste to prevent any cross contamination                                                            |
| C 2.4.1.3                                                                                 | Read and interpret radiograph and other investigations for the purpose of diagnosis and treatment plan in prosthodontic treatment                                                                     |
| C 2.4.1.4                                                                                 | Practice ethics, law and jurisprudence in prosthodontic treatment. The student should respect patients' rights and privileges including patients' rights to information about prosthodontic treatment |
| C 2.4.1.5                                                                                 | Diagnose failed prosthesis and provide prosthodontic treatment and after care for these conditions.                                                                                                   |
| C 2.4.1.6                                                                                 | Differentiate and refer complex cases to Prosthodontic specialist for further treatment.                                                                                                              |
| C 2.4.1.7                                                                                 | The student knows and practice about ethics, law and jurisprudence in prosthodontic treatment.                                                                                                        |

### Matrix of Programme Outcome & Course Outcome (POCO) - Clinical

| Course Out Come      | PO1        | PO2        | PO3      | PO4        | PO5        | PO6        | PO7      |
|----------------------|------------|------------|----------|------------|------------|------------|----------|
| C 2.4.1.1            | 2          | 2          | 1        | 1          | 2          | 2          | 2        |
| C 2.4.1.2            | 1          | 3          | 2        | 2          | 1          | 2          | 2        |
| C 2.4.1.3            | 2          | 3          | 2        | 2          | 2          | 3          | 2        |
| C 2.4.1.4            | 1          | 3          | 2        | 1          | 2          | 1          | 2        |
| C 2.4.1.5            | 2          | 2          | 2        | 1          | 1          | 2          | 2        |
| C 2.4.1.6            | 1          | 2          | 3        | 2          | 1          | 2          | 2        |
| C 2.4.1.7            | 1          | 2          | 3        | 2          | 1          | 1          | 2        |
| <b>Average score</b> | <b>1.5</b> | <b>2.5</b> | <b>2</b> | <b>1.5</b> | <b>1.5</b> | <b>1.8</b> | <b>2</b> |

**Curriculum and Course Content for III BDS**  
**Theory – 31 Hours ; Practical – 70 Hours**

| Sr. No. | Topic - THEORY                                                                                                                  | Teaching hours | Must know /<br>Desirable to know /<br>Nice to Know | Suggested teaching methodology              |
|---------|---------------------------------------------------------------------------------------------------------------------------------|----------------|----------------------------------------------------|---------------------------------------------|
| 1.      | <b>a. Biomechanics of the edentulous state</b>                                                                                  | <b>2 Hours</b> |                                                    | Didactic lectures in ICT enabled classrooms |
|         | Mechanism of tooth support                                                                                                      |                | MK                                                 |                                             |
|         | Mechanism of complete denture support                                                                                           |                | MK                                                 |                                             |
|         | Masticatory load                                                                                                                |                | MK                                                 |                                             |
|         | Mucosal support                                                                                                                 |                | MK                                                 |                                             |
|         | Residual ridge                                                                                                                  |                | MK                                                 |                                             |
|         | Psychologic effect on retention                                                                                                 |                | MK                                                 |                                             |
|         | Functional and parafunctional considerations                                                                                    |                | MK                                                 |                                             |
|         | Occlusion                                                                                                                       |                | MK                                                 |                                             |
|         | Functions: Mastication and swallowing                                                                                           |                | MK                                                 |                                             |
|         | Mandibular movements                                                                                                            |                | DK                                                 |                                             |
|         | Para functions                                                                                                                  |                | DK                                                 |                                             |
|         | Distribution of stresses to the denture supporting tissues changes in morphological face height and the temporomandibular joint |                | DK                                                 |                                             |
|         | Face height                                                                                                                     |                | MK                                                 |                                             |
|         | Centric relation                                                                                                                |                | MK                                                 |                                             |
|         | Temporomandibular joint changes                                                                                                 |                | DK                                                 |                                             |
|         | Individual behavioral or adaptive response                                                                                      |                | DK                                                 |                                             |

|    |                                                                               |        |    |                                             |
|----|-------------------------------------------------------------------------------|--------|----|---------------------------------------------|
|    | Cosmetic changes                                                              |        | NK |                                             |
|    | Dietary changes                                                               |        | NK |                                             |
|    | Adaptive and psychological changes                                            |        | NK |                                             |
|    | Adaptive potential of the patient                                             |        | NK |                                             |
|    | <b>b. Tissue response to complete denture prosthesis:</b>                     |        |    | Didactic lectures in ICT enabled classrooms |
|    | The aging edentulous patient Soft tissue changes                              |        | MK |                                             |
|    | <b>Effects of Aging:</b>                                                      |        | MK | Didactic lectures in ICT enabled classrooms |
|    | Oral changes                                                                  |        | MK |                                             |
|    | Mucosa and skin                                                               |        | MK |                                             |
|    | Residual bone and the maxillomandibular relation                              |        | MK |                                             |
|    | Disuse atrophy                                                                |        | MK |                                             |
|    | Changes in the size of the basal seat                                         |        | MK |                                             |
|    | Maxillo mandibular relations                                                  |        | MK |                                             |
|    | Tongue and taste                                                              |        | MK |                                             |
|    | Salivary flow and nutritional impairment                                      |        | DK |                                             |
|    | Degenerative changes                                                          |        | DK |                                             |
|    | Dietary problems                                                              |        | DK |                                             |
|    | Psychologic changes                                                           |        | DK |                                             |
| 2. | <b>Preparing the patient for complete denture prosthesis</b>                  | 1 Hour | MK | Didactic lectures in ICT enabled classrooms |
| 3. | <b>Diagnosis and treatment planning for patient with some teeth Remaining</b> | 3      | MK | Flipped Class Room                          |
|    | Diagnostic procedures                                                         |        | MK |                                             |

|    |                                                                          |   |    |                                             |
|----|--------------------------------------------------------------------------|---|----|---------------------------------------------|
|    | History and records                                                      |   | MK |                                             |
|    | Immediate complaints                                                     |   | MK |                                             |
|    | Systemic evaluation – CVS, respiratory, renal, endocrines, CNS and other |   | MK |                                             |
|    | Temporomandibular joint disorders                                        |   | MK |                                             |
|    | Intra oral examination                                                   |   | MK |                                             |
|    | Diagnostic cast                                                          |   | MK |                                             |
|    | Interarch space problems                                                 |   | MK |                                             |
|    | Radiographs and other investigations                                     |   | MK |                                             |
|    | <b>Treatment Plan</b>                                                    |   |    | Didactic lectures in ICT enabled classrooms |
|    | - Deciding whether to extract the remaining teeth                        |   | MK |                                             |
|    | - Pre-extraction record                                                  |   | MK |                                             |
|    | - Mental attitudes and classification                                    |   |    |                                             |
| 4. | Diagnosis of patient with no teeth remaining                             | 1 |    |                                             |
|    | Examination charts and records                                           |   | MK |                                             |
|    | General observations affecting diagnosis                                 |   | MK |                                             |
|    | - age, sex, occupation, ethnic                                           |   | MK |                                             |
|    | - general health and nutrition                                           |   | MK |                                             |
|    | - social training                                                        |   | MK |                                             |
|    | - patient complaints                                                     |   | MK |                                             |
|    | - gait                                                                   |   | MK |                                             |
|    | - Facial features                                                        |   | MK |                                             |
|    | - Advantages of a radiographic examination                               |   | DK |                                             |
|    | - Intra oral examination                                                 |   | MK |                                             |

|    |                                                            |   |    |                                             |
|----|------------------------------------------------------------|---|----|---------------------------------------------|
|    | - Ridge form                                               |   | MK |                                             |
|    | - Ridge relations                                          |   | MK |                                             |
|    | - Arch shape                                               |   | MK |                                             |
|    | - Sagittal profile of the residual ridge                   |   | MK |                                             |
|    | - Shape of the palatal vault                               |   | MK |                                             |
|    | - Relation of the hard and soft palate                     |   | MK |                                             |
|    | - Muscular development                                     |   | MK |                                             |
|    | - Saliva                                                   |   | MK |                                             |
|    | - Cheeks and lips                                          |   | MK |                                             |
|    | - Muscle tonus                                             |   | MK |                                             |
|    | - Muscular control                                         |   | MK |                                             |
|    | - Jaw movements                                            |   | MK |                                             |
|    | - Temporomandibular joint problems                         |   | NK |                                             |
|    | - Tongue size and position                                 |   | MK |                                             |
|    | - Throat form                                              |   | MK |                                             |
|    | - Gagging                                                  |   | MK |                                             |
| 5. | Development of the Treatment Plan                          | 1 |    |                                             |
|    | Communicating with the patient                             |   | MK |                                             |
|    | - Nutrition care of the denture patient                    |   | MK |                                             |
|    | - Nutritional needs and status of the elderly              |   | MK |                                             |
|    | - Calcium and bone health                                  |   | MK |                                             |
|    | - Vitamin supplementation                                  |   | MK |                                             |
|    | - Nutrition counseling                                     |   | MK |                                             |
| 6. | Identification and management of the patient with problems | 1 |    | Didactic lectures in ICT enabled classrooms |



|    |                                                                                                                           |   |    |                                             |
|----|---------------------------------------------------------------------------------------------------------------------------|---|----|---------------------------------------------|
|    | Basic rules to follow to avoid problems                                                                                   |   | NK |                                             |
|    | - Conduction of the comprehensive examination                                                                             |   | NK |                                             |
|    | - Correctional procedures prior to making prosthesis                                                                      |   | NK |                                             |
|    | Patient behavior characteristics observed during the examination appointment that may indicate future management problems |   | NK |                                             |
|    | - Disrupting regular office routine                                                                                       |   | NK |                                             |
|    | - Overreacting to normal examination procedures                                                                           |   | NK |                                             |
|    | - Downgrading or criticizing treatment provided by a previous dentist                                                     |   | NK |                                             |
| 7. | Use of consultation report                                                                                                | 1 | NK | Didactic lectures in ICT enabled classrooms |
|    | Contents of the Report                                                                                                    |   | NK |                                             |
|    | <b>Economics of prosthodontics service</b>                                                                                |   | NK |                                             |
|    | <b>Improving the patient's denture foundation and ridge relations</b><br><b>Non-surgical methods:</b>                     |   | DK |                                             |
|    | - Rest for the prosthesis supporting tissues                                                                              |   | DK |                                             |
|    | - Occlusal and vertical dimension correcting of old prostheses                                                            |   | DK |                                             |
|    | - Good nutrition and                                                                                                      |   | DK |                                             |
|    | - Conditioning of the patient's musculature                                                                               |   | DK |                                             |
|    | <b>Surgical Methods</b>                                                                                                   |   |    | Didactic lectures in ICT enabled classrooms |
|    | - Hyperplastic ridge, epulisfissuratum, and papillomatosis                                                                |   | MK |                                             |

|    |                                                                           |  |    |                                             |
|----|---------------------------------------------------------------------------|--|----|---------------------------------------------|
|    | - Frenular attachments and pendulous maxillary tuberosities               |  | MK |                                             |
|    | - Bony prominences, undercuts, spiny ridges, and non-parallel bony ridges |  | MK |                                             |
|    | - Discrepancies in jaw size                                               |  | MK |                                             |
|    | - Vestibuloplasty                                                         |  | MK |                                             |
|    | - Ridge augmentation                                                      |  | NK |                                             |
|    | - Replacing tooth roots by Osseo integrated dental implants               |  | NK |                                             |
| 8. | Rehabilitation of the Edentulous Patient                                  |  |    | Didactic lectures in ICT enabled classrooms |
|    | Biologic considerations for Maxillary Impressions                         |  | MK |                                             |
|    | Macroscopic anatomy of supporting structures                              |  | MK |                                             |
|    | - support for the maxillary denture                                       |  | MK |                                             |
|    | - residual ridge                                                          |  | MK |                                             |
|    | - stress-bearing areas                                                    |  | MK |                                             |
|    | - incisive papilla                                                        |  | MK |                                             |
|    | - posterior palatal area                                                  |  | MK |                                             |
|    | - bone of the basal seat                                                  |  | MK |                                             |
|    | Macroscopic anatomy of limiting structures                                |  | MK |                                             |
|    | - Resistant and non-resistant areas Peripheral valvular sealing areas     |  | MK |                                             |
|    | <b>Microscopic anatomy</b>                                                |  |    | Didactic lectures in ICT enabled classrooms |
|    | - Histological nature of soft tissue and bone                             |  | MK |                                             |
|    | - Microscopic anatomy of supporting tissues                               |  | MK |                                             |
|    | - Microscopic anatomy of limiting structures                              |  | MK |                                             |

|     |                                                                                                                                            |   |    |                                             |
|-----|--------------------------------------------------------------------------------------------------------------------------------------------|---|----|---------------------------------------------|
|     | <b>Clinical Considerations of Microscopic Anatomy</b>                                                                                      |   |    | Didactic lectures in ICT enabled classrooms |
| 9.  | <b>Maxillary Impression Procedures</b>                                                                                                     | 2 | MK | BLENDED LEARNING                            |
|     | Principles and objectives of impression making                                                                                             |   | MK |                                             |
|     | Factors of retention of dentures                                                                                                           |   | MK |                                             |
|     | Acquired muscular control                                                                                                                  |   |    |                                             |
|     | Health of the basal seat tissues                                                                                                           |   | MK |                                             |
|     | Impressions for the edentulous patient                                                                                                     |   | MK |                                             |
|     | Primary impression-Patients position, operators position, stock trays, materials and step by step procedure for making primary impression. |   | MK |                                             |
|     | - Impression trays-special trays and design for final impression                                                                           |   | MK |                                             |
|     | - Final impression materials                                                                                                               |   | MK |                                             |
|     | <b>Impression techniques:</b>                                                                                                              |   |    | Didactic lectures in ICT enabled classrooms |
|     | - First technique-border molded Custom tray                                                                                                |   | MK |                                             |
|     | - Second technique-one step border molded tray                                                                                             |   | MK |                                             |
|     | - Third technique-custom tray design based on the previously worn prosthesis.                                                              |   | MK |                                             |
| 10. | Biologic considerations for mandibular impressions                                                                                         | 2 | MK |                                             |
|     | Sequelae of tooth loss                                                                                                                     |   | MK |                                             |
|     | Macroscopic anatomy of the supporting structures                                                                                           |   | MK |                                             |
|     | - Stages of change in the mandible                                                                                                         |   | MK |                                             |

|     |                                                                                             |   |    |                                             |
|-----|---------------------------------------------------------------------------------------------|---|----|---------------------------------------------|
|     | - Throat form and tongue positions                                                          |   | MK |                                             |
|     | - Mental foramen area resorption                                                            |   | MK |                                             |
|     | - Insufficient space between the mandible and the tuberosity                                |   | MK |                                             |
|     | - Direction of ridge resorption                                                             |   | MK |                                             |
|     | - Torus mandibularis                                                                        |   | MK |                                             |
|     | <b>Macroscopic Anatomy of Limiting Structures:</b>                                          |   |    | Didactic lectures in ICT enabled classrooms |
| 13. | Movements of the mandible                                                                   | 1 |    | Didactic lectures in ICT enabled classrooms |
|     | - Practical significance of understanding mandibular movements                              |   |    |                                             |
|     | - Methods of studying mandibular movements                                                  |   | NK |                                             |
|     | - Influence of temporomandibular joints                                                     |   | NK |                                             |
|     | - Clinical understanding of mandibular movement                                             |   | NK |                                             |
| 14. | Biologic consideration in vertical jaw relations                                            | 1 |    | Didactic lectures in ICT enabled classrooms |
|     | - Anatomy and physiology of vertical jaw relations                                          |   | MK |                                             |
|     | - Establishment of the vertical maxillomandibular relations for complete denture prosthesis |   | MK |                                             |
|     | - Methods of determining the vertical dimension                                             |   | MK |                                             |
| 15. | <b>Biologic considerations in horizontal jaw relations</b>                                  | 1 |    | Didactic lectures in ICT enabled classrooms |
|     | - Muscle involvement in centric relations                                                   |   | MK |                                             |

|     |                                                                       |   |    |                                             |
|-----|-----------------------------------------------------------------------|---|----|---------------------------------------------|
|     | - Orienting centric relation to hinge axis                            |   | MK |                                             |
|     | - Significance of centric relation                                    |   | MK |                                             |
| 16. | <b>Recording and transferring bases and occlusion rims</b>            | 2 |    | Didactic lectures in ICT enabled classrooms |
|     | - Trial denture base, or recording base                               |   | MK |                                             |
|     | - Occlusion rims                                                      |   | MK |                                             |
|     | Guide for esthetics – Central line, lip line, canine line, smile line |   | MK |                                             |
|     | - level of the occlusal plane                                         |   | MK |                                             |
|     | - preliminary centric relations records                               |   | MK |                                             |
| 17. | <b>Relating the patient to the articulator</b>                        | 1 |    | Didactic lectures in ICT enabled classrooms |
|     | - Articulators                                                        |   | MK |                                             |
|     | - articulators based on theories of occlusion                         |   | MK |                                             |
|     | - articulators based on the type of record used for their adjustment  |   | MK |                                             |
|     | - Selection of articulator for complete dentures                      |   | MK |                                             |
| 18. | <b>Selecting artificial teeth for the edentulous patient</b>          | 1 |    | Didactic lectures in ICT enabled classrooms |
|     | Mold charts and shade guides                                          |   | MK |                                             |
|     | - Anterior tooth selection                                            |   | MK |                                             |
|     | - Pre-extraction guides                                               |   | MK |                                             |
|     | - Size of the anterior teeth                                          |   | MK |                                             |
|     | - Form of the anterior teeth                                          |   | MK |                                             |
|     | - The dentogenic concept in selecting artificial teeth                |   | MK |                                             |

|     |                                                                       |   |    |                                             |
|-----|-----------------------------------------------------------------------|---|----|---------------------------------------------|
|     | - Posterior tooth selection                                           |   | MK |                                             |
|     | - Bucco lingual width of posterior teeth                              |   | MK |                                             |
|     | - Mesiodistal length of posterior teeth                               |   | MK |                                             |
|     | - Vertical length of the buccal surfaces of posterior teeth           |   | MK |                                             |
|     | - Types of posterior teeth according to materials                     |   | MK |                                             |
|     | - Types of posterior teeth according to cusp inclines                 |   | MK |                                             |
| 19. | <b>Preliminary Arrangement of Artificial Teeth</b>                    | 1 |    | Didactic lectures in ICT enabled classrooms |
|     | - Guides for preliminary arranging anterior teeth                     |   | MK |                                             |
|     | - Setting mandibular anterior teeth in the wax for try in             |   | MK |                                             |
|     | - Preliminary arrangement of posterior teeth                          |   | MK |                                             |
|     | - Setting posterior teeth for try in                                  |   | MK |                                             |
| 20. | <b>Perfection and Verification of Jaw Relation Records<br/>1 Hour</b> |   |    | Didactic lectures in ICT enabled classrooms |
|     | - Verifying Vertical Dimension                                        |   | MK |                                             |
|     | - Verifying the centric relation                                      |   | MK |                                             |
|     | - Extra oral articulator method                                       |   | MK |                                             |
| 21. | <b>Creating Facial and Functional Harmony with Anterior Teeth:</b>    |   |    | Didactic lectures in ICT enabled classrooms |
|     | - Anatomy of natural appearance and facial expression                 |   | NK |                                             |
|     | - Normal facial landmarks                                             |   | NK |                                             |

|     |                                                                                                                                            |   |    |                                             |
|-----|--------------------------------------------------------------------------------------------------------------------------------------------|---|----|---------------------------------------------|
|     | - Maintaining facial support and neuromuscular balance                                                                                     |   | NK |                                             |
|     | - Basic guides to developing facial and functional harmon                                                                                  |   | NK |                                             |
| 22. | <b>Completion of the try in: Eccentric jaw relation records articulators and cast adjustments, establishing the posterior palatal seal</b> | 1 |    | Didactic lectures in ICT enabled classrooms |
|     | - Protrusive and lateral relations                                                                                                         |   | NK |                                             |
|     | - Controlling factors of movement                                                                                                          |   | NK |                                             |
|     | - Eccentric relation records                                                                                                               |   | NK |                                             |
|     | - Establishing the posterior palatal seal                                                                                                  |   | NK |                                             |
| 23. | <b>Arranging Posterior Teeth for Functional Harmony:</b>                                                                                   |   |    | Didactic lectures in ICT enabled classrooms |
|     | - Importance of occlusion                                                                                                                  |   | MK |                                             |
|     | - Maintenance of occlusal harmony                                                                                                          |   | MK |                                             |
|     | - Differences in artificial occlusion and natural occlusion                                                                                |   | MK |                                             |
|     | - Reduced inclines in dentures                                                                                                             |   | MK |                                             |
|     | - Rational for arranging posterior teeth in temporomandibular joint disturbances                                                           |   | DK |                                             |
|     | - Factors of centric occlusion                                                                                                             |   | DK |                                             |
|     | - Critical components in arranging posterior teeth                                                                                         |   | DK |                                             |
|     | - Occlusal schemes used in complete dentures for the edentulous patients                                                                   |   | DK |                                             |

|     |                                                                                                         |   |    |                                             |
|-----|---------------------------------------------------------------------------------------------------------|---|----|---------------------------------------------|
|     | - Techniques for arranging cusped teeth in Balanced occlusion                                           |   | DK |                                             |
|     | - Techniques for arranging cusplless teeth in occlusion                                                 |   | DK |                                             |
| 24. | <b>Appearance and Functional Harmony of Denture Bases</b>                                               |   |    | Didactic lectures in ICT enabled classrooms |
|     | Materials used for denture bases: Acrylic resin, Metal                                                  |   | NK |                                             |
|     | - Formation and preparation of the mold packing the mold                                                |   | NK |                                             |
|     | - Preserving the orientation relations                                                                  |   | NK |                                             |
|     | - Construction of remounting casts                                                                      |   | NK |                                             |
|     | - Completing the rehabilitation of the patient                                                          |   | NK |                                             |
|     | - Treatment of the time of the denture insertion                                                        |   | NK |                                             |
|     | - Errors in occlusion                                                                                   |   | NK |                                             |
|     | - Interocclusal records for remounting dentures                                                         |   | NK |                                             |
|     | - Interocclusal record of centric relation                                                              |   | NK |                                             |
|     | - Remounting the mandibular denture verifying centric relation                                          |   | NK |                                             |
| 25. | <b>Patients instructions after care and recall and management of patient complaints:</b>                | 1 |    | Didactic lectures in ICT enabled classrooms |
|     | Protrusive inter occlusal record                                                                        |   | MK |                                             |
|     | Alternative use of plaster inter occlusal records advantages of balanced occlusion in complete dentures |   | MK |                                             |
|     | Special instructions to the patient                                                                     |   | MK |                                             |
|     | -individuality of patients                                                                              |   | MK |                                             |



|    |                                                                                                                                             |   |    |                     |
|----|---------------------------------------------------------------------------------------------------------------------------------------------|---|----|---------------------|
|    | -appearance with new dentures                                                                                                               |   | MK |                     |
|    | -mastication with new dentures                                                                                                              |   | MK |                     |
|    | -speaking with new dentures                                                                                                                 |   | MK |                     |
|    | -oral hygiene with dentures                                                                                                                 |   | MK |                     |
|    | Maintaining the comfort and health of the oral cavity in a rehabilitated edentulous patient Twenty four hour oral examination and treatment |   | MK |                     |
|    | -adjustments related to the occlusion                                                                                                       |   | MK |                     |
|    | -adjustments related to the denture bases                                                                                                   |   | MK |                     |
|    | -subsequent oral examination and treatments                                                                                                 |   | MK |                     |
| 26 | Emerging and re-emerging : Sterilization protocol & operator asepsis. Biomedical waste disposal.                                            | 1 | NK | DL & Demonstrations |

| Sr. No. | Topic - PRACTICAL       | Teaching 70 hours | Must know / Desirable to know / Nice to Know | Suggested teaching methodology |
|---------|-------------------------|-------------------|----------------------------------------------|--------------------------------|
| 1       | Complete Denture – 1 No |                   | MK                                           | DOPS                           |
| 2       | RPD – 5 No.             |                   | MK                                           | DOPS                           |
| 3       | Sterilization protocol  |                   | MK                                           | DOPS                           |

## SCHEME OF EXAMINATION

As per DCI this subject has no Theory or Practical Examination for III BDS

**Curriculum and Course Content for IV BDS**  
**Theory – 80 Hours ; Practical – 300 Hours**

| Sr. No. | Topic - THEORY                                                                                                                          | Teaching hours | Must know /<br>Desirable to know /<br>Nice to Know | Suggested teaching methodology              |
|---------|-----------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------------------------------------------|---------------------------------------------|
| 1.      | <b>Removable Partial Denture Prosthesis</b><br><br><b>Introduction</b>                                                                  | 2              | MK                                                 | Didactic lectures in ICT enabled classrooms |
|         | <b>a.</b> Terminology Definitions – History-Scope in Prosthodontic therapy                                                              |                | MK                                                 |                                             |
|         | <b>b.</b> Stomatognathic system cranio mandibular system (Masticatory apparatus)                                                        |                | MK                                                 |                                             |
|         | <b>c.</b> Components of masticatory apparatus – Functions                                                                               |                | MK                                                 |                                             |
|         | <b>d.</b> Applied anatomy, histology and physiology of the components of craniomandibular system                                        |                | MK                                                 |                                             |
|         | <b>e.</b> Applied growth and development including genetics, immunity                                                                   |                | MK                                                 |                                             |
|         | <b>f.</b> Reasons for loss of teeth and associated structures.                                                                          |                | MK                                                 |                                             |
|         | <b>g.</b> Clinic and laboratory – facilities for prosthodontic therapy (equipments, instruments, materials).                            |                | MK                                                 |                                             |
|         | <b>h.</b> Prosthodontic therapy for diseases of cranio mandibular system.                                                               |                | MK                                                 |                                             |
|         | <b>i.</b> Asepsis and cross infection control in clinical and laboratory. Hospital and laboratory waste disposal system and management. |                | MK                                                 |                                             |

|    |                                                                    |   |    |                                             |
|----|--------------------------------------------------------------------|---|----|---------------------------------------------|
| 2. | <b>Applied Dental Anatomy</b> Removable Partial Denture Prosthesis | 2 | MK | Didactic lectures in ICT enabled classrooms |
|    | Introduction and scope Terminology Classifications                 |   | MK |                                             |
|    | Examination, diagnosis and treatment planning                      |   | MK |                                             |
|    | Components of removable partial dentures and their functions       |   | MK |                                             |
| 3. | <b>Major Connectors</b>                                            | 2 | MK | Didactic lectures in ICT enabled classrooms |
|    | Mandibular Major connectors<br>Maxillary Major connectors          |   | MK |                                             |
| 4. | <b>Minor connectors</b>                                            | 2 | MK | Didactic lectures in ICT enabled classrooms |
|    | Functions                                                          |   | MK |                                             |
|    | Form and location                                                  |   | MK |                                             |
|    | Tissue stops                                                       |   | MK |                                             |
|    | Finishing lines                                                    |   | MK |                                             |
|    | Reaction of tissues to metallic coverage                           |   | MK |                                             |
|    | Form of occlusal rests and rest seats                              |   | MK |                                             |
| 5. | <b>Rests and rest seats</b>                                        | 1 | MK | Didactic lectures in ICT enabled classrooms |
|    | Inerproximalocclusal rest seals                                    |   | MK |                                             |
|    | Internal occlusal rests                                            |   | MK |                                             |
|    | Incisal rests and rest seals                                       |   | MK |                                             |

|    |                                                                                                   |   |    |                                             |
|----|---------------------------------------------------------------------------------------------------|---|----|---------------------------------------------|
|    | Lingual rests on canines and incisor teeth                                                        |   | MK |                                             |
|    | Possible movements of partial denture                                                             |   | MK |                                             |
|    | Support for rests                                                                                 |   | MK |                                             |
| 6. | <b>Direct retainers 3 Hrs</b>                                                                     | 3 | MK | Didactic lectures in ICT enabled classrooms |
|    | Intra coronal attachments                                                                         |   | MK |                                             |
|    | Extra coronal direct retainers                                                                    |   | MK |                                             |
|    | Relative uniformity of retention                                                                  |   | MK |                                             |
|    | Criteria for selecting a given clasp design                                                       |   | MK |                                             |
|    | Basic principles of clasp design                                                                  |   | MK |                                             |
|    | Designs of clasps                                                                                 |   | MK |                                             |
| 7. | <b>Indirect retainers</b>                                                                         | 2 | MK | Didactic lectures in ICT enabled classrooms |
|    | Denture rotation about an axis                                                                    |   | MK |                                             |
|    | Factors influencing effectiveness of indirect retainers Auxillary functions of indirect retainers |   | MK |                                             |
|    | Forms of indirect retainers Auxillary occlusal rests Canine rests                                 |   | MK |                                             |
|    | Continuous bar retainers and linguo plates Modification areas                                     |   | MK |                                             |
|    | Rugae support                                                                                     |   | MK |                                             |
|    | Direct indirect retention Denture base considerations                                             |   | MK |                                             |
|    | Tooth supported partial denture base                                                              |   | MK |                                             |

|     |                                                                                                                                                                                           |   |    |                                             |
|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|----|---------------------------------------------|
| 8.  | <b>Distal extension partial denture base</b>                                                                                                                                              | 2 | MK | Didactic lectures in ICT enabled classrooms |
|     | Functions of denture bases<br>Methods of attaching denture bases<br>Ideal denture base partial<br>Advantages of metal bases<br>Methods of attaching artificial teeth<br>Need for relining |   | MK |                                             |
| 9.  | <b>Stress breakers</b>                                                                                                                                                                    | 2 | MK | Didactic lectures in ICT enabled classrooms |
|     | Types of stress breakers<br>Advantages of stress breakers<br>Disadvantages of a rigid design<br>Stress breaking principles                                                                |   | MK |                                             |
|     | Principles of removable partial denture design Biomechanical considerations                                                                                                               |   | MK |                                             |
|     | Other factors influencing                                                                                                                                                                 |   | MK |                                             |
|     | Differentiation between two main types of removable partial dentures<br>Essentials of partial denture design                                                                              |   | MK |                                             |
|     | Components of partial denture design Additional considerations in influencing design                                                                                                      |   | MK |                                             |
| 10. | <b>Surveying</b>                                                                                                                                                                          | 2 | MK | Didactic lectures in ICT enabled classrooms |
|     | Description of dental surveyor<br>Purpose of a surveyor                                                                                                                                   |   | MK |                                             |
|     | Factors that determine path of placement and removal Step by step procedure in surveying a diagnostic cast                                                                                |   | MK |                                             |
|     | Final path of placement                                                                                                                                                                   |   | MK |                                             |

|     |                                                                                                                                                        |   |    |                                             |
|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------|---|----|---------------------------------------------|
|     | Recording relation of cast to surveyor Surveying the master cast                                                                                       |   | MK |                                             |
|     | Measuring retention and and balancing of retention Influence of survey line in designing of clasps Blocking out the mater cast                         |   | MK |                                             |
|     | Relieving the master cast                                                                                                                              |   | MK |                                             |
|     | Paralleled block out, shaped block out, arbitrary block out and relief Preparation of the mouth for removable partial denture                          |   | MK |                                             |
|     | Oral surgical preparation                                                                                                                              |   | MK |                                             |
|     | Conditioning of abused and irritated tissues Periodontal preparation                                                                                   |   | MK |                                             |
|     | Periodontal diagnosis and treatment planning Initial disease control therapy                                                                           |   | MK |                                             |
|     | Definitive periodontal therapy Recall and maintenance Advantages of periodontal therapy Preparation of abutment teeth Classification of abutment teeth |   | MK |                                             |
|     | Sequence of abutment preparation on sound enamel Abutment preparation using conservative restorations Abutment preparation using crowns                |   | DK |                                             |
|     | Splinting of abutment teeth                                                                                                                            |   | DK |                                             |
|     | Use of isolated teeth as abutment Missing anterior teeth                                                                                               |   | DK |                                             |
|     | Temporary crowns when a partial denture is being worn Fabricating restorations to fit existing denture retainers                                       |   | DK |                                             |
| 11. | <b>Impression materials and procedures for removable partial denture</b>                                                                               | 1 |    | Didactic lectures in ICT enabled classrooms |
|     | Rigid materials Thermoplastic materials Elastic materials                                                                                              |   | MK |                                             |

|     |                                                                                                                     |   |    |                                             |
|-----|---------------------------------------------------------------------------------------------------------------------|---|----|---------------------------------------------|
|     | Impressions of the partially edentulous arch Individual impression trays                                            |   | MK |                                             |
|     | Support for the distal extension denture base Distal extension removable partial dentures                           |   | MK |                                             |
|     | Factors influencing the support of distal extension bases                                                           |   | MK |                                             |
|     | Method for obtaining functional support for distal extension base                                                   |   | MK |                                             |
| 12. | <b>Occlusal relationship for removable partial denture</b>                                                          | 1 |    | Didactic lectures in ICT enabled classrooms |
|     | Difference in natural and artificial occlusion                                                                      |   | MK |                                             |
|     | Desirable occlusal contact relationship for removable partial denture Method for establishing occlusal relationship |   | MK |                                             |
|     | Materials for artificial posterior teeth                                                                            |   | MK |                                             |
|     | Establishing jaw relation for mandibular removable partial denture opposing a maxillary complete denture            |   | MK |                                             |
|     | Laboratory procedures Duplicating a stone cast                                                                      |   | MK |                                             |
|     | Waxing the partial denture framework Anatomic replica pattern                                                       |   | MK |                                             |
|     | Spruing, investing, burnout, casting and finishing of the partial denture framework Making record base              |   | MK |                                             |
|     | Occlusal rims                                                                                                       |   | MK |                                             |
|     | Making a stone occlusal template from a functional occlusal record Arranging posterior teeth to an opposing cast    |   | MK |                                             |
|     | Types of anterior teeth                                                                                             |   | MK |                                             |
|     | Waxing and investing the partial denture before processing the acrylic resin base Processing the denture            |   | MK |                                             |

|     |                                                                                                                                            |   |    |                                             |
|-----|--------------------------------------------------------------------------------------------------------------------------------------------|---|----|---------------------------------------------|
|     | Remounting and occlusal corrections to an occlusal template<br>Polishing the denture                                                       |   | MK |                                             |
| 13. | <b>Work authorization for removable partial denture</b>                                                                                    | 1 |    | Didactic lectures in ICT enabled classrooms |
|     | Work authorization                                                                                                                         |   | DK |                                             |
|     | Definitive instructions by work authorization Legal aspects of work authorization                                                          |   | DK |                                             |
|     | Relining and rebasing the removable partial denture Relining tooth support – supported denture base Relining distal extension denture base |   | DK |                                             |
|     | Method of reestablishing occlusion of a relined partial denture                                                                            |   | DK |                                             |
| 14. | <b>Repair and additions to removable partial denture</b>                                                                                   | 1 |    | Didactic lectures in ICT enabled classrooms |
|     | Broken clasp arms Fractured occlusal rests                                                                                                 |   | DK |                                             |
|     | Distortion or breakage of other components                                                                                                 |   | DK |                                             |
|     | Loss of teeth not involved in the support or retention of the restoration                                                                  |   | DK |                                             |
|     | Loss of an abutment tooth necessitating its replacement and making a new direct retainer                                                   |   | DK |                                             |
|     | Other types of repair                                                                                                                      |   | DK |                                             |
|     | Repair by soldering                                                                                                                        |   | DK |                                             |
| 15. | <b>Temporary removable partial denture</b>                                                                                                 | 1 |    | Didactic lectures in ICT enabled classrooms |
|     | Appearance                                                                                                                                 |   | MK |                                             |



|     |                                                                                                                                     |   |    |                                             |
|-----|-------------------------------------------------------------------------------------------------------------------------------------|---|----|---------------------------------------------|
|     | Space maintenance                                                                                                                   |   | MK |                                             |
|     | Reestablishing occlusal relationships<br>Conditioning teeth and residual ridge<br>Conditioning the patient for wearing a prosthesis |   | MK |                                             |
| 16. | <b>Removable partial denture considerations in maxillofacial Prosthodontics</b>                                                     | 2 |    | Didactic lectures in ICT enabled classrooms |
|     | Maxillofacial prosthodontics                                                                                                        |   | DK |                                             |
|     | Intraoral prosthesis design considerations<br>Maxillary prosthesis                                                                  |   | DK |                                             |
|     | Mandibular prosthesis<br>Treatment planning<br>Framework design<br>Class I resections<br>Class II resections                        |   | DK |                                             |
|     | Mandibular flange prosthesis                                                                                                        |   | MK |                                             |
| 17. | <b>Immediate Denture Treatment</b>                                                                                                  | 1 | MK | Didactic lectures in ICT enabled classrooms |
|     | indication for immediate dentures                                                                                                   |   | MK |                                             |
|     | -contraindications to immediate denture service                                                                                     |   | MK |                                             |
|     | -delayed and transitional dentures                                                                                                  |   | MK |                                             |
|     | -treatment planning                                                                                                                 |   | MK |                                             |
|     | -clinical procedures                                                                                                                |   | MK |                                             |
|     | -subsequent service for immediate dentures                                                                                          |   | MK |                                             |
| 18. | <b>Over Dentures 1 Hr</b>                                                                                                           | 1 |    | Didactic lectures in ICT enabled classrooms |
|     | - Advantages & Disadvantages                                                                                                        |   | MK |                                             |
|     | - Indications & Treatment Planning                                                                                                  |   | MK |                                             |
|     | - Selection of abutment teeth                                                                                                       |   | MK |                                             |

|     |                                                                      |   |    |                                             |
|-----|----------------------------------------------------------------------|---|----|---------------------------------------------|
|     | - Clinical Procurers                                                 |   | MK |                                             |
|     | <b>Single complete dentures opposing natural teeth</b>               |   |    | Didactic lectures in ICT enabled classrooms |
|     | - maxillary single dentures                                          |   | MK |                                             |
|     | - clinical and laboratory procedures                                 |   | MK |                                             |
|     | - subsequent problems with single dentures against natural teeth     |   | MK |                                             |
|     | - mandibular single dentures                                         |   | MK |                                             |
|     | - supplemental prosthodontic procedures for the edentulous patient   |   | MK |                                             |
| 19. | <b>Relining or rebasing of complete dentures</b>                     | 1 |    | Didactic lectures in ICT enabled classrooms |
|     | treatment rationale                                                  |   | MK |                                             |
|     | - diagnosis                                                          |   | MK |                                             |
|     | - clinical procedures                                                |   | MK |                                             |
|     | - static impression technique closed and open mouth relines/ rebases |   | MK |                                             |
|     | - functional impression technique                                    |   | MK |                                             |
|     | - chair side technique                                               |   | MK |                                             |
|     | <b>Repair of Complete Dentures and Duplication of Casts:</b>         |   |    | Didactic lectures in ICT enabled classrooms |
|     | - Maxillary and mandibular fracture repair                           |   | NK |                                             |
|     | - repairs using cold curing resin                                    |   | NK |                                             |
|     | - duplication of casts-reversible hydrocolloid technique             |   | NK |                                             |

|     |                                                                                                                                                                                                    |   |    |                                             |
|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|----|---------------------------------------------|
|     | - irreversible hydrocolloid technique                                                                                                                                                              |   | NK |                                             |
| 20. | <b>Elements of Fixed Prosthodontics</b><br>Introduction                                                                                                                                            | 2 | MK | Didactic lectures in ICT enabled classrooms |
|     | a. Terminology – Definitions – History – Scope in Prosthodontic therapy                                                                                                                            |   | MK |                                             |
|     | b. Stomatognathic system<br>craniomandibular system<br>(Masticatory apparatus)                                                                                                                     |   | MK |                                             |
|     | c. Components of masticatory apparatus – Functions                                                                                                                                                 |   | MK |                                             |
|     | d. Applied anatomy, histology and physiology of the components of craniomandibular system                                                                                                          |   | MK |                                             |
|     | e. Applied growth and development including genetics, immunity.                                                                                                                                    |   | MK |                                             |
|     | f. Reasons for loss of teeth and associated structures.                                                                                                                                            |   | MK |                                             |
|     | g. Clinic and laboratory – facilities for prosthodontic therapy (equipments, instruments, materials).                                                                                              |   | MK |                                             |
|     | h. Prosthodontic therapy for diseases of cranio mandibular system.                                                                                                                                 |   | MK |                                             |
|     | i. Asepsis and cross infection control in clinical and laboratory. Hospital and laboratory waste disposal system and management.                                                                   |   | MK |                                             |
| 21. | <b>Applied Dental Anatomy</b>                                                                                                                                                                      | 1 |    | Didactic lectures in ICT enabled classrooms |
|     | Physiology, nutrition, occlusion, occlusal curves, vertical overlap, horizontal overlap, condylar path, saliva, pain and other reflexes, neuro muscular mechanism and applied psychiatry medicine. |   | MK |                                             |

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|-----|-------------------------------------------------------------------------------------------------|---|----|---------------------------------------------|
| 22. | <b>Elements of Fixed Prosthodontics</b>                                                         | 2 |    | Didactic lectures in ICT enabled classrooms |
|     | Introduction, definitions<br>Terminologies                                                      |   | MK |                                             |
|     | Indication and contraindications                                                                |   | MK |                                             |
| 23. | <b>Examination diagnosis and treatment planning and radiological interpretations</b>            | 2 |    | Didactic lectures in ICT enabled classrooms |
| 24. | <b>Selection and choice of abutment teeth</b>                                                   | 1 |    | Didactic lectures in ICT enabled classrooms |
| 25. | <b>Biomechanical principles of tooth preparation</b>                                            | 2 |    | Didactic lectures in ICT enabled classrooms |
|     | Preservation of tooth structure                                                                 |   | MK |                                             |
|     | Retention and resistance form<br>Structural durability of the restoration<br>Marginal integrity |   | MK |                                             |
|     | Preservation of the periodontium                                                                |   | MK |                                             |
| 26. | <b>Full veneer crowns</b>                                                                       | 4 |    | Didactic lectures in ICT enabled classrooms |
|     | Maxillary and mandibular posterior three quarter crowns<br>Anterior three quarter crown         |   | NK |                                             |
|     | Pin modified three quarter crowns<br>Seven eighths crown                                        |   | NK |                                             |
|     | Proximal half crowns                                                                            |   | NK |                                             |
| 27. | <b>Anterior Posterior porcelain fused to metal crowns</b>                                       | 2 |    | Didactic lectures in ICT enabled classrooms |

|     |                                                                                                                                                                                              |   |    |                                             |
|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|----|---------------------------------------------|
| 28. | <b>All ceramic crowns</b>                                                                                                                                                                    | 2 |    | Didactic lectures in ICT enabled classrooms |
|     | Preparation, modifications for damaged teeth Modifications for damaged vital teeth Conversion of defects into retentive features Solution to common problems                                 |   | MK |                                             |
| 29. | <b>Endodontically treated tooth</b>                                                                                                                                                          | 2 |    | Didactic lectures in ICT enabled classrooms |
|     | Preparation modifications for special situations Preparation for fixed bridge abutment                                                                                                       |   | DK |                                             |
|     | Preparation for removable partial denture abutments                                                                                                                                          |   | DK |                                             |
| 30. | <b>Isolation of working field and temporary protections of prepared tooth</b>                                                                                                                | 2 |    | Didactic lectures in ICT enabled classrooms |
|     | Gingival retractions and impression procedures                                                                                                                                               |   | MK |                                             |
|     | Digital work flow (Impression Procedure)                                                                                                                                                     | 1 | DK |                                             |
|     | Construction of DIES of working models, direct and indirect technique Techniques of fabrication of retainers and materials used, its application with reference of fabrication and esthetics |   | MK |                                             |
| 31. | <b>Selection and fabrication of pontics and esthetics</b>                                                                                                                                    | 2 |    | Didactic lectures in ICT enabled classrooms |
|     | Connectors, stress-breakers and assembly of fixed bridges Finishing, cementing and maintenance of crowns and bridges Laser and high speed                                                    |   | MK |                                             |

|     |                                                                                                                                              |   |    |                                             |
|-----|----------------------------------------------------------------------------------------------------------------------------------------------|---|----|---------------------------------------------|
| 32. | <b>Maxillofacial Prosthesis</b>                                                                                                              | 5 |    | Didactic lectures in ICT enabled classrooms |
|     | Restoration of congenital and acquired oral and para oral defects (Facial Prostheses, including osseo integrated support facial prosthesis). |   | DK |                                             |
|     | Splints Obturators                                                                                                                           |   | DK |                                             |
|     | Bruxism and management of occlusal attrition                                                                                                 |   | DK |                                             |
| 33. | <b>Miscellaneous</b>                                                                                                                         | 1 |    | Didactic lectures in ICT enabled classrooms |
|     | Patient and practice management in prosthodontic clinic ethics, law, jurisprudence and forensic odontology – in prosthodontic practice       |   | NK |                                             |
|     | Assistants – Laboratories and clinic Communication methods – Technician work Authorization, methods and legality                             |   | DK |                                             |
|     | During impression recording in partial, complete edentulous situation and maxillofacial defects                                              |   | NK |                                             |
|     | Precautions and management of traumatic accidents in tooth preparation use of constrictor in anaesthetic solutions and retraction cords      |   | NK |                                             |
|     | Ill fitting dentures Broken clasps, facings Broken prosthesis Swallowing prosthesis                                                          |   | NK |                                             |
|     | General management of elderly and C.V.S. and immunocompromised patients                                                                      |   | MK |                                             |

|     |                                                                                                                                                                                                                                                                                                            |   |    |                                             |
|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|----|---------------------------------------------|
|     | <b>Oral Implatology</b>                                                                                                                                                                                                                                                                                    |   |    | Didactic lectures in ICT enabled classrooms |
| 1.  | History of implants, their design & surface characteristics and osseo-integration                                                                                                                                                                                                                          | 2 | DK |                                             |
| 2.  | Scope of oral & maxillofacial implantology & terminologies.                                                                                                                                                                                                                                                | 1 | DK |                                             |
| 3.  | A brief introduction to various implant systems in practice                                                                                                                                                                                                                                                | 1 | DK |                                             |
| 4.  | Bone biology, Morphology, Classification of bone and its relevance to implant treatment and bone augmentation materials.                                                                                                                                                                                   | 2 | DK |                                             |
| 5.  | Soft tissue considerations in implant dentistry                                                                                                                                                                                                                                                            | 1 | NK |                                             |
| 6.  | Diagnosis & treatment planning in implant dentistry case history taking/ Examination/Medical evaluation/Orofacial evaluation/ Radiographic revaluation/ Diagnostic evaluation/ Diagnosis and treatment planning/ treatment alternatives/ Estimation of treatment costs / patient education and motivation. | 1 | NK |                                             |
| 7.  | Pre surgical preparation of patient.                                                                                                                                                                                                                                                                       | 1 | NK |                                             |
| 8.  | Implant installation & armamentarium for the Branemark system as a role model                                                                                                                                                                                                                              | 1 | NK |                                             |
| 9.  | First stage surgery – Mandible – Maxilla                                                                                                                                                                                                                                                                   | 1 | NK |                                             |
| 10. | Healing period & second stage surgery                                                                                                                                                                                                                                                                      | 1 | NK |                                             |
| 11. | Management of surgical complications & failures                                                                                                                                                                                                                                                            | 1 | NK |                                             |

|     |                                                                                                                             |   |    |  |
|-----|-----------------------------------------------------------------------------------------------------------------------------|---|----|--|
| 12. | General considerations in Prosthodontic reconstruction & Bio mechanics                                                      | 2 | NK |  |
| 13. | Prosthodontic components of the branemark system as a role model                                                            | 1 | NK |  |
| 14. | Impression procedures & preparation of master cast.                                                                         | 1 | NK |  |
| 15. | Jaw relation records and construction of superstructure with special emphasis on occlusion for Osseo integrated prosthesis. | 1 | NK |  |
| 16. | Management of Prosthodontic complications & failures                                                                        | 1 | NK |  |
| 17. | Recall & maintenance phase.                                                                                                 | 1 | NK |  |

## SCHEME OF EXAMINATION

Theory: 70 marks

Distribution of Topics and type of Questions

| Contents                                                                                                                                                 | Type of Questions and Marks      | Marks |
|----------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|-------|
| <b>Multiple choice questions</b>                                                                                                                         | M.C.Q.<br>20 x 1 = 20            | 20    |
| <b>Long essays</b><br>One long essay from complete denture<br>One long essay from removable partial denture/ fixed partial denture                       | Long essays<br>2 x 10 marks      | 20    |
| <b>Short essays</b><br>4 short essay from complete denture<br>3 short essays from removable partial denture<br>3 short essays from fixed partial denture | Short essay<br>10 x 3 marks = 30 | 30    |

**Viva-Voce :**

**20 marks**

Complete denture

- 10 marks

Removable partial denture

- 5 marks

Fixed partial denture

- 5 marks Implants, maxillofacial and

Allied prosthesis



|                            |                         |                               |            |
|----------------------------|-------------------------|-------------------------------|------------|
| <b>THEORY : 100 Marks</b>  |                         | <b>PRACTICAL : 100 Marks</b>  |            |
| Theory examination         | : 70 Marks              | Practical Examination         | : 90 Marks |
| Theory Internal Assessment | : 10 Marks              | Practical Internal Assessment | : 10 Marks |
| Viva Voce                  | : 20 Marks<br>100 Marks |                               | :100 Marks |

**Recommended Books :**

| Sl. No. | Title                                          | Author     | Edition | Yr. of Publ.        | Publisher          |
|---------|------------------------------------------------|------------|---------|---------------------|--------------------|
| 1.      | Prosthodontic treatment of Edentulous patients | Boucher    | 13th    | 2012                | Mosby              |
| 2.      | Syllabus of complete denture                   | Heartwell  | 5th     | 1993                | Lea &Febiger       |
| 3.      | Theory and practice of fixed Prosthodontics    | Tylman     | 8th     | 1993                | Ishiyaku Euro      |
| 4.      | Removable partial denture                      | Mc Cracker | 11th    | 2015<br>South Asian | Elsevier           |
| 5       | Sciences of dental materials                   | Skinner    | 11th    | 2021<br>South Asian | W. B. Saunders Co. |
| 6       | Dental materials Properties and manipulation   | Craig      | 14th    | 2018                | Mosby              |

## **2.4.2. PERIODONTICS**

### **GOALS**

1. The subject of periodontics aims at imparting knowledge in understanding the structures and function of periodontium.
2. It aims at prevention, diagnosis and treatment of diseases affecting the surrounding tissues of teeth

### **OBJECTIVES**

#### **a. Knowledge**

1. The student is expected to learn the basics of surrounding structures like gingiva, periodontal ligament, cementum and alveolar bone, so as to impart this understanding for diagnosing periodontal diseases in future.
2. To perform basic oral hygiene procedures along with educating and motivating the patients.

#### **b. Skills**

1. Identification of plaque and calculus.
2. Develop skills for scaling and root planning
3. Manual scaling and polishing.
4. Oral hygiene maintenance programs

### Course Outcomes - Theory

| At the end of Periodontology course, the students should be able to: |                                                                                                                      |
|----------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| T 2.4.2.1                                                            | Describe and explain the components of periodontium which includes gingiva, periodontal ligament, cementum and bone. |
| T 2.4.2.2                                                            | Describe various etiological factors contributing to gingival and periodontal disease.                               |
| T 2.4.2.3                                                            | Discuss clinical & diagnostic features of gingival and periodontal disease.                                          |

### Matrix of Programme Outcome & Course Outcome (POCO) - Theory

| Course Outcome       | PO1        | PO2        | PO3      | PO4      | PO5      | PO6        | PO7      |
|----------------------|------------|------------|----------|----------|----------|------------|----------|
| T 2.4.2.1            | 1          | 1          | 1        | 1        | 1        | 1          | 1        |
| T 2.4.2.2            | 2          | 2          | 1        | 1        | 1        | 2          | 1        |
| T 2.4.2.3            | 2          | 2          | 1        | 1        | 1        | 1          | 1        |
| <b>Average Score</b> | <b>1.6</b> | <b>1.6</b> | <b>1</b> | <b>1</b> | <b>1</b> | <b>1.3</b> | <b>1</b> |

### Course Outcomes - Clinical

| At the end of Periodontology course, the students should be able to: |                                                                                        |
|----------------------------------------------------------------------|----------------------------------------------------------------------------------------|
| C 2.4.2.1                                                            | Plan treatment protocol for gingival and periodontal disease.                          |
| C 2.4.2.2                                                            | Render non-surgical treatment (scaling, root planning and local drug delivery).        |
| C 2.4.2.3                                                            | Plan oral hygiene maintenance protocol, explain and implement the same to the patient. |
| C 2.4.2.4                                                            | Incorporate dental ethics and demonstrate acumen for continuous learning and research. |

### Matrix of Programme Outcome & Course Outcome (POCO) - Practical

| Course Out come      | PO1         | PO2         | PO3         | PO4      | PO5      | PO6      | PO7      |
|----------------------|-------------|-------------|-------------|----------|----------|----------|----------|
| C 2.4.2.1            | 2           | 2           | 2           | 1        | 1        | 1        | 1        |
| C 2.4.2.2            | 2           | 2           | 2           | 1        | 1        | 1        | 1        |
| C 2.4.2.3            | 2           | 2           | 2           | 1        | 1        | 1        | 1        |
| C 2.4.2.4            | 1           | 1           | 1           | 1        | 1        | 1        | 1        |
| <b>Average Score</b> | <b>1.75</b> | <b>1.75</b> | <b>1.75</b> | <b>1</b> | <b>1</b> | <b>1</b> | <b>1</b> |

**Curriculum and Course Content for III BDS**  
**Theory – 30 Hours ; Practical – 72 Hours**

| Sr. No. | Topic - THEORY                                 | Teaching hours | Must know / Desirable to know / Nice to Know | Suggested teaching methodology |
|---------|------------------------------------------------|----------------|----------------------------------------------|--------------------------------|
| 1.      | Historical background                          | 1              | NK                                           | Didactic Lecture               |
| 2.      | The Gingiva                                    | 2              | MK                                           | DL                             |
| 3.      | Periodontal ligament                           | 2              | MK                                           | DL                             |
| 4.      | Cementum                                       | 1              | MK                                           | DL                             |
| 5.      | Alveolar Bone                                  | 1              | MK                                           | DL                             |
| 6.      | Defense mechanism of gingiva                   | 2              | MK                                           | DL                             |
| 7.      | Gingival Inflammation                          | 1              | MK                                           | DL                             |
| 8.      | Clinical features of gingivitis                | 1              | MK                                           | DL                             |
| 9.      | Gingival enlargement                           | 2              | MK                                           | DL                             |
| 10.     | Dental calculus                                | 1              | MK                                           | DL                             |
| 11.     | Periodontal microbiology                       | 2              | MK                                           | DL                             |
| 12.     | Gingival diseases in childhood                 | 1              | MK                                           | DL                             |
| 13.     | Classification of periodontal diseases         | 2              | MK                                           | DL                             |
| 14.     | Acute gingival infections                      | 2              | MK                                           | Flip Class                     |
| 15.     | Influence of systemic diseases on periodontium | 2              | MK                                           | DL                             |
| 16.     | Endocrine disorders and the periodontium       | 2              | MK                                           | DL                             |
| 17.     | AIDS and periodontium                          | 1              | MK                                           | DL                             |
| 18.     | Periodontal pocket                             | 1              | MK                                           | DL                             |
| 19.     | Chronic periodontitis                          | 1              | MK                                           | DL                             |
| 20.     | Aggressive periodontitis                       | 1              | MK                                           | DL                             |
| 21.     | Recurrent and refractory periodontitis         | 1              | MK                                           | DL                             |
| 22.     | Aging & periodontium                           | 1              | MK                                           | DL                             |
| 23.     | Feedback and assessment                        | 5              | MK                                           | DL                             |

| Sr. No. | Topic - Practical                                                                          | Teaching hours | Must know / Desirable to know / Nice to Know | Suggested teaching methodology |
|---------|--------------------------------------------------------------------------------------------|----------------|----------------------------------------------|--------------------------------|
|         | <b>Clinical work and case discussion ( 2 Postings)</b>                                     |                |                                              |                                |
| 1.      | Pre-clinical exercises for III BDS on casts for practice of principles of instrumentation. | 2              |                                              |                                |
| 2.      | 10 Detailed Case History recording and Discussion                                          | 17             |                                              | OSCE                           |
| 3.      | 10 Oral Prophylaxis<br>Demonstration of All Surgical Procedure<br>Maintenance Therapy      | 52             |                                              | OSCE                           |
| 4.      | Assessment                                                                                 | 2              |                                              |                                |

## SCHEME OF EXAMINATION

**As per DCI this subject has no Theory or Practical Examination for III BDS**

## RECOMMENDED BOOKS

| SI No | Author                                          | Title                                       | Edn                | Publisher                           | Year of Publication |
|-------|-------------------------------------------------|---------------------------------------------|--------------------|-------------------------------------|---------------------|
| 1     | Carranza and Newman                             | Clinical Periodontology                     | 13th               | SB Saunders Company                 | 2019                |
| 2     | Robert Genco, Henry. M. Goldman. D.Walter Cohen | Contemporary Periodontics                   |                    | C. V. Mosby Company St. Louis       | 1990                |
| 3     | Jan Lindhe, T. Karring, N. P. Lang              | Clinical Periodontology & Implant Dentistry | 6 <sup>th</sup>    | Munksguard Copenhagen               | 2015                |
| 4     | Grant, Stern, Listgarten                        | Periodontics                                | 6 <sup>th</sup>    | Mosby CBS Publishers Indian Edition | 1998                |
| 5     | Cohen                                           | Atlas of Periodontal Surgery                | 3 <sup>rd</sup> Ed | C. V. Mosby Company, U. S. A.       | 2007                |

**Curriculum and Course Content for IV BDS**  
**Theory – 77 Hours ; Practical – 131 Hours**

| Sr. No. | Topic - THEORY                                                                                                           | Teaching hours | Must know /<br>Desirable to know /<br>Nice to Know | Suggested teaching methodology |
|---------|--------------------------------------------------------------------------------------------------------------------------|----------------|----------------------------------------------------|--------------------------------|
| 1.      | Evidence based decision making                                                                                           | 1              | DK                                                 | DL                             |
| 2.      | Aging on the periodontium                                                                                                | 1              | MK                                                 | DL                             |
| 3.      | Classification of diseases and conditions affecting the periodontium                                                     | 1              | MK                                                 | DL                             |
| 4.      | Epidemiology of gingival and periodontal disease                                                                         | 1              | DK                                                 | DL                             |
| 5.      | Smoking & periodontal disease                                                                                            | 1              | MK                                                 | DL                             |
| 6.      | Periodontal Medicine: Impact of periodontal infection on systemic health                                                 | 1              | DK                                                 | DL                             |
| 7.      | Oral malodor                                                                                                             | 1              | MK                                                 | DL                             |
| 8.      | Gingival enlargement                                                                                                     | 2              | MK                                                 | DL                             |
| 9.      | Acute gingival infections                                                                                                | 1              | MK                                                 | Flip Class                     |
| 10.     | Gingival diseases in childhood                                                                                           | 1              | MK                                                 | DL                             |
| 11.     | Desquamative gingivitis and oral mucous membrane diseases                                                                | 1              | MK                                                 | DL                             |
| 12.     | The periodontal pocket                                                                                                   | 1              | MK                                                 | DL                             |
| 13.     | Bone loss and patterns of bone destruction                                                                               | 1              | MK                                                 | DL                             |
| 14.     | Periodontal response to external forces                                                                                  | 2              | MK                                                 | DL                             |
| 15.     | Trauma from occlusion                                                                                                    | 1              | MK                                                 | DL                             |
| 16.     | Chronic periodontitis                                                                                                    | 1              | MK                                                 | DL                             |
| 17.     | Necrotizing ulcerative periodontitis, refractory periodontitis and periodontitis as a manifestation of systemic diseases | 2              | MK                                                 | DL                             |
| 18.     | Aggressive Periodontitis                                                                                                 | 1              | MK                                                 | DL                             |
| 19.     | AIDS and the periodontium                                                                                                | 2              | MK                                                 | Flip Class                     |
| 20.     | Clinical diagnosis                                                                                                       | 1              | MK                                                 | DL                             |



|     |                                                                         |   |    |     |
|-----|-------------------------------------------------------------------------|---|----|-----|
| 21. | Radiographic aids in the diagnosis of periodontal disease               | 1 | MK | DL  |
| 22. | Advanced diagnostic techniques                                          | 1 | DK | DL  |
| 23. | Risk assessment                                                         | 1 | NK | DL  |
| 24. | Levels of clinical significance                                         | 1 | NK | DL  |
| 25. | Determination of prognosis                                              | 1 | MK | DL  |
| 26. | The treatment plan                                                      | 1 | MK | DL  |
| 27. | Rationale for periodontal treatment                                     | 1 | MK | DL  |
| 28. | Periodontal therapy in the female patient                               | 1 | DK | DL  |
| 29. | Periodontal treatment of medically compromised patients                 | 2 | DK | DL  |
| 30. | Periodontal treatment of older adults                                   | 1 | DK | DL  |
| 31. | Treatment of aggressive & atypical forms of periodontitis               | 1 | DK | DL  |
| 32. | Treatment of acute gingival disease                                     | 1 | MK | DL  |
| 33. | Treatment of periodontal abscess                                        | 1 | MK | DL  |
| 34. | Non-Surgical therapy                                                    | 3 | MK | DL  |
|     | - Phase I therapy                                                       |   |    |     |
|     | - Plaque control for the periodontal patient -scaling and root planning |   |    |     |
| 35. | Chemotherapeutic agents                                                 | 2 | MK | DL  |
|     | - Local delivery of antibiotics                                         |   |    |     |
| 36. | Host modulation agents                                                  | 1 | DK | DL  |
| 37. | Periodontal splints                                                     | 1 | DK | DL  |
| 38. | Sonic and ultrasonic instrumentation                                    | 1 | MK | DL  |
| 39. | Supragingival and subgingival irrigation                                | 1 | MK | DL  |
| 40. | Occlusal evaluation and therapy                                         | 1 | DK | DL  |
| 41. | Adjunctive role of orthodontic therapy                                  | 1 | DK | DL  |
| 42. | Periodontic-Endodontic continuum                                        | 1 | DK | ITL |

|     |                                                                        |   |    |     |
|-----|------------------------------------------------------------------------|---|----|-----|
| 43. | The Surgical phase of therapy                                          | 2 | MK | DL  |
|     | - Phase II periodontal therapy                                         |   |    |     |
| 44. | General principles of periodontal surgery                              | 1 | MK | DL  |
| 45. | Surgical anatomy of periodontium and related structures                | 1 | MK | DL  |
| 46. | Gingival surgical techniques                                           | 1 | MK | DL  |
|     | Gingival curettage gingivectomy                                        |   | MK | DL  |
| 47. | Treatment of gingival enlargement                                      | 2 | MK | DL  |
| 48. | The periodontal flap                                                   | 2 | MK | DL  |
| 49. | Suturing technique                                                     | 1 | DK | DL  |
| 50. | The Flap technique for pocket therapy                                  | 2 | MK | DL  |
| 51. | Resective osseous surgery                                              | 1 | MK | DL  |
| 52. | Reconstructive periodontal therapy                                     | 2 | MK | DL  |
| 53. | Furcation: Involvement and treatment                                   | 2 | MK | DL  |
| 54. | Periodontal plastic and esthetic surgery                               | 2 | MK | DL  |
| 55. | Recent advances in surgical technology                                 | 1 | DK | DL  |
| 56. | Preparation of the periodontium for restorative dentistry              | 1 | DK | DL  |
| 57. | Restorative interrelationship                                          | 1 | MK | ITL |
| 58. | Oral Implantology                                                      | 1 | DK | ITL |
| 59. | Supportive periodontal treatment                                       | 1 | MK | DL  |
| 60. | Dental Ethics<br>-Legal principles: Jurisprudence<br>-Dental insurance | 2 | NK | DL  |
| 61. | Emerging and re-emerging diseases : COVID-19                           | 1 | NK | DL  |

| Sr. No. | Topic - Practical                                                                 | Teaching hours | Must know / Desirable to know / Nice to Know | Suggested teaching methodology |
|---------|-----------------------------------------------------------------------------------|----------------|----------------------------------------------|--------------------------------|
|         | <b>Clinical work and case discussion</b>                                          |                |                                              |                                |
| 1       | 15 Case history                                                                   | 22             |                                              | OSCE                           |
| 2       | 40 Oral prophylaxis                                                               | 80             |                                              | OSCE                           |
| 3       | Two cases of compulsory ultrasonic scaling after completion of hand scaling quota |                |                                              |                                |
| 4       | Demonstration of all surgical procedure                                           | 10             |                                              |                                |
| 5       | Maintenance therapy                                                               | 10             |                                              |                                |
| 6       | Demonstration for sterilization procedure for COVID -19                           | 1              |                                              | DOPS                           |

## SCHEME OF EXAMINATION

### A. Theory: 70 Marks

Distribution of Topics and type of Questions

| Contents                                                                                                                                        | Type of Questions and Marks   | Marks     |
|-------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|-----------|
| <b>MCQ</b>                                                                                                                                      | 20 x 1 marks                  | 20        |
| <b>Long essays</b><br>One long essay from basics and etiopathogenesis<br>One long essay from treatment                                          | Long essays<br>2 x 10 marks   | 20        |
| <b>Short answers</b><br>4 short answer from etiopathogenesis<br>3 short answer questions from basics<br>3 short answer questions from treatment | Short answers<br>10 x 3 marks | 30        |
|                                                                                                                                                 | <b>Total</b>                  | <b>70</b> |

**B. Theory Viva-Voce: 20 Marks**

|                  |          |
|------------------|----------|
| Etiopathogenesis | 06 marks |
| Treatment        | 08 marks |
| Basics           | 06 marks |

**Total 20 Marks**

**Practicals****C. Clinical Examination: 90 Marks**

Exercise No.1: Clinical case history - Marks: 40

Exercise No.2: Clinical work (Oral prophylaxis) - Marks: 50

**D. Internal Assessment: 20 Marks**

Theory: 10 marks / Practical's: 10 marks

| <b>THEORY : 100 Marks</b>  |            | <b>PRACTICAL : 100 Marks</b>  |            |
|----------------------------|------------|-------------------------------|------------|
| Theory examination         | : 70 Marks | Practical Examination         | : 90 Marks |
| Theory Internal Assessment | : 10 Marks | Practical Internal Assessment | : 10 Marks |
| Viva Voce                  | : 20 Marks |                               |            |
| Total                      | 100 Marks  | Total                         | :100 Marks |

## RECOMMENDED BOOKS

| Sl No | Author                                          | Title                                                      | Edn  | Publisher                           | Year of Publication |
|-------|-------------------------------------------------|------------------------------------------------------------|------|-------------------------------------|---------------------|
| 1     | Carranza and Newman                             | Clinical periodontology                                    | 13th | SB Saunders Company                 | 2019                |
| 2     | Robert Genco, Henry. M. Goldman. D.Walter Cohen | Contemporary periodontics                                  |      | C. V. Mosby Company St. Louis       | —                   |
| 3     | Jan Lindhe, T. Karring, N. P. Lang              | Clinical Periodontology & Implant Dentistry                | 5th  | Munksguard Copenhagen               | 2007                |
| 4     | Grant, Stern, Listgarten                        | Periodontics                                               | 6th  | Mosby CBS Publishers Indian Edition | 1998                |
| 5     | S. P. Ramfjord, M. M Ash                        | Periodontology and Periodontics Modern Theory and practice | —    | AITBS Publisher India               | 1996                |
| 6     | T. ITO, J. D. Johnson                           | Colour Atlas of Periodontal Surgery                        | —    | Mosby & Wolfe. U. S.A.              | —                   |
| 7     | Cohen                                           | Atlas of Periodontal Surgery                               | —    | C. V. Mosby Company, U. S. A.       | —                   |

## **2.4.3. ORAL & MAXILLOFACIAL SURGERY**

### **AIM:**

To produce a dental surgeon competent enough to perform tooth extraction under both local and General Anesthesia, anticipate, prevent and manage associated complications, recognize underlying medical conditions and modify treatment plan, acquire adequate knowledge and understanding of various congenital, developmental and acquired pathologies, dysfunctions, defects and injuries occurring in the oral and Maxillofacial region, providing treatment options for common conditions and at the same time able to diagnose maxillofacial pathologies, fractures and refer them to higher specialty.

### **OBJECTIVES:**

#### **a) Knowledge & Understanding:**

By the end of the course of the clinical training the graduate is expected to –

1. Application of the knowledge acquired in the related medical subjects like pathology, microbiology and general medicine in the management of patients with oral surgical problem.
2. Good understanding of the evaluation, diagnosis and perioperative management of oral surgical patient.
3. Knowledge of range of surgical treatments.
4. Patient counseling regarding morbidity and dysfunction associated with craniofacial pathologies and anomalies and referring such patients to specialists.
5. Understand the principles of in-patient management.
6. Understanding the need of surgery for the aforementioned conditions and principles involved in patient management.
7. Adequate knowledge of pain and anxiety management.
8. Should know ethical and medicolegal issues and communication ability.

#### **b) Skills:**

1. Acquire skill to examine any patient with oral surgical problem in a systematic manner and requisition of various clinical and laboratory investigations to arrive at a specific diagnosis.
2. Should be efficient in exodontia both under local and general anesthesia.

3. Perform minor surgical procedures under local anesthesia like frenectomy, Alveoloplasty, Biopsy and suturing techniques.
4. Ability to anticipate prevent and manage complications during and after surgery.
5. Understanding of management of major oral surgical problems and principles involved in inpatient management.
6. Diagnosis and Management of medical emergencies occurring on dental chair.
7. Identify the medically compromised patients and modify the treatment plan as required.

### Course outcomes - Theory

| At the end of Oral and Maxillofacial Surgery course, the students should be able to: |                                                                                                                                 |
|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| T 2.4.3.1                                                                            | Describe the evaluation, diagnosis and management of common oral surgical diseases and discuss the various surgical treatments. |
| T 2.4.3.2                                                                            | Discuss the treatment modifications required in the medically compromised patient.                                              |
| T 2.4.3.3                                                                            | Describe the major oral surgical diseases and the principals involved in in-patient management.                                 |

### Matrix of Programme Outcome & Course Outcome (POCO) - Theory

| Course Out come      | PO1        | PO2        | PO3      | PO4        | PO5      | PO6        | PO7        |
|----------------------|------------|------------|----------|------------|----------|------------|------------|
| T 2.4.3.1            | 2          | 2          | 1        | 2          | 1        | 2          | 2          |
| T 2.4.3.2            | 2          | 2          | 1        | 2          | 1        | 2          | 2          |
| T 2.4.3.3            | 1          | 1          | 1        | 1          | 1        | 1          | 1          |
| <b>Average Score</b> | <b>1.6</b> | <b>1.6</b> | <b>1</b> | <b>1.6</b> | <b>1</b> | <b>1.6</b> | <b>1.6</b> |

### Course Outcomes - Clinical

| At the end of Oral and Maxillofacial Surgery course,<br>the students should be able to: |                                                                                                                                                           |
|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| C 2.4.3.1                                                                               | Record case history, demonstrate clinical examination, advise and interpret radiological and laboratory investigations to arrive at a specific diagnosis. |
| C 2.4.3.2                                                                               | Perform exodontia and minor surgical procedures like suturing and alveoloplasty under Local Anesthesia following the standard sterilization protocols.    |
| C 2.4.3.3                                                                               | Identify and manage medical emergencies on dental chair and minor oral surgical complications intra operatively and postoperatively.                      |
| C 2.4.3.4                                                                               | Diagnose (Impacted 3 <sup>rd</sup> molar, Cysts, Tumors, and Fractures etc.) and refer cases beyond their expertise to Oral and Maxillofacial Surgeon.    |

### Matrix of Programme Outcome & Course Outcome (POCO) - Clinical

| Course Outcome       | PO1         | PO2        | PO3      | PO4        | PO5         | PO6      | PO7      |
|----------------------|-------------|------------|----------|------------|-------------|----------|----------|
| C 2.4.3.1            | 3           | 3          | 3        | 3          | 1           | 2        | 2        |
| C 2.4.3.2            | 3           | 3          | 1        | 3          | 1           | 2        | 2        |
| C 2.4.3.3            | 3           | 2          | 2        | 2          | 1           | 2        | 2        |
| C 2.4.3.4            | 2           | 2          | 2        | 2          | 2           | 2        | 2        |
| <b>Average Score</b> | <b>2.75</b> | <b>2.5</b> | <b>2</b> | <b>2.5</b> | <b>1.25</b> | <b>2</b> | <b>2</b> |



**Curriculum and Course Content for III BDS**  
**Theory – 76 Hours; Practical – 130 Hours**

| Sr. No. | Topic - THEORY                                                                                                                                                                                                                                                                                                                                                                                                                                           | Teaching hours | Must know /<br>Desirable to know /<br>Nice to Know | Suggested teaching methodology |
|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------------------------------------------|--------------------------------|
| 1.      | <b>INTRODUCTION TO ORAL SURGERY</b> <ul style="list-style-type: none"> <li>• Introduction.</li> <li>• Definition.</li> <li>• Scope.</li> <li>• Aims and objectives</li> </ul>                                                                                                                                                                                                                                                                            | 02             | MK                                                 | Lecture                        |
| 2.      | <b>DIAGNOSIS IN ORAL SURGERY</b> <ul style="list-style-type: none"> <li>• History taking</li> <li>• Clinical examination.</li> </ul>                                                                                                                                                                                                                                                                                                                     | 01             | MK                                                 | Discussion                     |
| 3.      | <b>PRINCIPLES OF INFECTION CONTROL</b><br><br>GENERAL PRINCIPLES OF ORAL SURGERY <ul style="list-style-type: none"> <li>• Asepsis and sterilization.</li> <li>• Access:</li> </ul>                                                                                                                                                                                                                                                                       | 01             | MK                                                 | Lecture                        |
|         | 1. Intra-oral: <ol style="list-style-type: none"> <li>1) Mucoperiosteal flaps – principles</li> <li>2) Commonly used intra oral incisions.</li> <li>3) Bone Removal: Methods of bone removal.</li> </ol>                                                                                                                                                                                                                                                 | 01             | MK                                                 | Discussion                     |
|         | 2. Extra-oral: <ol style="list-style-type: none"> <li>1) Skin incisions – principles.</li> <li>2) Control of haemorrhage during surgery: <ul style="list-style-type: none"> <li>• Normal Haemostasis</li> <li>• Local measures available to control bleeding</li> </ul> </li> <li>3) Drainage &amp; Debridement: <ul style="list-style-type: none"> <li>• Purpose of drainage in surgical wounds.</li> <li>• Debridement: Purpose</li> </ul> </li> </ol> | 01             | MK                                                 | Discussion                     |

|    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |    |    |                                           |
|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----|-------------------------------------------|
|    | 4) Closure of wounds: <ul style="list-style-type: none"> <li>• Suturing: Principles.</li> <li>• Suture material.</li> <li>• Classification.</li> </ul> 5) Post-operative care: <ul style="list-style-type: none"> <li>• Post-operative instructions.</li> <li>• Physiology of cold and heat.</li> <li>• Control of pain – analgesics.</li> <li>• Control of infection – antibiotics.</li> <li>• Control of swelling – anti-inflammatory.</li> </ul>                                                                                                                                                                                     |    |    |                                           |
| 4. | <b>EXODONTIA</b> <ol style="list-style-type: none"> <li>1. General considerations.</li> <li>2. Ideal extraction.</li> <li>3. Indications and contraindications for extraction of teeth.</li> <li>4. Extractions in medically compromised patients</li> <li>5. Methods of extraction- <ol style="list-style-type: none"> <li>a). Forceps or intra-alveolar or closed method. Principles, types of movement, force etc.</li> <li>b). Trans-alveolar/surgical method. Indications, surgical procedure.</li> </ol> </li> <li>6. Dental elevators: uses, classification, principles in the use elevators, commonly used elevators</li> </ol> | 04 | MK | -Lecture<br>-Demonstration<br>-Discussion |
| 5. | <b>BENIGN CYSTIC LESIONS OF THE JAWS</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 03 | MK | Lecture                                   |
|    | 1. Definition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |    |    |                                           |
|    | 2. Classification                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |    |    |                                           |
|    | 3. Pathogenesis                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |    |    |                                           |

|    |                                                                                                                                                                                                                                            |    |    |            |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----|------------|
|    | 4. Diagnosis –<br>a. Clinical features<br>b. Radiological<br>c. Aspiration biopsy<br>d. Use of contrast media<br>e. Histopathology.                                                                                                        |    |    |            |
|    | 5. Management –<br>a. Types of surgical procedures<br>b. Rationale of the techniques,<br>c. Indication                                                                                                                                     |    |    |            |
| 6. | <b>MEDICAL EMERGENCIES IN DENTAL PRACTICE</b>                                                                                                                                                                                              | 03 | MK | Lecture    |
|    | Primary care of Medical emergencies in dental practice particularly<br><ul style="list-style-type: none"> <li>• Cardiovascular</li> <li>• Respiratory</li> <li>• Endocrine</li> <li>• Anaphylactic Reaction</li> <li>• Epilepsy</li> </ul> |    |    |            |
| 7. | <b>EMERGENCY DRUGS AND PROCEDURES</b><br>Emergency Drugs                                                                                                                                                                                   | 01 | MK | Discussion |
| 8. | <b>ANAESTHESIA</b>                                                                                                                                                                                                                         | 05 | MK | Lecture    |
|    | 1. Introduction                                                                                                                                                                                                                            |    |    |            |
|    | 2. Concept of LA                                                                                                                                                                                                                           |    |    |            |
|    | 3. Classification of Local Anaesthetic agents                                                                                                                                                                                              |    |    |            |
|    | 4. Ideal requirements                                                                                                                                                                                                                      |    |    |            |
|    | 5. Mode of action                                                                                                                                                                                                                          |    |    |            |
|    | 6. Types of LA                                                                                                                                                                                                                             |    |    |            |

|     |                                                                                                                                                                                      |    |    |                                        |
|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----|----------------------------------------|
|     | 7. Use of vasoconstrictors in LA solutions                                                                                                                                           |    |    |                                        |
|     | 8. Advantages, contraindications, various vasoconstrictors                                                                                                                           |    |    |                                        |
|     | 9. Anaesthesia of the mandible<br>a. Pterygomandibular space-boundaries, contents.<br>(Inferior Dental Nerve block – techniques, complications)<br><br>b. Mental foramen nerve block | 05 |    | Lecture<br>Discussion<br>Demonstration |
|     | 10. Anaesthesia of maxilla:<br><br>a. Infraorbital nerve block<br><br>b. Posterior superior Alveolar nerve block<br><br>c. Maxillary Nerve block techniques                          |    |    | Lecture<br>Discussion<br>Demonstration |
| 9.  | <b>INFECTION CONTROL</b><br><br>Cross infection control with particular reference to HIV/AIDS and Hepatitis.                                                                         | 01 | MK | Lecture                                |
| 10. | <b>ANAESTHESIA</b>                                                                                                                                                                   |    | DK |                                        |
|     | <b>Local Anaesthesia:</b><br><br>Complications of local anaesthesia.                                                                                                                 | 01 |    | Lecture                                |
|     | <b>General Anaesthesia</b>                                                                                                                                                           | 03 |    | Lecture                                |
|     | 1. Concept of general anaesthesia                                                                                                                                                    |    |    |                                        |
|     | 2. Indications of general anaesthesia in dentistry.                                                                                                                                  |    |    |                                        |
|     | 3. Pre-anaesthetic evaluation of the patients.                                                                                                                                       |    |    |                                        |
|     | 4. Pre-anaesthetic medication- advantages, drugs used.                                                                                                                               |    |    |                                        |
|     | 5. Commonly used anaesthetic agents.                                                                                                                                                 |    |    |                                        |
|     | 6. Complication during and after G.A.                                                                                                                                                |    |    |                                        |

|     |                                                                                    |   |    |                  |
|-----|------------------------------------------------------------------------------------|---|----|------------------|
|     | 7. I.V. sedation with Diazepam and Midazolam.                                      |   |    |                  |
|     | 8. Indications, mode of action, technique etc.                                     |   |    |                  |
|     | 9. Cardiopulmonary resuscitation.                                                  |   |    |                  |
|     | 10. Use of oxygen and emergency drugs.                                             |   |    |                  |
|     | 11. Tracheostomy.                                                                  |   |    |                  |
| 11. | Emerging and re-emerging infections – Mucromycosis                                 | 1 | NK | Didactic Lecture |
| 12. | Demonstration of Infiltration, Nerve Block & Extraction through Clinical Simulator | 3 | MK | Lecture          |

## RECOMMENDED BOOKS

| Sl. No. | Book Name                                                     | Author         | Edition         | Year |
|---------|---------------------------------------------------------------|----------------|-----------------|------|
| 1       | Handbook of local anesthesia                                  | Malamed S. F.  | 4 <sup>th</sup> | 2001 |
| 2       | Monheims local anesthesia and pain control in dental practice | Bennett. C. R. | 7 <sup>th</sup> | 1984 |
| 3       | Minor oral Surgery                                            | Howe G. L.     | 3 <sup>rd</sup> | 1985 |
| 4       | The extraction of teeth                                       | Howe G. L.     | 2 <sup>nd</sup> | 1980 |
| 5       | Hand book of medical emergencies in the dental office         | Malamed S. F.  | 3 <sup>rd</sup> | 1989 |

**Curriculum and Course Content for IV BDS**  
**Theory – 55 Hours ; Practical – 200 Hours**

| Sr. No. | Topic - THEORY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Teaching hours | Must know / Desirable to know / Nice to Know | Suggested teaching methodology |
|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------------------------------------|--------------------------------|
| 1.      | <b>IMPACTED TEETH</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 04             | MK                                           | Lecture                        |
|         | -Incidence definition, aetiology.<br>(a) Impacted mandibular third molar.<br>-Classification, reasons for removal.<br>-Assessment- both clinical & radiological.<br>-Surgical procedures for removal.<br>-Maxillary third molar- Identification for removal, classification, surgical procedure for removal.<br>-Impacted maxillary canine- Reasons for canine impaction, Localization, Indications for removal.<br>-Methods of management, labial and palatal approach, surgical exposure, transplantation, removal. |                |                                              |                                |
| 2.      | <b>PRE-PROSTHETIC SURGERY</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 02             | MK                                           | Lecture                        |
|         | 1. Definition, classification of procedures.                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                |                                              |                                |
|         | 2. Corrective procedures:<br>a. Alveoloplasty,<br>b. Frenectomies                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                |                                              |                                |
|         | 3. Ridge extension or Sulcus extension procedures<br>a. Indications                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                |                                              |                                |
|         | 4. Ridge augmentation and reconstruction.<br>a. Indications                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                |                                              |                                |

|    |                                                                                                                                                                                  |    |    |         |
|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----|---------|
| 3. | <b>DISEASES OF THE MAXILLARY SINUS</b>                                                                                                                                           | 02 | MK | Lecture |
|    | 1. Surgical anatomy of the sinus                                                                                                                                                 |    |    |         |
|    | 2. Sinusitis:<br>a. Etiology.<br>b. Clinical features.<br>c. Non- surgical management.<br>d. Names of surgical procedures and its principles.                                    |    |    |         |
|    | 3. Removal of root from the sinus                                                                                                                                                |    |    |         |
|    | 4. Oro-antral fistula:<br>a. Etiology.<br>b. Clinical features.<br>c. Names of surgical procedures and its principles.                                                           |    |    |         |
| 4. | <b>INFECTIONS OF THE ORAL CAVITY</b>                                                                                                                                             | 03 | MK | Lecture |
|    | 1. Introduction                                                                                                                                                                  |    |    |         |
|    | 2. Factors responsible for infection                                                                                                                                             |    |    |         |
|    | 3. Course of infections.                                                                                                                                                         |    |    |         |
|    | 4. Spread of odontogenic infections through various fascial spaces                                                                                                               |    |    |         |
|    | 5. Dentoalveolar abscess – aetiology, clinical features and management.                                                                                                          |    |    |         |
|    | 6. Osteomyelitis of jaws –<br>a. Definition<br><br>b. Aetiology, pre-disposing factors.<br><br>c. Classification<br><br>d. Clinical features<br><br>e. Management- Non surgical. |    |    |         |

|    |                                                                                                                                                                                                                                                                                                                                               |    |    |         |
|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----|---------|
|    | 7. Ludwig's angina <ul style="list-style-type: none"> <li>a. Definition</li> <li>b. Aetiology</li> <li>c. Clinical features</li> <li>d. Management – Non surgical.</li> </ul>                                                                                                                                                                 |    |    |         |
| 5. | <b>TUMOURS OF THE ORAL CAVITY</b>                                                                                                                                                                                                                                                                                                             | 03 | MK | Lecture |
|    | 1. General considerations                                                                                                                                                                                                                                                                                                                     |    |    |         |
|    | 2. Non odontogenic benign tumours <ul style="list-style-type: none"> <li>a. Fibroma</li> <li>b. Papilloma</li> <li>c. Lipoma</li> <li>d. Ossifying fibroma</li> <li>e. Myxoma</li> <li>f. Ameloblastoma               <ul style="list-style-type: none"> <li>i. Clinical features</li> <li>ii. Radiological appearance</li> </ul> </li> </ul> |    |    |         |
|    | 3. Carcinoma of the oral cavity – <ul style="list-style-type: none"> <li>a. Biopsy</li> <li>b. TNM classification</li> <li>c. Outline of management of squamous cell carcinoma</li> </ul>                                                                                                                                                     |    |    |         |
|    | 4. Role of dental surgeons in the prevention and early detection of oral cancer                                                                                                                                                                                                                                                               |    |    |         |
| 6. | <b>FRACTURES OF THE JAWS</b>                                                                                                                                                                                                                                                                                                                  | 10 | MK | Lecture |
|    | General considerations<br><br>Types of fractures<br><br>Aetiology<br><br>Clinical features<br><br>General principles of management                                                                                                                                                                                                            |    |    |         |



|    |                                                                                                                                                   |           |           |                |
|----|---------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-----------|----------------|
|    | Mandibular fractures –<br>Applied anatomy<br>Classification<br>Diagnosis – Clinical<br>Radiological                                               |           |           |                |
|    | <b>Fractures of the condyle</b><br>Aetiology<br>Classification<br>Clinical features                                                               |           |           |                |
|    | <b>Fractures of the middle third of the face</b><br>Definition of the mid face<br>Applied Surgical anatomy<br>Classification<br>Clinical Features |           |           |                |
|    | <b>Alveolar fractures-</b><br>Methods of management                                                                                               |           |           |                |
|    | <b>Fractures of the Zygomatic complex</b><br>Classification<br>Clinical features<br>Indications for treatment                                     |           |           |                |
| 7. | <b>DISORDERS OF T.M. JOINT</b>                                                                                                                    | <b>02</b> | <b>MK</b> | <b>Lecture</b> |
|    | Applied surgical anatomy of the joint.                                                                                                            |           |           |                |
|    | Dislocation<br>a. Definition of related terminologies.                                                                                            |           |           |                |

|     |                                                                                                                                                                                                                         |    |    |         |
|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----|---------|
|     | b.Types.<br>c.Aetiology.<br>d.Clinical features.<br>e.Management- Non surgical.<br>f.Comparison of dislocation and subluxation.                                                                                         |    |    |         |
|     | Ankylosis:<br>a.Definition and classification.<br>b.Aetiology.<br>c.Clinical features.<br>d.Management- Non surgical.                                                                                                   |    |    |         |
| 8.  | <b>SALIVARY GLAND DISEASES</b>                                                                                                                                                                                          | 03 | MK | Lecture |
|     | Diagnosis of Salivary gland disease<br>Sialography, contrast media, procedure<br>Infections of the salivary glands<br>Sialolithiasis- Submandibular duct and gland and parotid duct<br>Clinical features and management |    |    |         |
| 9.  | <b>ORAL IMPLANTOLOGY</b>                                                                                                                                                                                                | 01 | MK | Lecture |
|     | Concept of osseointegration<br>Knowledge of various types of implants                                                                                                                                                   |    |    |         |
| 10. | <b>EXODONTIA</b>                                                                                                                                                                                                        | 01 | MK | Lecture |
|     | Complications of exodontia<br>a. Operative complications common to both maxilla and mandible<br>b. Post-operative complications<br>c. Prevention and management of complications                                        |    |    |         |

|     |                                                                                                                                                                                                                                         |    |    |                       |
|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----|-----------------------|
| 11. | <b>GENERAL PRINCIPLES OF ORAL SURGERY</b>                                                                                                                                                                                               | 02 | DK | Lecture<br>Discussion |
|     | a. Surgery Set up                                                                                                                                                                                                                       |    |    |                       |
|     | b. Access                                                                                                                                                                                                                               |    |    | Lecture               |
|     | 1) Intraoral<br>Use of Burs<br><br>Advantages, Precautions<br><br>Bone cutting instruments-<br>Principles of using Chisel and<br>Osteotome                                                                                              |    |    |                       |
|     | 2) Extraoral                                                                                                                                                                                                                            |    |    |                       |
|     | Various extraoral incisions to<br>expose facial skeleton<br><br><ul style="list-style-type: none"> <li>• Submandibular</li> <li>• Preauricular</li> <li>• Incision to expose maxilla and orbit</li> <li>• Bicoronal incision</li> </ul> |    |    |                       |
|     | Control of haemorrhage during<br>Surgery<br><br><ul style="list-style-type: none"> <li>• Hypotensive Anaesthesia</li> </ul>                                                                                                             |    |    |                       |
|     | Drainage and debridement<br><br><ul style="list-style-type: none"> <li>• Types of drains used</li> <li>• Debridement</li> </ul>                                                                                                         |    |    |                       |
|     | Soft tissue and bone debridement<br><br><ul style="list-style-type: none"> <li>• Closure of wounds</li> <li>• Body response to various materials</li> <li>• Long term postoperative follow up Significance</li> </ul>                   |    |    |                       |
| 12. | <b>IMPACTED TEETH</b>                                                                                                                                                                                                                   | 01 | DK | Lecture               |
|     | Complications during and after<br>removal<br><br>Prevention and management.                                                                                                                                                             |    |    |                       |

|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |    |    |         |
|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----|---------|
| 13. | <b>PRE-PROSTHETIC SURGERY</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 02 | DK | Lecture |
|     | <ol style="list-style-type: none"> <li>1. Corrective procedures: <ol style="list-style-type: none"> <li>a. Reduction of maxillary tuberosities,</li> <li>b. Removal of tori.</li> </ol> </li> <li>2. Ridge extension or Sulcus extension procedures <ol style="list-style-type: none"> <li>a. Surgical procedures</li> </ol> </li> <li>3. Ridge augmentation and reconstruction. <ol style="list-style-type: none"> <li>a. Use of bone grafts, Hydroxyapatite</li> </ol> </li> <li>4. Implants- <ol style="list-style-type: none"> <li>a. Surgical procedure to place implants.</li> </ol> </li> </ol> |    |    |         |
| 14. | <b>DISEASES OF THE MAXILLARY SINUS</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 01 | DK | Lecture |
|     | <ol style="list-style-type: none"> <li>1. Sinusitis <ol style="list-style-type: none"> <li>a. Surgical approach of sinus- description of various surgical procedures and complications.</li> </ol> </li> <li>2. Oro-antral fistula: <ol style="list-style-type: none"> <li>a. Various surgical methods for closure.</li> <li>b. Complications</li> </ol> </li> </ol>                                                                                                                                                                                                                                   |    |    |         |
| 15. | <b>DISORDERS OF T.M. JOINT</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 03 | DK | Lecture |
|     | <ol style="list-style-type: none"> <li>1. Dislocation- <ol style="list-style-type: none"> <li>a. Management – surgical.</li> </ol> </li> <li>2. Ankylosis- <ol style="list-style-type: none"> <li>a. Management – surgical.</li> </ol> </li> <li>3. Internal derangement <ol style="list-style-type: none"> <li>a. Arthritis of T.M. Joint.</li> </ol> </li> </ol>                                                                                                                                                                                                                                     |    |    |         |
| 16. | <b>INFECTIONS OF THE ORAL CAVITY</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 02 | DK | Lecture |
|     | <ol style="list-style-type: none"> <li>1. Osteomyelitis of the jaws- <ol style="list-style-type: none"> <li>a. Management.</li> </ol> </li> <li>2. Ludwigs angina- <ol style="list-style-type: none"> <li>a. Management</li> </ol> </li> <li>3. Complications</li> </ol>                                                                                                                                                                                                                                                                                                                               |    |    |         |
| 17. | <b>BENIGN CYSTIC LESIONS OF THE JAWS</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 01 | DK | Lecture |

|     |                                                                                                                                                                              |    |    |         |
|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----|---------|
|     | 1. Management-<br>Procedures<br><br>2. Complications                                                                                                                         |    |    |         |
| 18. | <b>TUMOURS OF THE ORAL CAVITY</b>                                                                                                                                            | 01 | DK | Lecture |
|     | 1. Ameloblastoma, methods of management.<br>2. Carcinoma of the oral cavity<br>a. Management of squamous cell carcinoma:<br>i. Surgery<br>ii. Radiation<br>iii. Chemotherapy |    |    |         |
| 19. | <b>JAW DEFORMITIES</b>                                                                                                                                                       | 04 | DK | Lecture |
|     | Basic forms – Prognathism<br><br>Retrognathism<br><br>Open Bite<br><br>Reasons for correction                                                                                |    |    |         |
| 20. | <b>NEUROLOGICAL DISORDERS</b>                                                                                                                                                | 01 | DK | Lecture |
|     | Trigeminal Neuralgia- Definition, etiology, clinical features and medical management<br><br>Facial Paralysis – Definition, etiology, and clinical features                   |    |    |         |
| 21. | <b>CLEFT LIP AND PALATE</b>                                                                                                                                                  | 01 | DK | Lecture |
|     | Aetiology of clefts<br><br>Incidence of the clefts<br><br>Classification of the clefts                                                                                       |    |    |         |
| 22. | <b>MANAGEMENT AND FIXATION OF FRACTURES IN DETAIL</b>                                                                                                                        | 01 | DK | Lecture |
| 23. | <b>CLEFT LIP AND PALATE</b>                                                                                                                                                  | 01 | DK | Lecture |
|     | Role of dental surgeon in the management of cleft patients.<br><br>Outline of the closure procedures                                                                         |    |    |         |

|     |                                                                                                                   |    |    |         |
|-----|-------------------------------------------------------------------------------------------------------------------|----|----|---------|
| 24. | <b>EMERGENCY DRUGS AND PROCEDURES</b>                                                                             | 01 | DK | Lecture |
|     | Intramuscular I.V. Injections-<br>Applied anatomy, Ideal location for giving these injections, techniques etc.    |    |    |         |
| 25. | <b>ORAL IMPLANTOLOGY</b>                                                                                          | 01 | DK | Lecture |
|     | Surgical procedures to place implants                                                                             |    |    |         |
| 26. | <b>ETHICS</b>                                                                                                     | 01 | DK | Lecture |
|     | Patient-doctor relationship<br>Doctor-doctor relationship<br>Informed consent<br>Medicolegal considerations       |    |    |         |
| 27. | <b>COMPLICATIONS OF FRACTURE MID FACE AND MANDIBULAR</b>                                                          | 01 | NK | Lecture |
|     | Delayed union<br>Non-union<br>Malunion                                                                            |    |    |         |
| 28. | <b>SALIVARY GLAND DISEASES</b>                                                                                    | 01 | NK | Lecture |
|     | Salivary fistulae<br><br>Common tumors of salivary gland like Pleomorphic adenoma including minor salivary glands |    |    |         |
| 29. | <b>JAW DEFORMITIES</b>                                                                                            | 01 | NK | Lecture |
|     | Outline of surgical methods carried out on mandible and maxilla and associated complications.                     |    |    |         |
| 30. | <b>NEUROLOGICAL DISORDERS</b>                                                                                     | 01 | NK | Lecture |

|         | Trigeminal neuralgia- Surgical management<br>Facial paralysis- Management<br>Nerve injuries- Neurohaphy                                                                                                                                                                                                                                                                                           |                |                                              |                                                                       |
|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------------------------------------|-----------------------------------------------------------------------|
| 31.     | <b>RECENT ADVANCES</b>                                                                                                                                                                                                                                                                                                                                                                            | 01             | NK                                           | Lecture                                                               |
|         | 1. Peizosurgery<br>2. Nanosurgery<br>3. Navigation surgery<br>4. Endoscopic surgery<br>5. Computer associated local anaesthesia delivery system                                                                                                                                                                                                                                                   |                |                                              |                                                                       |
| 32.     | Endodontic Surgery                                                                                                                                                                                                                                                                                                                                                                                | 01             | DK                                           | Lecture                                                               |
| 33.     | Medico legal consideration in Oral & Maxillofacial Surgery                                                                                                                                                                                                                                                                                                                                        | 01             | DK                                           | Lecture                                                               |
| Sr. No. | Topic - PRACTICALS                                                                                                                                                                                                                                                                                                                                                                                | Teaching hours | Must know / Desirable to know / Nice to Know | Suggested teaching methodology                                        |
|         | <b>CLINICALS</b><br>III BDS-70 hours, IV BDS-90 hours                                                                                                                                                                                                                                                                                                                                             | 160            | MK                                           |                                                                       |
| 1.      | <b>Students are required to learn the following</b>                                                                                                                                                                                                                                                                                                                                               |                |                                              |                                                                       |
|         | 1. Case history taking & examination of the patient<br>2. Recording blood pressure & vital signs<br>3. Various anesthetic injections techniques<br>4. Use of different instruments in Oral surgery<br>5. Carry out extractions, have knowledge about minor surgical procedures under LA like frenectomy, alveolar procedures and biopsy.<br>6. Suturing techniques on models – orange peel/gloves |                |                                              | - Discussion<br>-Demonstration<br>-Clinical Exposure<br>-And Hands-On |
|         | Understand the management of major oral surgical problems and principles involved in in-patient management                                                                                                                                                                                                                                                                                        |                |                                              |                                                                       |

## SCHEME OF EXAMINATION

### A. THEORY: 100 Marks

Distribution of Topics and type of Questions

| Contents                              | Type of Questions and Marks | Marks |
|---------------------------------------|-----------------------------|-------|
| <b>Multiple choice questions</b>      | M.C.Q.                      | 20    |
| Entire Portion                        | 20×1                        |       |
| <b>Long essays</b>                    | Long essays                 | 20    |
| 1. One question from Local Anesthesia | 2 x 10 marks                |       |
| 2. One question from Oral Surgery     |                             |       |
| <b>Short answers Entire portion</b>   | Short answers               | 30    |
| 9 Question from Oral Surgery          | 10 x 3 marks = 30           |       |
| 1 Question form Local Anesthesia      |                             |       |
| Internal Assessment                   |                             | 10    |
| Total                                 |                             | 80    |

**B. VIVA-VOCE:** 20 Marks

Total 100 Marks

### C. CLINICAL EXAMINATION: 90 Marks

(i) Case History, Examination of the patient, presenting the case history to the examiners at the chair side 30 Marks

(ii) Local Anesthesia techniques 30 Marks

(iii) Tooth Extraction and patient management 30 Marks

(iv) Internal Assessment 10 Marks

Total 100 Marks

### D. INTERNAL ASSESSMENT – Theory: 10 Marks ; Practical: 10 Marks



## RECOMMENDED BOOKS

| Sl. No | Book Name                                                      | Author                         | Edition | Year |
|--------|----------------------------------------------------------------|--------------------------------|---------|------|
| 01     | Oral and Maxillofacial Surgery.                                | Laskin.d.m.                    | 1ED     | 1985 |
| 02     | Killey and kays Outline of Oral Surgery. Part 1.               | Seward.G.R;<br>Harris.M.       | 2ED     | 1987 |
| 03     | Killey and Kay's outline of Oral Surgery, part II.             | Seward.G.R;<br>Harris.M.       | 2ED     | 1987 |
| 04     | Killey's fractures of the middle third of the facial skeleton. | Banks.P.                       | 4ED     | 1981 |
| 05     | Killeys Fractures Of The Mandible.                             | Banks.P.                       | 3ED     | 1985 |
| 06     | Cysts Of The Oral And Maxillofacial Regions.                   | Shear.M.                       | 4ED     | 2007 |
| 07     | Oral And Maxillofacial Infections.                             | Topazian.R.G;<br>Goldberg.M.H. | 2ED     | 1987 |

## LIST OF REFERENCE BOOKS

| SI No | Topics                                 | Books                                                                                                                                                                              |
|-------|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1     | Extraction and instruments             | The extraction of teeth-Geoffery L.Howe<br>-Oral and maxillofacial surgery-Archer                                                                                                  |
| 2     | Medical emergencies in dental practice | Malamed's Medical emergencies in the dental Office<br>Little and Falace's dental management of the medically compromised patient                                                   |
| 3     | Local anaesthesia and books            | Oral and maxillofacial surgery-Daniel M.Laskin,<br>Volume-I<br>Handbook of local anaesthesia-Stanely F. Malamed<br>Monheim's Local anaesthesia and pain control in dental practice |
| 4     | Impaction                              | Oral and maxillofacial surgery-Archer                                                                                                                                              |
| 5     | Space infection                        | Oral and maxillofacial surgery-Daniel M. Laskin<br>Topazian -of Oral and maxillofacial infections                                                                                  |

|    |                                                                            |                                                                                                                                                              |
|----|----------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 6  | Cyst of the jaws                                                           | Oral and maxillofacial surgery-Daniel M. Laskin<br>Textbook of Oral and maxillofacial surgery<br>S.M.Balaji                                                  |
| 7  | Benign tumours of the jaws                                                 | Oral and maxillofacial surgery Daniel M .Laskin<br>Volume-II                                                                                                 |
| 8  | Malignant tumours of the jaws                                              | Peterson's principles of oral and maxillofacial<br>Surgery –Volume-II                                                                                        |
| 9  | Maxillofacial trauma-<br>a. Mid face fractures<br>b. Mandible fractures    | Killey's fractures of the middle third of the facial<br>skeleton<br>Killey's fractures of the mandible                                                       |
| 10 | Red and white Lesions,<br>Oral cancer                                      | Jatin P. Shah -Oral cancer Chapter-<br>Potential malignant Lesions                                                                                           |
| 11 | Nerve injuries, Trigeminal neuralgia                                       | Text book of oral and maxillofacial surgery-<br>S M Balaji                                                                                                   |
| 12 | Orthognathic surgery                                                       | Text book of oral and maxillofacial surgery-<br>S M Balaji                                                                                                   |
| 13 | Cleft Lip and palate                                                       | Text book of oral and maxillofacial surgery-<br>S M Balaji                                                                                                   |
| 14 | Pre prosthetic surgery                                                     | Oral and maxillofacial surgery-<br>Daniel M. Laskin Volume II<br>Text book of oral and maxillofacial surgery-<br>S M Balaji                                  |
| 15 | TMJ-<br>a. Anatomy<br>b. Hypermobility<br>c. dislocation<br>d. Subluxation | Text book of oral and maxillofacial surgery-<br>S M Balaji<br>Surgery of the temporomandibular joint –<br>David A. Keith<br>Chapter – mandibular dislocation |
| 16 | Maxillary sinus                                                            | Text book of oral and maxillofacial surgery-<br>S M Balaji                                                                                                   |
| 17 | Salivary gland disorders                                                   | Text book of oral and maxillofacial surgery-<br>S M Balaji                                                                                                   |

## **2.4.4. CONSERVATIVE DENTISTRY AND ENDODONTICS**

### **GOALS**

- To develop exemplary clinicians and educators
- To seek innovations in Restorative dentistry & Endodontics, education and health care delivery systems
- Incorporate innovations in practice to deliver high quality treatment to the patient

### **OBJECTIVES**

- Enhance and facilitate the combined pre-clinical and clinical graduate program for students and clinicians who wish to practice or pursue further academic careers
- Upgrade and renovate the clinical environment to provide contemporary patient care, including treatment areas, clinical computing capabilities and instrument management
- Instill knowledge, skills and human values

### **SKILLS**

- A thorough understanding of the biological sciences to enable the integration and correlation of basic sciences with clinical dental practice
- Obtaining skills in all aspects of clinical restorative diagnosis, treatment planning and prognosis
- Skills to provide the preventive and treatment services commonly required in restorative dentistry
- Familiarize with endodontic instruments, materials and techniques needed to carry out simple Endodontic procedures

### **ETHICS**

- Adopt ethical principles, honesty and integrity in all aspects of dental practice
- Be humble and accept the limitations in knowledge and skill and ask for help from colleagues when needed
- Understand the principle of justice and how it impacts dentistry

### Course Outcomes - Theory

| At the end of Conservative Dentistry and Endodontics course, the students should be able to: |                                                                                                                                                         |
|----------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| T 2.4.4.1                                                                                    | Recall and explain appropriate dental terminologies of Conservative Dentistry and Endodontics.                                                          |
| T 2.4.4.2                                                                                    | Describe etiology and pathophysiology of Caries and non-Carious diseases of dental tissues - clinical diagnosis, prevention and treatment planning.     |
| T 2.4.4.3                                                                                    | Adequate knowledge in selection, manipulation & application of various restorative dental materials and dental instruments in clinical dental practice. |
| T 2.4.4.4                                                                                    | Describe various endodontic instruments, materials and techniques required to carry out simple Endodontic procedures.                                   |
| T 2.4.4.5                                                                                    | Describe steps of research and right protocol, collect, analyze and interpret data and publish scientific paper                                         |
| T 2.4.4.6                                                                                    | Follow ethical principles, honesty and integrity in various aspects of dental practice.                                                                 |

### Matrix of Programme Outcome & Course Outcome (POCO) - Theory

| Course Outcome       | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|----------------------|-----|-----|-----|-----|-----|-----|-----|
| T 2.4.4.1            | 3   | 2   | 1   | 1   | 1   | 1   | 1   |
| T 2.4.4.2            | 2   | 2   | 1   | 1   | 1   | 2   | 1   |
| T 2.4.4.3            | 2   | 2   | 1   | 1   | 1   | 1   | 1   |
| T 2.4.4.4            | 2   | 1   | 1   | 2   | 1   | 2   | 1   |
| T 2.4.4.5            | 2   | 1   | 1   | 1   | 1   | 1   | 1   |
| T 2.4.4.6            | 2   | 1   | 1   | 1   | 1   | 2   | 1   |
| <b>Average Score</b> | 2.1 | 1.5 | 1   | 1.1 | 1   | 1.5 | 1   |

### Course Outcomes - Clinical

| At the end of Conservative Dentistry and Endodontics course, the students should be able to: |                                                                                                                                      |
|----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| C 2.4.4.1                                                                                    | Utilize appropriate knowledge of fundamentals of tooth preparation and restoration in managing simple and compound cavities          |
| C 2.4.4.2                                                                                    | Communicate effectively and sensitively with patients and public to bring about satisfaction and trust                               |
| C 2.4.4.3                                                                                    | Selection, manipulation & use of various restorative dental materials and dental instruments in clinical dental practice.            |
| C 2.4.4.4                                                                                    | Perform endodontic treatment of single rooted anterior teeth with the knowledge of endodontic instruments, materials and techniques. |
| C 2.4.4.5                                                                                    | Use newer materials and techniques to deliver high quality treatment to the patients.                                                |
| C 2.4.4.6                                                                                    | Identify and refer patients requiring specialist care                                                                                |

### Matrix of Programme Outcome & Course Outcome (POCO) - Clinical

| Course Outcome       | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|----------------------|-----|-----|-----|-----|-----|-----|-----|
| C 2.4.4.1            | 2   | 1   | 1   | 1   | 1   | 1   | 1   |
| C 2.4.4.2            | 2   | 2   | 1   | 1   | 1   | 2   | 1   |
| C 2.4.4.3            | 2   | 2   | 1   | 1   | 1   | 1   | 1   |
| C 2.4.4.4            | 2   | 2   | 1   | 2   | 1   | 1   | 1   |
| C 2.4.4.5            | 2   | 2   | 1   | 2   | 1   | 1   | 1   |
| C 2.4.4.6            | 2   | 1   | 1   | 1   | 1   | 2   | 1   |
| <b>Average Score</b> | 2   | 1.6 | 1   | 1.3 | 1   | 1.3 | 1   |

**Curriculum and Course Content for III BDS**  
**Theory – 38 Hours ; Practical – 70 Hours**

| Sr. No. | Topic - THEORY                                                                             | Teaching hours | Must know /<br>Desirable to know /<br>Nice to Know | Suggested teaching methodology |
|---------|--------------------------------------------------------------------------------------------|----------------|----------------------------------------------------|--------------------------------|
| 1.      | Examination –Diagnosis and treatment planning                                              | 3              | <b>MK</b>                                          | Didactic lecture               |
| 2.      | Infection control in Conservative Dentistry and Endodontics                                | 2              | <b>MK</b>                                          | Didactic lecture               |
| 3.      | Recent advances of isolation                                                               | 1              | <b>MK</b>                                          | Didactic lecture               |
| 4.      | Control of pain during operative procedures                                                | 2              | <b>MK</b>                                          | Didactic lecture               |
| 5.      | Management of Gingival tissue during operative and Impression procedure                    | 2              | <b>MK</b>                                          | Didactic lecture               |
| 6.      | Contacts & contours                                                                        | 2              | <b>MK</b>                                          | Didactic lecture               |
| 7.      | Definition –Aim and scope of Endodontics[ Short essay / Short answer ]                     | 1              | <b>MK</b>                                          | Didactic lecture               |
| 8.      | Diseases of the pulp and its management                                                    | 2              | <b>MK</b>                                          | <b>Blended learning</b>        |
| 9.      | Diseases of the periradicular tissue and management                                        | 2              | <b>MK</b>                                          | Didactic lecture               |
| 10.     | Rationale of Endodontic treatment                                                          | 1              | <b>DK</b>                                          | Didactic lecture               |
| 11.     | Endodontic diagnosis                                                                       | 3              | <b>MK</b>                                          | Didactic lecture               |
| 12.     | Recent advances in endodontic diagnosis                                                    | 1              | <b>MK</b>                                          | Didactic lecture               |
| 13.     | Case selection in Endodontics                                                              | 2              | <b>MK</b>                                          | Didactic lecture               |
| 14.     | Endodontic hand Instruments and sterilization.                                             | 3              | <b>MK</b>                                          | Didactic lecture               |
| 15.     | Anatomy of the pulp space (Internal anatomy of pulp chamber) Access opening and principles | 4              | <b>MK</b>                                          | Didactic lecture               |
| 16.     | Determination of working length/ methods                                                   | 2              | <b>MK</b>                                          | Didactic lecture               |

|     |                                                    |   |           |                  |
|-----|----------------------------------------------------|---|-----------|------------------|
| 17. | Preparation of root canal-Cleaning & Shaping       | 3 | <b>MK</b> | Didactic lecture |
| 18. | Intra canal irrigants (Disinfection of root canal) | 2 | <b>MK</b> | Didactic lecture |

| Sr. No. | Topic - PRACTICAL                                                                                                            | Teaching hours | Must know / Desirable to know / Nice to Know | Suggested teaching methodology |
|---------|------------------------------------------------------------------------------------------------------------------------------|----------------|----------------------------------------------|--------------------------------|
|         | <b>Clinical discussions / Demonstrations</b>                                                                                 | <b>70</b>      | <b>MK</b>                                    |                                |
| 1.      | Case history and Chair position                                                                                              |                | <b>MK</b>                                    | <b>Demo</b>                    |
| 2.      | Sterilization and infection control<br>Various infection control protocols relevant to emerging and re - emerging infections |                | <b>MK</b>                                    | <b>Demo</b>                    |
| 3.      | Isolation (Cord Placement & Rubber Dam Application)                                                                          |                | <b>MK</b>                                    | <b>SGD &amp; Demo</b>          |
| 4.      | Management of deep carious lesions                                                                                           |                | <b>MK</b>                                    | <b>SGD &amp; Demo</b>          |
| 5.      | Root canal Treatment on Anterior teeth (Access opening, working length and obturation)                                       |                | <b>MK</b>                                    | <b>SGD &amp; Demo</b>          |
| 6.      | Preventive Resin Restoration                                                                                                 |                | <b>MK</b>                                    | <b>SGD &amp; Demo</b>          |

### Exercises

- On extracted typhodont teeth
  - 6 class I dental amalgam restoration
  - 2 class V Glass ionomer restoration
  - 1 root canal therapy on single rooted teeth
  - 1 class I cavity with buccal extension
  - 1 class I cavity with palatal extension
- On patients
  - 6 class I dental amalgam restorations / composite.
  - 2 class V Restoration.
  - Post end examination on patients for both the terms during clinical posting. Viva Voce for the first term and objective structured clinical examination (OSCE) for second term posting

## SCHEME OF EXAMINATION

**As per DCI this subject has no Theory or Practical Examination for III BDS**

### Curriculum and Course Content for IV BDS

**Theory – 80 Hours ; Practical – 300 Hours**

| Sr. No. | Topic - THEORY                                                                                                                                                                                                                                | Teaching hours | Must know /<br>Desirable to know /<br>Nice to Know | Suggested teaching methodology |
|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------------------------------------------|--------------------------------|
| 1.      | Rotary Instruments for cleaning and shaping                                                                                                                                                                                                   | 2              | <b>Desirable to know</b>                           | Didactic lecture               |
| 2.      | Intra canal medicaments used in Endodontics                                                                                                                                                                                                   | 2              | <b>Must know</b>                                   | Didactic lecture               |
| 3.      | Temporary filling materials                                                                                                                                                                                                                   | 1              | <b>Must know</b>                                   | Didactic lecture               |
| 4.      | Microbiology as related to Endodontics <ul style="list-style-type: none"> <li>• Microbial flora &amp; infected pulp</li> <li>• Various cultures tests -techniques - culture media interpretation</li> <li>• Antibiotic sensitivity</li> </ul> | 2              | <b>Desirable to know</b>                           | Didactic lecture               |
| 5.      | Root Canal Sealers                                                                                                                                                                                                                            | 2              | <b>Must know</b>                                   | Didactic lecture               |
| 6.      | Obturing Materials – Classification and Description                                                                                                                                                                                           | 1              | <b>Must know</b>                                   | Didactic lecture               |
| 7.      | Various techniques of root canal obturation including recent techniques and Repair                                                                                                                                                            | 2              | <b>Must know</b>                                   | Didactic lecture               |
| 8.      | Post Endodontic Restoration ( in brief)                                                                                                                                                                                                       | 2              | <b>Must know</b>                                   | Didactic lecture               |
| 9.      | Procedural errors                                                                                                                                                                                                                             | 3              | <b>Must know</b>                                   | Didactic lecture               |
| 10.     | Amalgam restorations- <ul style="list-style-type: none"> <li>• Complex amalgam restoration</li> <li>• Class II modifications</li> <li>• Pinretained amalgam</li> <li>• Bonded amalgam</li> </ul>                                              | 7              | <b>MK</b><br><b>MK</b><br><b>DK</b><br><b>NK</b>   | Didactic lecture               |
| 11.     | Wasting diseases & its management                                                                                                                                                                                                             | 2              | <b>Must know</b>                                   | Didactic lecture               |



|     |                                                                                                                                                                                                                                                                                                                                                                           |   |                          |                  |
|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|--------------------------|------------------|
| 12. | <p>Cast Gold restorations</p> <ul style="list-style-type: none"> <li>• Definitions of Inlay and Onlay</li> <li>• Indications and Contraindications</li> <li>• Cavity designs for class II cast Gold inlay restorations, wax patterns</li> <li>• Spruing ,Investing and Casting</li> <li>• Seating ,Adjusting , Polishing of the Casting</li> <li>• Cementation</li> </ul> | 5 | <b>Must know</b>         | Didactic lecture |
| 13. | <p>Direct filling Gold</p> <ul style="list-style-type: none"> <li>• Indication ,contraindications</li> <li>• Various cavity designs and preparation of cavities ,types of Cohesive Gold</li> <li>• Principles of manipulation</li> <li>• Compaction techniques, finishing and polishing.</li> </ul>                                                                       | 2 | <b>Desirable to know</b> | Didactic lecture |
| 14. | <p>a) Fundamental concepts of enamel and dentin adhesion</p> <ul style="list-style-type: none"> <li>• Basic concepts of adhesion</li> <li>• Enamel adhesion</li> <li>• Dentin adhesion</li> <li>• Development of dentin bonding systems</li> <li>• Current concept of bonding systems with clinical relevance</li> </ul>                                                  | 2 | <b>Must know</b>         | Didactic lecture |
| 15. | <p>b) Introduction to composite restorations</p> <ul style="list-style-type: none"> <li>• Types of composites</li> <li>• Important properties</li> <li>• Polymerization of composite</li> <li>• Indications</li> <li>• Contraindications</li> <li>• Advantages</li> <li>• Disadvantages</li> <li>• Material aspects</li> </ul>                                            | 2 | <b>Must know</b>         | Didactic lecture |
| 16. | <p>c) Direct Composite restorations</p> <ul style="list-style-type: none"> <li>• Tooth preparation and restorative technique for Class I II III IV V and VI composite restorations</li> <li>• Repair of composite restorations</li> <li>• Common problems: causes and potential solutions</li> </ul>                                                                      | 2 | <b>Must know</b>         | Didactic lecture |

|     |                                                                                                                                                                                                                                                                                                                                                                  |   |                          |                  |
|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|--------------------------|------------------|
| 17. | d) Glass ionomer restorations <ul style="list-style-type: none"> <li>• Indications</li> <li>• Contraindications</li> <li>• Advantages</li> <li>• Disadvantages</li> <li>• Tooth preparation and restorative technique</li> </ul>                                                                                                                                 | 2 | <b>Must know</b>         | Didactic lecture |
| 18. | e) Dental Ceramics                                                                                                                                                                                                                                                                                                                                               | 3 | <b>Desirable to know</b> | Didactic lecture |
| 19. | f ) Class I and Class II indirect tooth colored restorations (Ceramic and Composite) <ul style="list-style-type: none"> <li>• Indications</li> <li>• Contraindications</li> <li>• Advantages</li> <li>• Disadvantages</li> <li>• Clinical procedures</li> <li>• Common problems &amp; solutions</li> <li>• Repair of tooth coloured inlays and onlays</li> </ul> | 2 | <b>Desirable to know</b> | Didactic lecture |
| 20  | g) Additional conservative esthetic procedures<br>1) Artistic elements <ul style="list-style-type: none"> <li>• Shape or form</li> <li>• Symmetry and proportionality</li> <li>• Position and alignment</li> <li>• Surface texture</li> <li>• Color</li> <li>• Translucency</li> <li>• Clinical considerations</li> </ul>                                        | 2 | <b>Desirable to know</b> | Didactic lecture |
|     | 2) Conservative alterations of tooth contours and contacts <ul style="list-style-type: none"> <li>• Alterations of shape of natural teeth</li> <li>• Alterations of embrasures</li> <li>• Correction of diastemas</li> </ul>                                                                                                                                     |   |                          | Didactic lecture |
|     | 3) Conservative treatments for discoloured teeth (Etiology, Microabrasion, Macroabrasion only)                                                                                                                                                                                                                                                                   |   | <b>Desirable to know</b> | Didactic lecture |

|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |   |                     |                  |
|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---------------------|------------------|
|     | 4) Acid etched resin bonded splints<br>* Periodontally involved tooth<br>Stabilization of teeth after orthodontic treatment                                                                                                                                                                                                                                                                                                                                                                                           | 2 | <b>Nice to Know</b> | Didactic lecture |
|     | 5) Conservative bridges<br>• Natural tooth pontic<br>• Denture tooth pontic<br>• Porcelain fused to metal pontic or all metal pontic with metal retainers<br>• All porcelain pontic                                                                                                                                                                                                                                                                                                                                   |   |                     | Didactic lecture |
| 20. | Treatment of discolored teeth( Bleaching only)                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 2 | <b>Must know</b>    | Didactic lecture |
| 21. | Endodontics –Periodontics - interrelation –classification and management.                                                                                                                                                                                                                                                                                                                                                                                                                                             | 2 | <b>Must know</b>    | ITL              |
| 22. | Surgical Endodontics<br>• Case selection – indications /contraindications<br>• Incision and drainage Trephination<br>• Various flap designs for periradicular surgery<br>• Root end surgeries –Apicoectomy /curettage.<br>• Retrograde fillings – root resection and hemisection<br>• Bicuspidation (short essay /short answer)<br>• Reimplantation , Intentional<br>• Reimplantation . Transplantation<br>o Endodontics Endosseous Implants<br>o Miscellaneous of Endodontics<br>o Use of Microscopes in Endodontics | 5 | <b>Must know</b>    | Didactic lecture |
| 23. | Root resorption – classification, etiology & management ( in brief)                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 2 | <b>Must know</b>    | Didactic lecture |
| 24. | Traumatic injuries of teeth - Management only                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 3 | <b>Must know</b>    | Didactic lecture |

|     |                                                         |   |                          |                  |
|-----|---------------------------------------------------------|---|--------------------------|------------------|
| 25. | Endodontic emergencies and management                   | 3 | <b>Must know</b>         | Didactic lecture |
| 26. | Single visit Endodontics                                | 1 | <b>Must know</b>         | Didactic lecture |
| 27. | <b>Lasers in Conservative Denstry &amp; Endodontics</b> | 1 | <b>Desirable to know</b> | Didactic lecture |
| 28. | Air abrasion                                            | 1 | <b>Nice to Know</b>      | Didactic lecture |
| 29. | Veneers                                                 | 2 | <b>Desirable to know</b> | Didactic lecture |
| 30. | Smear Layer                                             | 1 | <b>Nice to Know</b>      | Didactic lecture |
| 31. | Hypersensitive Dentin                                   | 1 | <b>Must know</b>         | Didactic lecture |
| 32. | Vital Pulp Therapy                                      | 2 | <b>Must know</b>         | Didactic lecture |
| 33. | Regenerative Endodontics                                | 2 | <b>Nice to Know</b>      | Didactic lecture |
| 34. | Failures in Endodontics                                 | 1 | <b>Must know</b>         | Didactic lecture |

| Sr. No. | Topic - PRACTICAL                                                                                                                                                                                                                  | Teaching hours | Must know / Desirable to know / Nice to Know | Suggested teaching methodology |
|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------------------------------------|--------------------------------|
|         | <b>CLINICAL</b>                                                                                                                                                                                                                    | 300            |                                              |                                |
| 1.      | Clinical Discussions and Demonstration<br>1. Composite class II, III, IV<br>2. Anterior root canal therapy<br>3. Class II inlay<br>4. Modification of class II amalgam restorations<br>5. Viva tray<br>Video of endodontic surgery |                | <b>Must know</b>                             | <b>SGD + Demo</b>              |
| 2.      | On extracted teeth – Quota<br>1. Class II Amalgam - 5<br>2. Composite class I, II, III, IV – 2 each<br>3. GIC Restoration class V - 2<br>4. Vital pulp therapy – 2<br>5. Anterior root canal therapy – 2                           |                |                                              |                                |
| 3.      | On patients – Quota<br>1. Dental amalgam / Composite restorations<br>Class I- 10, Class II – 5+5<br>2. Glass ionomer restorations-2<br>3. Vital pulp therapy – 2<br>4. Anterior root canal therapy - 2                             |                |                                              |                                |

## SCHEME OF EXAMINATION

### A THEORY: 70 Marks

Distribution of topics and type of Questions

| Contents                                                                                            | Type of Question and Marks       | Marks     |
|-----------------------------------------------------------------------------------------------------|----------------------------------|-----------|
| <b>Multiple choice question</b>                                                                     | M.C.Q<br>20 x 1= 20 marks        | 20        |
| <b>Long essays</b><br>One long essay from Conservative Dentistry<br>One long essay from Endodontics | Long essays<br>2 x10=20 marks    | 20        |
| <b>Short essays</b><br>5 Short essay from Conservative Dentistry and Endodontics each               | Short essay<br>10 x 3 = 30 marks | 30        |
|                                                                                                     | <b>Total</b>                     | <b>70</b> |

**B. Viva –Voce : 20 marks**

**C. Internal Assessment: 10 marks**

**Theory Total: 70 + 20 + 10 = 100 marks**

### I. CLINICAL EXAMINATION: 90 Marks

- |           |                                   |                 |
|-----------|-----------------------------------|-----------------|
| <b>1.</b> | <b>Case History + Record Book</b> | 10 marks        |
| <b>2.</b> | <b>Clinical Exercise</b>          |                 |
| <b>A.</b> | <b>Conservative Exercise</b>      |                 |
| a.        | Class II tooth Preparation        | 45 marks        |
| b.        | Lining and Matrix Application     | 10 marks        |
| c.        | Amalgam Filling and Carving       | 25 marks        |
|           |                                   | <b>80 marks</b> |

OR

**B. Endodontics Exercise**

- a) Preparation of access cavity for root canal treatment in an anterior tooth 20 marks
- b) Working length determination 15 marks
- c) Bio Mechanical preparation and selection of master cone 45 marks
- 80 marks**

**3. Internal Assessment = 10 marks Practical Total: 10+80+10 = 100 Marks**

**RECOMMENDED TEXT BOOK**

| SL No | Title                                              | Author               | Edition       |
|-------|----------------------------------------------------|----------------------|---------------|
| 1     | Art and Sciences of Operative Dentistry            | Strudevant           | V             |
| 2     | Endodontic Practice                                | Louis J Grossman     | XI            |
| 3     | Strudevant Art and Sciences of Operative Dentistry | Andree V. Kittee     | II South Asia |
| 4     | Principles and practice of Operative Dentistry     | Charbeneau           | III           |
| 5     | Endodontic Therapy                                 | Weine<br>Torabinejad | VI            |

## **2.4.5. ORTHODONTICS & DENTOFACIAL ORTHOPAEDICS**

### **GOALS:**

1. The goal of the Orthodontics program is to provide a basic education in Orthodontics for an improved understanding of the diagnosis and treatment planning of various types of malocclusions and increased skills in their management
2. To transform the nature of dental education and practice in ways that will dramatically improve the way we serve our students, our patients, and the surrounding community.

### **OBJECTIVES:**

#### **A. Knowledge:**

- a. To have a systematic understanding of the dynamic interaction of Biologic processes and Mechanical forces acting on the stomatognathic system during Orthodontic treatment.
- b. To lay foundation of basic knowledge and assimilate associated orthodontic skills to enable students to Diagnose and manage various Orthodontic problems.

#### **B. Skills:**

Clinical practice is limited to collection and analysis of records and correction of mild occlusion problems with removable appliances.



### Course Outcomes - Theory

| At the end of Orthodontics and Dentofacial Orthopedics course, the students should be able to: |                                                                                                                                                                                                                               |
|------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| T 2.4.5.1                                                                                      | Define and explain the basics of growth and development ,factors influencing and Clinical application of growth and development                                                                                               |
| T 2.4.5.2                                                                                      | Explain and relate the dynamic interaction of biologic processes & mechanical forces acting on the Stomatognathic system during orthodontic treatment                                                                         |
| T 2.4.5.3                                                                                      | Define, Identify, describe, classify malocclusion and differentiate it with normal occlusion and understand the etiology of malocclusion                                                                                      |
| T 2.4.5.4                                                                                      | Describe importance of various diagnostic aids and relate the findings by analyzing various cephalometric and model analysis to enable the students to diagnose and manage minor malocclusions requiring removable appliances |
| T 2.4.5.5                                                                                      | Discuss and write a plan of treatment for patients needing orthodontic treatment.                                                                                                                                             |

### Matrix of Programme Outcome & Course Outcome (POCO) - Theory

| Course Out Come      | PO1        | PO2        | PO3        | PO4        | PO5        | PO6        | PO7        |
|----------------------|------------|------------|------------|------------|------------|------------|------------|
| T 2.4.5.1            | 3          | 3          | 3          | 3          | 3          | 3          | 3          |
| T 2.4.5.2            | 3          | 3          | 3          | 4          | 3          | 3          | 3          |
| T 2.4.5.3            | 3          | 3          | 3          | 3          | 3          | 3          | 3          |
| T 2.4.5.4            | 4          | 4          | 3          | 3          | 3          | 3          | 3          |
| T 2.4.5.5            | 3          | 5          | 4          | 5          | 3          | 4          | 4          |
| <b>Average Score</b> | <b>3.4</b> | <b>3.6</b> | <b>3.2</b> | <b>3.6</b> | <b>3.0</b> | <b>3.2</b> | <b>3.2</b> |

### Course Outcomes - Practical

| At the end of Orthodontics and Dentofacial orthopedics course, the students should be able to: |                                                                                                                                  |
|------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| C 2.4.5.1                                                                                      | Explain the basics of different types of orthodontic materials used with emphasis on stainless steel.                            |
| C 2.4.5.2                                                                                      | Demonstrate the dynamic functioning and create various springs, retractors, clasps                                               |
| C 2.4.5.3                                                                                      | Identify, describe and produce various removable appliances for minor orthodontic problems                                       |
| C 2.4.5.4                                                                                      | Diagnose and manage minor malocclusions cases requiring removable appliances and do analysis of various cephalometric and model. |
| C 2.4.5.5                                                                                      | Plan and design an orthodontic treatment plan based on patients need.                                                            |

### Matrix of Programme Outcome & Course Outcome (POCO) - Practical

| Course Outcome       | PO1        | PO2        | PO3        | PO4        | PO5        | PO6        | PO7        |
|----------------------|------------|------------|------------|------------|------------|------------|------------|
| C 2.4.5.1            | 3          | 4          | 4          | 3          | 4          | 3          | 3          |
| C 2.4.5.2            | 4          | 3          | 3          | 3          | 3          | 3          | 3          |
| C 2.4.5.3            | 3          | 3          | 4          | 4          | 3          | 3          | 3          |
| C 2.4.5.4            | 4          | 4          | 3          | 3          | 3          | 3          | 3          |
| C 2.4.5.5            | 3          | 5          | 4          | 5          | 3          | 4          | 4          |
| <b>Average Score</b> | <b>3.4</b> | <b>3.8</b> | <b>3.6</b> | <b>3.6</b> | <b>3.2</b> | <b>3.2</b> | <b>3.2</b> |

**Curriculum and Course Content for III BDS**  
**Theory – 20Hours; Practical – 70 Hours**

| Sr. No. | Topic - THEORY                                                                                                                                                                                                                                                                                                                                       | Teaching hours | Must know /<br>Desirable to know /<br>Nice to Know | Suggested teaching methodology |
|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------------------------------------------|--------------------------------|
| 1.      | Introduction. Definition, Historical Background, Aims and objectives of Orthodontics and Need For orthodontics Care                                                                                                                                                                                                                                  | 1              | MK                                                 | DIDACTIC LECTURE               |
| 2.      | Growth and Development: In general<br>a. Definition<br>b. Growth spurts and Differential growth<br>c. Factors influencing growth and Development<br>d. Methods of measuring growth<br>e. Growth theories (Genetic, Sicher's, Scott's, Moss's, Multifactorial)<br>f. Genetic and epigenetic factors in growth<br>g. Cephalocaudal gradient in growth. | 2              | MK                                                 | DIDACTIC LECTURE               |
| 3.      | Morphologic Development of Craniofacial Structures<br>a. Methods of bone growth<br>b. Prenatal growth of craniofacial structures<br>c. Postnatal growth and development of: cranial base, maxilla, mandible, dental arches and occlusion.                                                                                                            | 2              | MK                                                 | DIDACTIC LECTURE               |
| 4.      | Clinical Application of Growth And development                                                                                                                                                                                                                                                                                                       | 2              | MK                                                 | DIDACTIC LECTURE               |
| 5.      | Development of Dentition & Normal occlusion Functional Development of Dental Arches and occlusion<br>a. Factors influencing functional development dental arches and occlusion.<br>b. Forces of occlusion                                                                                                                                            | 2              | MK                                                 | DIDACTIC LECTURE               |

|     |                                                                                                                                                                                                                                                                                                                                                                  |   |    |                   |
|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|----|-------------------|
|     | c. Wolfe's law of transformation of bone<br>d. Trajectories of forces                                                                                                                                                                                                                                                                                            |   |    |                   |
| 6.  | Malocclusion - In General<br><br>a. Concept of normal occlusion<br>b. Definition of malocclusion<br>c. Description of different types of dental, skeletal and functional malocclusion.                                                                                                                                                                           | 1 | MK | DIDACTIC LECTURE  |
| 7.  | Classification of Malocclusion<br><br>Principle, description, advantages and disadvantages of classification of malocclusion by Angle, Simon, Lischer and Ackerman and Proffit.                                                                                                                                                                                  | 1 | MK | FLIPPED CLASSROOM |
| 8.  | Normal and Abnormal Function of Stomatognathic System                                                                                                                                                                                                                                                                                                            | 1 | DK | DIDACTIC LECTURE  |
| 9.  | Etiology of Malocclusion<br><br>a. Definition, importance, classification, local and general etiological factors.<br>b. Etiology of following different types of malocclusion:<br>1. Midline diastema<br>2. Crowding<br>3. Spacing<br>4. Cross-bite: anterior/posterior<br>5. Class III Malocclusion<br>6. Class II Malocclusion<br>7. Deep Bite<br>8. Open Bite | 8 | DK | DIDACTIC LECTURE  |
| 10. | Computers in Orthodontics                                                                                                                                                                                                                                                                                                                                        | 1 | NK | DIDACTIC LECTURE  |
| 11. | Preventive & Interceptive Orthodontics                                                                                                                                                                                                                                                                                                                           | 1 | NK | DIDACTIC LECTURE  |
| 12. | Removable/ Habit Breaking Orthodontic Appliances                                                                                                                                                                                                                                                                                                                 | 2 |    | DIDACTIC LECTURE  |
| 13. | Soldering & Welding                                                                                                                                                                                                                                                                                                                                              | 1 | NK | DIDACTIC LECTURE  |
| 14. | Genetics & Orthodontics                                                                                                                                                                                                                                                                                                                                          | 1 | NK | DIDACTIC LECTURE  |
| 15. | Revision                                                                                                                                                                                                                                                                                                                                                         |   |    |                   |

| Sr. No. | Topic - PRACTICALS                                                                                                                                                                                                                                                                                                                                                  | Teaching hours | Must know /<br>Desirable to know /<br>Nice to Know | Suggested teaching methodology |
|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------------------------------------------|--------------------------------|
| 1.      | <b>Basic wire bending exercises</b><br><b>Gauge 22 or 0.7 mm</b><br>1. Straightening of wires (1 no)<br>2. Bending of a equilateral triangle<br>3. Bending of a square<br>4. Bending of a circle<br>5. Bending of U & V                                                                                                                                             | 15             | MK                                                 | DEMO                           |
| 2.      | <b>Construction of clasps (Both sides upper/lower) gauge 22 or 0.7 mm</b><br>1. 3/4 clasp (C-clasp)<br>2. Full clasp (Jackson's clasp)<br>3. Adam's clasp                                                                                                                                                                                                           | 18             | MK<br>MK<br>MK                                     | DEMO<br>DEMO<br>DOPS           |
| 3.      | <b>Construction of springs (upper both sides) Gauge 24 or 0.5 mm</b><br>1. Finger spring<br>2. Double cantilever spring (Z spring)                                                                                                                                                                                                                                  | 12             | MK                                                 | DOPS                           |
| 4.      | <b>Construction of canine retractors</b><br><b>Gauge 23 or 0.6 mm</b><br>1. Helical canine retractor (Both sides upper and lower)<br>2. Buccal canine retractor self-supported canine retractor<br>a) sleeve-5 mm wire or 24 gauge<br>b) sleeve-19 gauge wire on one side<br>3. Palatal canine retractor on upper both sides (Gauge 23 or 0.6 mm)<br>4. Adams Clasp | 7              | MK                                                 | DEMO                           |

|    |                                                                                                                                     |    |    |      |
|----|-------------------------------------------------------------------------------------------------------------------------------------|----|----|------|
| 5. | <b>Labial Bow (Gauge 22 or 0.7 mm)<br/>One on both upper and lower</b>                                                              | 9  | MK | DOPS |
| 6. | <b>Clinical exercise</b>                                                                                                            | 10 |    |      |
|    | 1. Demonstration of upper alginate impression                                                                                       |    | MK | DEMO |
|    | 2. Demonstration of lower alginate impression                                                                                       |    | MK | DEMO |
|    | 3. Demonstration of model preparation                                                                                               |    | MK | DEMO |
|    | 4. Model analysis – Demonstration<br>a) Pont's analysis<br>b) Ashley Howe's analysis<br>c) Carey's analysis<br>d) Bolton's analysis |    | MK | DEMO |
| 7. | <b>Sterilization in orthodontics<br/>during pandemic times</b>                                                                      | 1  | MK | DEMO |

### **SCHEME OF EXAMINATION**

As per DCI this subject has no Theory or Practical Examination for III BDS

## RECOMMENDED BOOKS

| Sl. No | S.No Name                                                          | Author                                      | Edition                 | Year | Publisher                       |
|--------|--------------------------------------------------------------------|---------------------------------------------|-------------------------|------|---------------------------------|
| 1      | Contemporary orthodontics                                          | William R Proffit                           | 4 <sup>th</sup> Edition | 2007 | Mosby                           |
| 2      | Orthodontics for dental students                                   | Gardiner Leighton, Luffingham and Valiathan | 4 <sup>th</sup> Edition | 1998 | Oxford                          |
| 3      | Handbook of orthodontics                                           | Moyers                                      | 4 <sup>th</sup> Edition | 1988 | Year book Medical publisher.inc |
| 4      | Orthodontics- principles and Techniques                            | Graber and Vanarsdall                       | 4 <sup>th</sup> Edition | 2000 | Mosby                           |
| 5      | Design , construction and use of removable orthodontics appliances | C.Adams                                     | 6 <sup>th</sup> Edition | 1990 | Varghese publishing             |
| 6      | Textbook of orthodontics                                           | W.J. Houston                                | 2 <sup>nd</sup> Edition | 1994 | Wright Oxford                   |

**Curriculum and Course Content for IV BDS**  
**Theory – 30Hours; Practical – 100 Hours**

| Sr. No. | Topic - THEORY                                                                                                                                                                                                                                                                                                                                                                                                                               | Teaching hours | Must know / Desirable to know / Nice to Know | Suggested teaching methodology |
|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------------------------------------|--------------------------------|
| 1.      | Cephalometrics In orthodontic<br><br>a. Tweeds<br>b. Downs<br>c. Steiners                                                                                                                                                                                                                                                                                                                                                                    | 4              | NK                                           | DIDACTIC LECTURE               |
| 2.      | Corrective Orthodontics<br><br>a) Definition and factors to be considered during treatment planning<br>b) Model analysis: Pont's, Ashley Howe's, Bolton, Careys, Moyer's<br>c) Mixed dentition analysis.<br>d) Methods of gaining space in the arch:- Indications, relative merits and demerits of proximal stripping, arch expansion and extractions<br>e) Extractions in orthodontics - indications and selection of teeth to extractions. | 4              | MK                                           | DIDACTIC LECTURE               |
| 3.      | Tissue Response to Orthodontic tooth moment                                                                                                                                                                                                                                                                                                                                                                                                  | 1              | MK                                           | DIDACTIC LECTURE               |
| 4.      | Orthodontic forces & Biomechanics                                                                                                                                                                                                                                                                                                                                                                                                            | 1              | MK                                           | DIDACTIC LECTURE               |
| 5.      | Anchorage in Orthodontics                                                                                                                                                                                                                                                                                                                                                                                                                    | 1              | MK                                           | DIDACTIC LECTURE               |
| 6.      | Orthodontic Appliances: Fixed<br><br>a. Definition, Indications & Contraindications<br>b. Component parts and their uses<br>c. Basic principles of different techniques: Edgewise, Begg's, straight wire.<br>d. Preliminary knowledge of acid etching and direct bonding.                                                                                                                                                                    | 6              | MK                                           | DIDACTIC LECTURE               |



|     |                                                                                                                                                                                                                                                                                   |   |    |                                  |
|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|----|----------------------------------|
| 7.  | Ethics                                                                                                                                                                                                                                                                            | 1 | MK | DIDACTIC LECTURE                 |
| 8.  | Extraoral Appliances<br>1. Headgears<br>2. Chincups<br>3. Reverse pull headgears                                                                                                                                                                                                  | 1 | NK | DIDACTIC LECTURE                 |
| 9.  | Myofunctional Appliances<br>1. Definition and principles<br>2. Muscle exercises and their uses in orthodontics<br>3. Functional appliances:<br>i) Activator, oral screens, Frankels function regulator, bionator, twin blocks, lip bumper<br>ii) Inclined planes- upper and lower | 4 | NK | DIDACTIC LECTURE                 |
| 10. | Orthodontic Management of Cleft Lip and Palate                                                                                                                                                                                                                                    | 1 | NK | DIDACTIC LECTURE                 |
| 11. | Principles of Surgical Orthodontics & Brief knowledge of correction of:<br>a. Mandibular Prognathism and Retrognathism<br>b. Maxillary Prognathism and Retrognathism<br>c. Anterior open bite and deep bite.<br>d. Cross bite                                                     | 1 | NK | INTEGRATED TEACHING AND LEARNING |
| 12. | 12. Principle, Differential Diagnosis & Methods of Treatment of:<br>1. Midline diastema<br>2. Cross bite<br>3. Open bite<br>4. Deep bite                                                                                                                                          | 5 | NK | DIDACTIC LECTURE                 |

|     |                                                                                                                                                             |   |    |                   |
|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------|---|----|-------------------|
|     | 5. Spacing<br>6. Crowding                                                                                                                                   |   |    |                   |
|     | <b>Management of</b><br>7. Class II Division 1, Division 2<br>8. Class III Malocclusion -True and Pseudo Class III                                          |   | MK | FLIPPED CLASSROOM |
| 13. | Retention and Relapse Definition, Need for retention, Causes of relapse, Methods of retention, Different types of Retention devices, Duration of retention. | 2 | MK | DIDACTIC LECTURE  |
| 14. | Adult Orthodontics                                                                                                                                          | 1 | NK | DIDACTIC LECTURE  |
| 15. | Revision                                                                                                                                                    | 1 |    |                   |

| Sr. No. | Topic - PRACTICAL                                                                                                                                                                                                       | Teaching hours | Must know / Desirable to know / Nice to Know | Suggested teaching methodology |
|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------------------------------------|--------------------------------|
| 1.      | Clinical training<br>1) Case history taking (3 Cases)<br>2) Case discussion (3 Cases)<br>3) Discussion on given topic<br>4) Cephalometric tracing<br>a) Down's analysis,<br>b) Steiner's analysis<br>c) Tweeds analysis | 40             | MK                                           | MINI CEX                       |
| 2.      | Practical training<br>1) Adam's clasp on anterior teeth gauge 0.7 mm<br>2) Standard & long facial bow.<br>(Gauge of labial bow 0.9 mm, apron spring 0.3 mm)                                                             | 30             | MK                                           | DOPS                           |

|    |                                                               |    |    |      |
|----|---------------------------------------------------------------|----|----|------|
| 3. | Appliance Construction in Acrylic                             | 30 |    |      |
|    | 1. Upper and Lower Hawley's appliance                         |    | MK | DOPS |
|    | 2. Upper Hawley's with anterior bite plane                    |    |    |      |
|    | 3. Upper Habit breaking appliance                             |    |    |      |
|    | 4. Upper Hawley's with posterior bite plane and with Z spring |    | MK | DEMO |
|    | 5. Oral Screen                                                |    | MK | DEMO |
|    | 6. Lower inclined plane /Catalan's appliance                  |    |    |      |
|    | 7. Soldering and welding                                      |    | MK | DEMO |
|    | 8. Bonding & banding                                          |    |    |      |
|    | 9. Night guard preparation                                    |    |    |      |
|    | 10. Construction bite                                         |    | MK | DEMO |
|    |                                                               |    | MK | DEMO |
|    |                                                               |    |    |      |
|    |                                                               |    | NK | DEMO |
|    |                                                               |    | NK | DEMO |
|    |                                                               |    | NK | DEMO |
|    |                                                               |    | NK | DEMO |
| 4  | <b>Sterilization in orthodontics during pandemic times</b>    | 1  | MK | DEMO |

## SCHEME OF EXAMINATION

### THEORY: 100 Marks

|                                 |          |
|---------------------------------|----------|
| University written examination: | 70 marks |
| Viva voice:                     | 20 marks |
| Internal assessment:            | 10 marks |

### Distribution of Topics and Type of Questions

| Contents                                                                                                                                                                                                                                                                                                                                                                                                                                        | Type of Questions and Marks  | Marks     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|-----------|
| Multiple Choice Questions                                                                                                                                                                                                                                                                                                                                                                                                                       | M.C.Q<br>20 X 1 = 20         | 20        |
| <b>Long Essays</b><br>Growth and Development: In General Morphology<br>Development of Craniofacial Structures<br>Classification & Etiology of malocclusion<br>Anchorage In Orthodontics<br>Diagnosis And Diagnostic Aids<br>Biomechanical Principles In Orthodontic Tooth movement<br>Myofunctional appliances<br>Treatment Planning<br>Preventive Orthodontic<br>Interceptive Orthodontics<br>Corrective Orthodontics<br>Retention And Relapse | Long Essays<br>2 X 10 = 20   | 20        |
| Short answers<br>Questions may be asked from all topics                                                                                                                                                                                                                                                                                                                                                                                         | Short Answers<br>10 x3 marks | 30        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>Total</b>                 | <b>70</b> |

### Clinical/ Practical: 100 Marks

#### a. University Clinical/Practical examination : 90 marks

|                                                                       |                   |
|-----------------------------------------------------------------------|-------------------|
| 1. Exercise No. 1<br>(Log book/records)                               | :10 marks         |
| 2. Exercise No. 2<br>(Case history/ Clinical discussion)              | : 30 marks        |
| 3. Exercise No. 3<br>(2x 10 Spotters)                                 | :20 marks         |
| 4. Exercise No. 4<br>(Wire bending -Clasps/ spring/ Retractors/ Bows) | :30 marks         |
| <b>Total</b>                                                          | <b>: 90 marks</b> |

**b. Internal Assessment: 10**

| <b>THEORY : 100 Marks</b>  |                         | <b>PRACTICAL : 100 Marks</b>  |            |
|----------------------------|-------------------------|-------------------------------|------------|
| Theory examination         | : 70 Marks              | Practical Examination         | : 90 Marks |
| Theory Internal Assessment | : 10 Marks              | Practical Internal Assessment | : 10 Marks |
| Viva Voce                  | : 20 Marks<br>100 Marks |                               | :100 Marks |

**RECOMMENDED BOOKS**

| S. No. | Name                                                              | Author                                    | Edition                 | Year | Publisher                       |
|--------|-------------------------------------------------------------------|-------------------------------------------|-------------------------|------|---------------------------------|
| 1      | Contemporary Orthodontics                                         | William R Proffit                         | 4 <sup>th</sup> Edition | 2007 | Mosby                           |
| 2      | Orthodontics for dental students                                  | Gardiner leighton, Luffingham & Valiathan | 4 <sup>th</sup> Edition | 1998 | Oxford                          |
| 3      | Handbook of orthodontics                                          | Moyers                                    | 4 <sup>th</sup> Edition | 1988 | Year book Medical publisher.inc |
| 4      | Orthodontics- principles & Techniques                             | Graber and Vanarsdall                     | 4 <sup>th</sup> Edition | 2000 | Mosby                           |
| 5      | Design, construction and use of removable orthodontics appliances | C.Adams                                   | 6 <sup>th</sup> Edition | 1990 | Varghese publishing             |
| 6      | Textbook of Orthodontics                                          | W.J. Houston                              | 2 <sup>nd</sup> Edition | 1994 | Wright Oxford                   |

## **2.4.7. PUBLIC HEALTH DENTISTRY**

### **GOAL:**

To create, prevent and promote positive perception of oral health among the community.

### **OBJECTIVES:**

#### **Cognitive (Knowledge):**

At the conclusion of the course, the student shall have a knowledge of the basics of Public Health, Preventive Dentistry, Public health problems in India, Nutrition, Environment and its role in health, basics of dental statistics, epidemiological methods, National and International oral health policies with emphasis on oral health.

#### **Psychomotor and Affective (Skill and Attitude):**

At the conclusion of the course, the students shall have acquired the skill of identifying dental health problems affecting the society, conducting oral health surveys, imparting oral health education and implementing oral health strategies. Students should develop positive attitude towards identifying problems of the society and must take responsibilities in providing oral health.

#### **Communication Abilities:**

At the conclusion of the course, the student should be able to identify the needs of the community and implement recent appropriate preventive and curative methodologies for promoting oral health.

### Course Outcomes - Theory

| At the end of Public Health Dentistry course, the students should be able to: |                                                                                                                          |
|-------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| T2.4.7.1                                                                      | Discuss various study designs and its implications                                                                       |
| T2.4.7.2                                                                      | Discuss various factors responsible for Health and Disease of an individual.                                             |
| T2.4.7.3                                                                      | Discuss various Health Care Services available for Rural and Urban Population                                            |
| T2.4.7.4                                                                      | Enumerate Ethical principles to be followed by the dentist and various Acts governing Dental Education in India and NGOs |
| T2.4.7.5                                                                      | Describe how Survey, Planning and evaluation is carried out for the Community.                                           |
| T2.4.7.6                                                                      | Describe principles, methods, and barriers of health education                                                           |
| T2.4.7.7                                                                      | Describe various types of dental manpower in clinical practices                                                          |
| T 2.4.7.8                                                                     | Discuss various aspects of environment and its role on health                                                            |
| T2.4.7.9                                                                      | Classify and describe various levels of preventive procedure for individual and at community level                       |
| T2.4.7.10                                                                     | Identify various etiological factors, their interaction and progress of disease                                          |
| T2.4.7.11                                                                     | Describe various measuring tools to measure, analyze and interpret various oral health conditions                        |
| T2.4.7.12                                                                     | Describe various clinical set up, practices and clinical management with emphasis on Biomedical Waste Management         |
| T2.4.7.13                                                                     | Enumerate and discuss the role of customs, taboos and socioeconomic scales influencing the health                        |

### Matrix of Programme Outcome & Course Outcome (POCO) - Theory

| Course Out come      | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|----------------------|-----|-----|-----|-----|-----|-----|-----|
| T 2.4.7.1            | 2   | 1   | 1   | 1   | 1   | 2   | 1   |
| T 2.4.7.2            | 1   | 1   | 1   | 1   | 1   | 1   | 1   |
| T 2.4.7.3            | 1   | 1   | 1   | 1   | 1   | 1   | 1   |
| T 2.4.7.4            | 1   | 2   | 2   | 1   | 1   | 1   | 2   |
| T 2.4.7.5            | 2   | 1   | 1   | 1   | 1   | 1   | 1   |
| T 2.4.7.6            | 1   | 1   | 1   | 1   | 2   | 1   | 1   |
| T 2.4.7.7            | 1   | 2   | 1   | 1   | 1   | 1   | 2   |
| T 2.4.7.8            | 2   | 1   | 1   | 1   | 1   | 1   | 1   |
| T 2.4.7.9            | 1   | 1   | 1   | 1   | 2   | 1   | 1   |
| T 2.4.7.10           | 1   | 1   | 1   | 1   | 1   | 1   | 1   |
| T 2.4.7.11           | 3   | 1   | 1   | 1   | 1   | 2   | 1   |
| T 2.4.7.12           | 1   | 2   | 1   | 1   | 1   | 1   | 2   |
| T 2.4.7.13           | 2   | 1   | 1   | 1   | 1   | 1   | 1   |
| <b>Average Score</b> | 1.4 | 1.2 | 1.0 | 1.0 | 1.1 | 1.1 | 1.2 |



### Course Outcomes - Clinical

| At the end of Public Health Dentistry course, the students should be able to: |                                                                                                                                                                       |
|-------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| C 2.4.7.1                                                                     | Collect information on various diseases in the community.                                                                                                             |
| C 2.4.7.2                                                                     | Perform various preventive procedures in preventing dental disease                                                                                                    |
| C 2.4.7.3                                                                     | Perform comprehensive treatment for patients.                                                                                                                         |
| C 2.4.7.4                                                                     | Apply the basic principles of health education in imparting health education                                                                                          |
| C 2.4.7.5                                                                     | Demonstrate role play as a medium for educating general population and target population.                                                                             |
| C 2.4.7.6                                                                     | Plan the steps for research protocol, collect data, analyze and interpret the results and encourage students to publish a paper.                                      |
| C 2.4.7.7                                                                     | Record and interpret a comprehensive and contemporaneous patient history with emphasis on oral health education.                                                      |
| C 2.4.7.8                                                                     | Treat all patients with equality, respect and dignity and comply with current best practice guidelines.                                                               |
| C 2.4.7.9                                                                     | Plan the oral health education materials and application of the same to educate, create awareness and motivate the population to adapt the best oral health practice. |

### Matrix of Programme Outcome & Course Outcome (POCO) - Clinical

| Course Out come      | PO1      | PO2        | PO3        | PO4        | PO5      | PO6      | PO7        |
|----------------------|----------|------------|------------|------------|----------|----------|------------|
| C 2.4.7.1            | 1        | 1          | 2          | 1          | 2        | 1        | 3          |
| C 2.4.7.2            | 2        | 2          | 2          | 1          | 1        | 1        | 3          |
| C 2.4.7.3            | 2        | 2          | 2          | 1          | 2        | 1        | 3          |
| C 2.4.7.4            | 2        | 1          | 2          | 2          | 3        | 1        | 1          |
| C 2.4.7.5            | 2        | 1          | 2          | 2          | 3        | 1        | 1          |
| C 2.4.7.6            | 3        | 1          | 2          | 2          | 3        | 1        | 3          |
| C 2.4.7.7            | 2        | 2          | 3          | 1          | 1        | 1        | 3          |
| C 2.4.7.8            | 2        | 2          | 3          | 1          | 1        | 1        | 3          |
| C 2.4.7.9            | 2        | 2          | 3          | 2          | 2        | 1        | 3          |
| <b>Average Score</b> | <b>2</b> | <b>1.5</b> | <b>2.3</b> | <b>1.4</b> | <b>2</b> | <b>1</b> | <b>2.5</b> |

**Curriculum and Course Content for III BDS**  
**Theory – 21 Hours; Practical – 100 Hours**

| Sr. No. | Topic - THEORY                                                                                                                                                                                                                                                                    | Teaching hours | Must know / Desirable to know / Nice to Know | Suggested teaching methodology |
|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------------------------------------|--------------------------------|
| 1.      | Introduction to dental public health <ul style="list-style-type: none"> <li>• Definition</li> <li>• History, Aims, Objectives, Scope, Procedural Steps,</li> <li>• Difference between Clinician And Public Health Dentist</li> <li>• Changing concept of public health</li> </ul> | 1 Hour         | MK                                           | Didactic Lecture               |
| 2.      | <b>a. Concept of health-</b>                                                                                                                                                                                                                                                      | 1 Hour         | MK                                           | Didactic Lecture               |
|         | <ul style="list-style-type: none"> <li>• Definition of health, changing concepts</li> </ul>                                                                                                                                                                                       |                | NK                                           |                                |
|         | <ul style="list-style-type: none"> <li>• New philosophies of health</li> </ul>                                                                                                                                                                                                    |                | MK                                           |                                |
|         | <ul style="list-style-type: none"> <li>• Dimensions of health</li> </ul>                                                                                                                                                                                                          |                | NK                                           |                                |
|         | Spectrum of health                                                                                                                                                                                                                                                                |                | MK                                           |                                |
|         | <b>b. Concept of disease-</b> germ theory, epidemiology triad                                                                                                                                                                                                                     | 1 Hour         | MK                                           | Didactic Lecture               |
|         | Multifactorial causation, web of causation                                                                                                                                                                                                                                        |                | DK                                           |                                |
|         | Iceberg phenomena                                                                                                                                                                                                                                                                 |                | MK                                           |                                |
| 3.      | Oral health survey- Definition, types of survey, steps in survey, WHO oral health survey procedures                                                                                                                                                                               | 2 Hour         | MK                                           | Didactic Lecture               |

|    |                                                                                                                                     |         |    |                  |
|----|-------------------------------------------------------------------------------------------------------------------------------------|---------|----|------------------|
| 4  | Definition of planning, steps, definition of evaluation                                                                             | 1 Hour  | MK | Didactic Lecture |
|    | Types of evaluation                                                                                                                 |         | DK | Didactic Lecture |
| 5. | Environment<br>1. Water - safe and wholesome water , uses and sources, water pollution, purification of water                       | 1 Hour  | MK | Didactic Lecture |
|    | water quality - criteria and standard                                                                                               |         | DK |                  |
|    | 2. Air pollution and noise pollution                                                                                                | 1 Hour  | MK | Didactic Lecture |
|    | 3. Disposal of waste , hospital waste management                                                                                    | 1 Hour  | DK | Didactic Lecture |
| 6. | <b>Health education</b><br>Definition, communication, types, Barriers, approaches to health education                               | 2 Hours | MK | Didactic Lecture |
|    | Difference between health education and propaganda                                                                                  |         | DK |                  |
|    | Principles of health education, methods in health education and communication, aids in health education                             |         | MK |                  |
| 7. | School Oral Health Program                                                                                                          | 1 Hour  | MK |                  |
| 8. | <b>General principles of epidemiology</b><br>Definition, general principles, aims, epidemiological approaches, tools of measurement | 5 Hours | MK | Didactic Lecture |
|    | Measurement of morbidity and mortality                                                                                              |         | DK |                  |
|    | Epidemiological methods, uses of epidemiology                                                                                       |         | MK |                  |

|     |                                                      |         |    |                                     |
|-----|------------------------------------------------------|---------|----|-------------------------------------|
| 9.  | Ethics and Jurisprudence, COPRA and Informed Consent | 2 hours | MK | <b>Didactic lecture and Seminar</b> |
| 10. | Emerging and Reemerging infection                    | 1 hour  | MK | <b>Didactic lecture</b>             |
| 11. | Introduction to AI                                   | 1 hour  | DK | <b>Didactic lecture</b>             |

| Sr. No. | Topic - PRACTICAL                                                                                                                                                                                                                                                                                                                                                                                    | Teaching hours | Must know / Desirable to know / Nice to Know | Suggested teaching methodology                        |
|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------------------------------------|-------------------------------------------------------|
| 1.      | Orientation program for the practical excites                                                                                                                                                                                                                                                                                                                                                        | 2 hour         | MK                                           | <b>Didactic lecture</b>                               |
| 2.      | Discussions and demonstration on following topics                                                                                                                                                                                                                                                                                                                                                    |                |                                              |                                                       |
|         | a. Dental chair position, Demonstrations of various instruments and sterilization.<br>b. Indices – Definition, Classification and Ideal Requisites. <ul style="list-style-type: none"> <li>• Indices for permanent dentition - DMFT , DMFS</li> <li>• Indices for Deciduous dentition - deft,dfs,dft</li> <li>• Indices for oral hygiene, periodontal and gingivalstatus -OHI,OHIS ,CPITN</li> </ul> | 45 hours       | MK                                           | <b>Didactic lecture and chair side Demonstrations</b> |
|         | <ul style="list-style-type: none"> <li>• CPI and Fluorosis index</li> </ul>                                                                                                                                                                                                                                                                                                                          | 3 hours        | DK                                           | <b>Didactic lecture and chair side Demonstrations</b> |
|         | c. WHO Dentition status and treatment needs                                                                                                                                                                                                                                                                                                                                                          | 20 hours       | MK                                           | <b>Didactic lecture and chair side Demonstrations</b> |
| 3.      | Visit to primary health center to acquaint with activities and system of health care delivery.                                                                                                                                                                                                                                                                                                       |                | MK                                           | <b>Early clinical exposure (part 1)</b>               |

|    |                                                                                                                         |          |    |                                    |
|----|-------------------------------------------------------------------------------------------------------------------------|----------|----|------------------------------------|
| 4. | Survey – prevalence of common oral diseases/ dental caries and periodontal diseases / emerging and re-emerging diseases | 20 hours | MK | <b>Field visit and assignment.</b> |
| 5. | Visit to water purification plant                                                                                       | 3 hours  | MK | <b>Field visit and assignment.</b> |
| 6. | Exploring and planning setting of private dental clinics for dental practices and preparing project report.             | 3 hours  | MK |                                    |
| 7. | Visit to schools to impart Dental health education.                                                                     | 4 hours  | MK |                                    |

**Curriculum and Course Content for IV BDS**  
**Theory – 41 Hours; Practical – 100 Hours**

| Sr. No. | Topic - THEORY                                 | Teaching hours | Must know /<br>Desirable to know /<br>Nice to Know | Suggested teaching methodology |
|---------|------------------------------------------------|----------------|----------------------------------------------------|--------------------------------|
| 1.      | Definition and Epidemiology of dental diseases |                |                                                    |                                |
|         | a. Epidemiology of dental caries               | 2 hours        | MK                                                 | <b>Didactic lecture</b>        |
|         | • Classification of caries                     |                |                                                    |                                |
|         | • Epidemiological triad                        |                |                                                    |                                |
|         | • Studies on diet and dental caries            |                |                                                    |                                |
|         | • Caries risk assessment                       |                | NK                                                 | <b>Seminar</b>                 |
|         | b. Epidemiology of periodontal disease         | 1 hour         | MK                                                 | <b>Didactic lecture</b>        |
|         | • Classification of periodontal diseases       |                |                                                    |                                |
|         | • Epidemiological triad                        |                |                                                    |                                |
|         | • Plaque control – mechanical and chemical     |                | MK                                                 | <b>Seminar</b>                 |
|         | c. Epidemiology of oral cancer                 | 1 hour         | MK                                                 | <b>Didactic lecture</b>        |
|         | • Epidemiological triad                        |                |                                                    |                                |
|         | • Prevention of oral cancer                    |                |                                                    |                                |
|         | • Diagnostic tools                             |                | MK                                                 | <b>Seminar</b>                 |
|         | d. Epidemiology of malocclusion                | 1 hour         | NK                                                 | <b>Seminar</b>                 |
|         | • Etiology                                     |                |                                                    |                                |
|         | • Classification                               |                |                                                    |                                |
|         | • Prevention                                   |                |                                                    |                                |

|    |                                                                                                                                                                                                                    |         |    |                              |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|------------------------------|
| 2. | Indices                                                                                                                                                                                                            |         |    |                              |
|    | <ul style="list-style-type: none"><li>• Definition</li></ul>                                                                                                                                                       | 1 hour  | MK | Didactic lecture             |
|    | <ul style="list-style-type: none"><li>• Introduction</li></ul>                                                                                                                                                     |         |    |                              |
|    | <ul style="list-style-type: none"><li>• Classification</li></ul>                                                                                                                                                   |         |    |                              |
|    | <ul style="list-style-type: none"><li>• Ideal requisites and uses</li></ul>                                                                                                                                        |         |    |                              |
|    | <ul style="list-style-type: none"><li>• DMFT/DMFS, WHO Dentition states and treatment needs, OHI – OHIS, Sillness and Loe index, Loe and Sillness index, CPI, CPITN, Deansfluorosis index, Russels index</li></ul> | 5 hours | MK | Didactic lecture and Seminar |
| 3. | Social Sciences - Branches of social sciences, family, socioeconomic status, culture, taboos and customs                                                                                                           | 2 hours | NK | Didactic lecture and Seminar |
| 4. | Preventive dentistry                                                                                                                                                                                               |         |    |                              |
|    | <ul style="list-style-type: none"><li>• Definition</li></ul>                                                                                                                                                       | 1 hour  | MK | Seminar                      |
|    | <ul style="list-style-type: none"><li>• Levels of prevention</li></ul>                                                                                                                                             |         |    |                              |
|    | A. Prevention of dental caries                                                                                                                                                                                     |         |    |                              |
|    | Fluorides                                                                                                                                                                                                          | 6 hours | MK | Didactic lecture, Seminar    |
|    | History, Source and Metabolism, Mechanism of action, fluoride delivery methods (blended learning), toxicity of fluoride, De-fluoridation of water.                                                                 |         |    |                              |
|    | B. Minimal intervention dentistry                                                                                                                                                                                  |         |    |                              |
|    | Pit and fissure sealants                                                                                                                                                                                           | 1 hour  | MK | Blended learning             |
|    | Atraumatic restorative technique                                                                                                                                                                                   | 1 hour  | MK | DL                           |



|    |                                                                                                                                                                                                          |         |    |                                     |
|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-------------------------------------|
|    | Arresting caries technique (tooth mousse, fluoride varnish, caries vaccine)                                                                                                                              | 2 hours | NK | <b>Seminar</b>                      |
|    | <b>Healthcare delivery systems</b>                                                                                                                                                                       |         |    |                                     |
|    | Definition of primary healthcare, Elements and principles of primary healthcare, healthcare systems,                                                                                                     | 2 Hours | MK | Didactic Lecture                    |
|    | National international health agencies                                                                                                                                                                   |         | DK | DL                                  |
|    | National Health programmes, oral health policy                                                                                                                                                           |         | NK | DL                                  |
| 7  | Dental practice management                                                                                                                                                                               |         |    |                                     |
|    | a. <b>Structure of system:</b><br>Types of practice, methods of dental care delivery, practice management, place, locality, premises, layout, and maintenance of records.<br><b>Mobile Dental Clinic</b> | 1 hour  | NK | <b>Didactic lecture and seminar</b> |
|    | b. <b>Manpower and Dental auxiliaries</b>                                                                                                                                                                | 1 hour  | MK | <b>Didactic lecture</b>             |
|    | c. <b>Finance in dental care</b>                                                                                                                                                                         | 1 hour  | MK | <b>Didactic lecture and Seminar</b> |
| 8  | DCI, IDA, Dentist Act of India                                                                                                                                                                           | 2 hours | MK | <b>Didactic lecture and Seminar</b> |
| 10 | EBD and Teledentistry.                                                                                                                                                                                   | 1 hour  | DK | <b>Seminar</b>                      |
| 11 | Research methodology                                                                                                                                                                                     | 3 hours | DK | <b>Seminar</b>                      |
|    | <ul style="list-style-type: none"> <li>Preparation of protocol for research</li> <li>Preparation of manuscript for publication</li> </ul>                                                                |         |    |                                     |

|    |                                                                                  |         |    |                  |
|----|----------------------------------------------------------------------------------|---------|----|------------------|
| 12 | Biostatistics- Introduction, definition, methods of collection of data, sampling | 5 Hours | MK | Didactic Lecture |
|    | Presentation of data                                                             |         | DK | Didactic Lecture |
|    | Measures of central tendency and dispersion                                      |         |    | Didactic Lecture |
|    | Tests of significance, types of errors                                           |         | NK | Didactic Lecture |

| Sr. No. | Topic - PRACTICAL                                                                                                                                                                                                 | Teaching hours           | Must know / Desirable to know / Nice to Know | Suggested teaching methodology            |
|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|----------------------------------------------|-------------------------------------------|
| 1.      | Preventive dentistry: Demonstration of application of pit and fissure sealants, fluoride varnish and Atraumatic restorative treatment.                                                                            | 3 hours                  | MK                                           | <b>Chair side Demonstration</b>           |
| 2.      | Case history taking<br>(10 patients) <ul style="list-style-type: none"> <li>Socio economic status</li> <li>Diet planning</li> <li>Levels of prevention</li> <li>Treatment plan</li> <li>Relevant index</li> </ul> | 50 hours<br><br>25 hours | MK                                           | <b>Chair side Demonstration</b>           |
| 3.      | PowerPoint presentation of seminar                                                                                                                                                                                | 20 hours                 | MK                                           | <b>Seminar and small group discussion</b> |
| 4.      | Preparation of oral health education material posters/ models/ Videos etc.                                                                                                                                        | 2 hours                  | MK                                           | <b>Assignment</b>                         |
| 5.      | Conduct a standard operative protocol for conducting screening of patients in community                                                                                                                           |                          |                                              |                                           |

## SCHEME OF EXAMINATION

**Theory: 70 Marks**

Distribution of Topics and type of Questions

| Contents                  | Type of Questions and Marks      | Marks |
|---------------------------|----------------------------------|-------|
| Multiple choice questions | M.C.Q.<br>20 x 1 = 20            | 20    |
| Long essays               | Long essays<br>2 x 10 marks      | 20    |
| Short essays              | Short essay<br>10 x 3 marks = 30 | 30    |

### THEORY WRITTEN EXAMINATION PATTERN AND DISTRIBUTION OF TOPICS

| Contents                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Type of questions & marks | Marks     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|-----------|
| <b>MCQ</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                           | <b>20</b> |
| <b>LONG ESSAYS</b><br>1. Biostatistics: Measures of central tendency and dispersion, sampling and methods of sampling<br>2. Epidemiology – definition, general principles of epidemiology; epidemiology of dental caries, periodontal disease and oral cancer.<br>3. Health education - Definition, Principles and methods of health education.<br>4. Definition, aims and objectives, changing concepts of Public Health Dentistry and Function of Public Health Dentistry<br>5. Surveying, Indices used in the Survey; Basic Oral health Survey methods ; WHO<br>6. Type, needs, Development of Dental Personnel, Dental Auxillary<br>7. Oral Health Care Delivery System in India and other countries<br>8. Payment plan for dental care | <b>2x10 marks</b>         | <b>20</b> |

|                                                                                                                                                                                                                                |             |           |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-----------|
| 9. Define, levels of prevention, specific preventive measures against oral diseases                                                                                                                                            |             |           |
| 10. Fluorides- history of fluoride, mechanism of action, systemic and topical fluoride delivery, toxicity and de-fluoridation of water.                                                                                        |             |           |
| <b>SHORT ANSWERS</b>                                                                                                                                                                                                           | <b>10x3</b> | <b>30</b> |
| 1. DCI, Dentist Act 1948, Indian Dental Association                                                                                                                                                                            |             |           |
| 2. Biostatistics - Mean and Standard Deviation; Normal Curve; Sampling methods , types and presentation of data                                                                                                                |             |           |
| 3. Principles of Epidemiology ; Epidemiological triad; uses of epidemiology ,tools of epidemiology                                                                                                                             |             |           |
| 4. Barriers for health education; Mass Media; Principles of Health Education ;difference between health education and propaganda; methods of health education                                                                  |             |           |
| 5. Difference between clinical Dentists and Public Health Dentists; Procedures and steps used in Dental Public health Functions of Public Health Professional                                                                  |             |           |
| 6. Path Finder Survey;types of examination,training and calibration of examiners.                                                                                                                                              |             |           |
| 7. Indices – DMFT,CPITN,DEAN FLUOROSIS ,OHIS                                                                                                                                                                                   |             |           |
| 8. Dental Auxiliaries - classification;functions;various types of dental auxiliaries.                                                                                                                                          |             |           |
| 9. Incremental Dental care ; comprehensive dental care;various School based preventiveprogram;elements of school health program                                                                                                |             |           |
| 10. Payments – classification and types of payment                                                                                                                                                                             |             |           |
| 11. Prevention of dental caries – Topical Fluoride application, Vaccines, prevention of plaque, prevention of periodontal disease; Oral cancer, Milk and salt fluoridation, school water fluoridation , caries activity tests. |             |           |
| 12. Taboos , customs and mores related to Oral health concepts of oral health among different socio-economic strata.                                                                                                           |             |           |
| 13. fees in dental practice; ethics and jurisprudence                                                                                                                                                                          |             |           |

|                                                                                                                                                                                             |              |           |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|-----------|
| 14. Fluoride tablets; Fluoride varnishes ; Fluorides in restorative materials; Topical fluoride application salt fluoridation ; Milk fluoridation; Plaque preventive measures; Mouth washes |              |           |
| 15. Primary health care                                                                                                                                                                     |              |           |
|                                                                                                                                                                                             | <b>Total</b> | <b>70</b> |

## **PRACTICAL & CLINICAL EXAMINATION**

**Practical examination shall have maximum marks of 90**

### **Exercise 1**

1. Objective structured practical examination will be carried out. This includes case history , indices – [Oral hygiene indices simplified, Sillness and Loe index for Plaque, Loe and Sillness index for Gingiva, CPI, DMFT and DMFS , DFT and AFS, Deans fluoride index] and spotters. [50 marks ]

### **Exercise 2**

1. Oral Health talk. [ 5 marks]
2. Project – oral health education model / chart [10 marks]
3. Records / Log books:- The candidate should be given credit for this records based on the scores obtained in the record. [ 5 marks]

### **Exercise 3**

Performing preventive procedure like Pit & Fissure sealant application , topical fluoride application , ART procedure [20 marks]

## **VIVA VOICE :-**

**Viva voice shall have maximum marks of 20**

Viva voce is an excellent mode of assessment because it permits a fairly broad coverage and it can assess the problem solving capacity of the student. An assessment related to the affective domain is also possible through viva voce. It is desirable to conduct the viva voce independently by each examiner. In order to avoid vagueness and to maintain uniformity of standard and coverage, questions can be pre- formulated before administering them to each student. Twenty marks are exclusively allotted for viva voce and that can be divided equally amongst the examiners, i. e 10 marks per examiner.

### MARKS DISTRIBUTION

| THEORY                  | 100MARKS   | PRACTICAL           | 100 MARKS  |
|-------------------------|------------|---------------------|------------|
| University written exam | 70         | University exam     | 90         |
| Viva Voice              | 20         | Internal Assessment | 10         |
| Internal Assessment     | 10         |                     |            |
|                         | <b>100</b> |                     | <b>100</b> |

### BOOKS RECOMMENDED & REFERENCE:

1. Essential of preventive and community dentistry Soben Peter 4th edition, Arya Publishing Press.
2. Text Book of Preventive and Social Medicine by Park and park, 20th edition.
3. Preventive Dentistry by Murray, 1997.
4. Fluoride in dentistry by Fejerskov 2nd edition, Munksgard Publishers.
5. Dentistry Dental Practice and Community by David F. Striffler and Brain A. Burt,Edn. -1983, W. B. Saunders Company
6. Principles of Dental Public Health by James Morse Dunning, 4th Edition, 1986,Harward University Press.
7. Dental Public Health and Community Dentistry Ed by Anthony Jong Publication By The C. V. Mosby Company 1981
8. Public Health- An Introduction to Community Dentistry. Ed'tion by Geoffrey L. Slack and Brain Burt, Published by John Wrigth and sons Bristol,1980
9. Oral Health Surveys- Basic Methods, 4th edition, 1997, published by W. H. O. Geneva available at the regional office New Delhi.
10. Introduction to Bio-statistics by B. K. Mahajan
11. Primary Preventive Dentistry by Norman. O. Harris. 8th Edition prarson education US.
12. Community Oral Health-A system approach by Patricia P. Cormier and Joyce I. Levy published by Appleton-Century-Crofts/New York, 1981

13. Community Dentistry-A problem oriented approach by P. C. Dental Hand book series Vol.8 by Stephen L. Silverman and Ames F. Tryon, Series editor-Alvin F. Gardner, PSG Publishing company Inc. Littleton Massachuseltts, 1980
14. Preventive Medicine and Hygiene-By Maxcy and Rosenau, published by Appleton Century Crofts, 1986.
15. Preventive Dentistry-by J. O. Forrest published by John Wright and sons Bristol!, 1980.
16. Research methodology and Bio-statistics by Kothari
17. Introduction to Statistical Methods by Grewal
18. Text Book Of Preventive And Community Dentistry B. Dr. S. S. Hiremath.
19. Kale, Isha & Mhapuskar, Amit. (2023). Artificial Intelligence in Dentistry.

## **2.4.8. PEDIATRIC AND PREVENTIVE DENTISTRY**

### **GOAL**

The dental graduates should acquire adequate knowledge, necessary skills and attitudes towards Pediatric dental practice involving the prevention, diagnosis and treatment of common diseases of the teeth & mouth associated tissues. The graduate should also understand the concept of school community programmes existing in the country.

### **OBJECTIVES**

#### **A. Knowledge**

The graduate should acquire the following during the period of training.

1. Adequate knowledge of the scientific foundations on which pediatric dentistry is based and good understanding of various relevant scientific methods, principles of biological functions and should be able to evaluate and analyze scientifically various established facts and data.
2. Adequate knowledge of the development, structure and function of the teeth, mouth and jaws and associated tissues both in health and disease and their relationship and effect on general – state of health and also the bearing on physical and social well – being of the patient.
3. Adequate knowledge of clinical disciplines and methods, which provide a coherent picture of anomalies, lesions and diseases of the teeth, mouth and jaws and preventive, diagnostic and therapeutic aspects of pediatric dentistry.
4. Adequate knowledge of biological function and behavior of children in health and sickness as well as the influence of the natural psychological and social environment on the state of health.

#### **B. SKILLS**

1. Able to diagnose and manage various common dental problems encountered in general pediatric dental practice, keeping in mind the expectations and the right children and the society to receive the best possible treatment available wherever possible.
2. Acquire skill to prevent and manage complications if encountered while caring out various dental procedures.
3. Possess skill to carry out required investigative procedures and ability to interpret them.
4. Promote oral health and help to prevent oral diseases in children.



5. Competent in control of pain and anxiety during dental treatment.
6. To help and to participate in the implementation of national oral health programmes.

### Course Outcomes - Theory

| At the end of Pediatric and Preventive Dentistry course, the students should be able to: |                                                                                                                                                                                                |
|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| T 2.4.8.1                                                                                | Describe principles and scientific evidence of clinical practice of Pediatric dentistry.                                                                                                       |
| T 2.4.8.2                                                                                | Describe the development, structure and function of the teeth, mouth, jaws and other oral tissues in health and disease and its effect on general health and social well-being of the patient. |
| T 2.4.8.3                                                                                | Discuss the scientific basis of child psychology and behavior management in treatment of children with dental anxiety.                                                                         |
| T 2.4.8.4                                                                                | Describe oral health and prevention of oral diseases in children.                                                                                                                              |
| T 2.4.8.5                                                                                | Discuss causes for pain and anxiety during dental treatment.                                                                                                                                   |

### Matrix of Programme Outcome & Course Outcome (POCO) - Theory

| Course Out Come      | PO1        | PO2        | PO3        | PO4        | PO5      | PO6        | PO7        |
|----------------------|------------|------------|------------|------------|----------|------------|------------|
| T 2.4.8.1            | 3          | 3          | 2          | 3          | 1        | 3          | 2          |
| T 2.4.8.2            | 3          | 3          | 1          | 1          | 1        | 1          | 2          |
| T 2.4.8.3            | 2          | 2          | 2          | 1          | 1        | 1          | 1          |
| T 2.4.8.4            | 2          | 2          | 2          | 2          | 1        | 1          | 1          |
| T 2.4.8.5            | 2          | 2          | 2          | 1          | 1        | 1          | 1          |
| <b>Average Score</b> | <b>2.4</b> | <b>2.4</b> | <b>1.8</b> | <b>1.6</b> | <b>1</b> | <b>1.4</b> | <b>1.4</b> |

### Course Outcomes - Clinical

| At the end of Pediatric and Preventive Dentistry course,<br>the students should be able to: |                                                                                                                                                                                                                                    |
|---------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| C 2.4.8.1                                                                                   | Record history, examine and diagnose common oral diseases like dental caries, periodontal diseases, other common soft and hard tissue pathologies of the oral cavity in children and provide preventive and therapeutic treatment. |
| C 2.4.8.2                                                                                   | Assess and manage effects of psychological and social environment on behavior of children and provide effective dental treatment for the child.                                                                                    |
| C 2.4.8.3                                                                                   | Perform treatment of common dental problems encountered in pediatric dental practice meeting the expectations of child and parent.                                                                                                 |
| C 2.4.8.4                                                                                   | Demonstrate management of common complications encountered while carrying out various dental procedures.                                                                                                                           |
| C 2.4.8.5                                                                                   | Carry out necessary investigative procedures and interpret.                                                                                                                                                                        |
| C 2.4.8.6                                                                                   | Perform pain control and behavior management during dental treatment.                                                                                                                                                              |
| C 2.4.8.7                                                                                   | Perform necessary treatment in trauma to the Or facial and dental structures.                                                                                                                                                      |
| C 2.4.8.8                                                                                   | Perform oral check- up and render dental treatment during oral health programs                                                                                                                                                     |

### Matrix of Programme Outcome & Course Outcome (POCO) - Clinical

| <b>Course Out Come</b> | <b>PO1</b>  | <b>PO2</b> | <b>PO3</b> | <b>PO4</b> | <b>PO5</b> | <b>PO6</b> | <b>PO7</b> |
|------------------------|-------------|------------|------------|------------|------------|------------|------------|
| C 2.4.8.1              | 3           | 3          | 2          | 3          | 1          | 3          | 2          |
| C 2.4.8.2              | 3           | 3          | 2          | 2          | 1          | 2          | 2          |
| C 2.4.8.3              | 3           | 3          | 2          | 2          | 2          | 2          | 2          |
| C 2.4.8.4              | 3           | 3          | 2          | 1          | 1          | 1          | 3          |
| C 2.4.8.5              | 3           | 3          | 2          | 3          | 1          | 1          | 3          |
| C 2.4.8.6              | 2           | 3          | 3          | 3          | 2          | 2          | 3          |
| C 2.4.8.7              | 3           | 3          | 3          | 3          | 2          | 2          | 3          |
| C 2.4.8.8              | 2           | 3          | 3          | 3          | 3          | 2          | 3          |
| <b>Average Score</b>   | <b>2.75</b> | <b>3</b>   | <b>2.3</b> | <b>2.5</b> | <b>1.6</b> | <b>1.8</b> | <b>2.6</b> |

**Curriculum and Course Content of Pediatric and  
Preventive Dentistry for III BDS  
Theory – 20 Hours ; Practical – 70 Hours**

| Sr. No. | Topic - THEORY                                                                                                   | Teaching hours | Must know /<br>Desirable to know /<br>Nice to Know | Suggested teaching methodology |
|---------|------------------------------------------------------------------------------------------------------------------|----------------|----------------------------------------------------|--------------------------------|
| 1.      | <b>INTRODUCTION TO PEDIATRIC &amp; PREVENTIVE DENTISTRY</b><br><br>Definition, scope, objectives and importance. | 1              | MK                                                 | Didactic Lecture               |
| 2.      | <b>GROWTH AND DEVELOPMENT</b>                                                                                    | 2              |                                                    | Didactic Lecture               |
|         | <b>Importance of study of growth and development in Pedodontics</b>                                              |                | MK                                                 | Didactic Lecture               |
|         | Prenatal and postnatal factors in growth and development.                                                        |                | DK                                                 |                                |
|         | Theories of growth and development.                                                                              |                | DK                                                 |                                |
|         | Development of maxilla and mandible and related age changes.                                                     |                | MK                                                 |                                |
|         | Age Changes of Mandibular foramen.                                                                               |                | MK                                                 |                                |
| 3.      | <b>DENTAL ANATOMY AND HISTOLOGY</b>                                                                              | 2              |                                                    | Didactic Lecture               |
|         | Development of teeth and associated structures in brief                                                          |                | MK                                                 |                                |
|         | Eruption and shedding of teeth – theories                                                                        |                | MK                                                 | Didactic Lecture               |
|         | Teething disorders and their management                                                                          |                | MK                                                 | Didactic Lecture               |
| 4.      | <b>CASE HISTORY RECORDING</b>                                                                                    | 1              |                                                    | Didactic Lecture               |

|    |                                                                                                                  |   |    |                                                                   |
|----|------------------------------------------------------------------------------------------------------------------|---|----|-------------------------------------------------------------------|
|    | Outline of principles of examination, diagnosis & treatment planning.                                            |   | MK |                                                                   |
| 5. | <b>DENTAL RADIOLOGY RELATED TO PEDODONTICS</b>                                                                   | 1 | DK | Didactic Lecture                                                  |
| 6. | <b>DENTAL CARIES INCLUDING EARLY CHILDHOOD CARIES</b>                                                            | 5 |    | Didactic Lecture                                                  |
|    | Historical background, definition, etiology and pathogenesis.                                                    |   | DK |                                                                   |
|    | Caries pattern in primary, young permanent and permanent teeth in children.                                      |   | MK |                                                                   |
|    | Rampant caries, early childhood caries and extensive caries: in brief                                            |   | MK | Small group discussions                                           |
|    | Definition, etiology, clinical features, complications and management in detail                                  |   | MK | Small group discussions                                           |
|    | Role of diet and nutrition in dental caries.                                                                     |   | DK |                                                                   |
|    | Dietary modification and diet counseling.                                                                        |   | NK |                                                                   |
|    | Caries activity tests, caries prediction, caries susceptibility and their clinical application.                  |   | NK |                                                                   |
| 7. | <b>PREVENTIVE DENTISTRY</b>                                                                                      | 2 |    | Didactic Lecture                                                  |
|    | Definition.                                                                                                      |   | MK | <b>Demonstration of oral prophylaxis and fluoride application</b> |
|    | Principles & scope.                                                                                              |   | MK |                                                                   |
|    | Types of prevention.                                                                                             |   | DK |                                                                   |
|    | Different preventive measures used in Pediatric Dentistry including pit and fissure sealants and caries vaccine. |   | MK |                                                                   |
|    | Importance of first permanent molar                                                                              |   | MK | Small group discussions                                           |

|    |                                                                    |   |    |                            |
|----|--------------------------------------------------------------------|---|----|----------------------------|
| 8. | <b>FLUORIDES</b>                                                   | 4 |    | Didactic<br>Lecture        |
|    | Historical background.                                             |   | DK |                            |
|    | Systemic & Topical fluorides.                                      |   | MK | Small group<br>discussions |
|    | Mechanism of action.                                               |   | MK |                            |
|    | Toxicity & Management                                              |   | DK |                            |
|    | De-fluoridation techniques.                                        |   | DK |                            |
| 9. | <b>GINGIVAL &amp; PERIODONTAL<br/>DISEASES IN<br/>CHILDREN.</b>    |   |    | Didactic<br>Lecture        |
|    | Normal gingiva & periodontium in<br>children.                      |   | MK | Small group<br>discussions |
|    | Definition, etiology and<br>pathogenesis.                          |   | MK |                            |
|    | Prevention and management of<br>gingival and periodontal diseases. |   | MK | Small group<br>discussions |

## **B. CLINICALS : 70 Hours**

Following is the recommended clinical quota for under graduate students in the subject of Pediatric & Preventive Dentistry.

### **CLINICAL EXERCISES**

| <b>Sl No.</b> | <b>Treatment</b>       | <b>No. of<br/>Cases</b> |
|---------------|------------------------|-------------------------|
| 1             | Case History           | 5                       |
| 2             | Oral Prophylaxis       | 10                      |
| 3             | Fluoride Application   | 5                       |
| 4             | Restorative procedures | 20                      |
| 5             | Extraction             | 10                      |

## SCHEME OF EXAMINATION

**As per DCI this subject has no Theory or Practical Examination for III BDS**

**One of the End posting exam will be conducted in the form of OSCE/OSPE**

### Curriculum and Course Content for IV BDS Theory – 41 Hours ; Practical – 100 Hours

| Sr. No. | Topic - THEORY                                                                                                                                                                 | Teaching hours | Must know / Desirable to know / Nice to Know | Suggested teaching methodology                      |
|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------------------------------------|-----------------------------------------------------|
| 1.      | <b>PEDIATRIC OPERATIVE DENTISTRY INCLUDING DENTAL MATERIALS</b>                                                                                                                | 4              |                                              | Didactic Lecture                                    |
|         | Principles of pediatric operative dentistry.                                                                                                                                   |                | MK                                           |                                                     |
|         | Modifications required for cavity preparation in primary and young permanent teeth. based on differences between deciduous and permanent teeth                                 |                | MK                                           | <b>Demonstration of Cavity preparation</b>          |
|         | Various isolation techniques, Matrix bands and retainers                                                                                                                       |                | MK                                           |                                                     |
|         | Restorations of decayed primary, young permanent and permanent teeth in children using various restorative materials like mainly Glass Ionomer, composites and silver amalgam. |                | MK                                           | Small group discussions                             |
| 2.      | <b>ORAL SURGICAL PROCEDURES IN CHILDREN.</b>                                                                                                                                   | 01             |                                              | Didactic Lecture                                    |
|         | Indications and contraindications of extraction of primary and permanent teeth in children.                                                                                    |                | MK                                           | <b>Demonstration of LA techniques and Exodontia</b> |
|         | Knowledge of local and general anesthesia.                                                                                                                                     |                | DK                                           |                                                     |

|    |                                                                                                   |   |    |                          |
|----|---------------------------------------------------------------------------------------------------|---|----|--------------------------|
|    | Minor surgical procedures in children.                                                            |   | NK |                          |
|    | Age changes of Mandibular foramen.                                                                |   | MK |                          |
| 3. | <b>BACTERIAL, VIRAL &amp; FUNGAL DISEASES IN CHILDREN</b>                                         | 2 | DK | Didactic Lecture         |
| 4. | <b>DEVELOPMENT OF OCCLUSION FROM BIRTH THROUGH ADOLESCENCE</b>                                    | 3 | MK | Didactic Lecture         |
|    | Study of variations and abnormalities                                                             |   | MK |                          |
| 5. | <b>DEEP CARIES MANAGEMENT (PEDIATRIC ENDODONTICS)</b>                                             | 4 |    | Didactic Lecture         |
|    | Principles & Diagnosis.                                                                           |   | MK |                          |
|    | Classification of pulpal pathology in primary young permanent & permanent teeth.                  |   | MK |                          |
|    | Management of pulpally involved primary, young permanent and permanent teeth.                     |   | MK | Small group discussions  |
|    | o Pulp capping- direct pulp capping                                                               |   | MK |                          |
|    | o Pulpotomy.                                                                                      |   | MK | Flipped classroom        |
|    | o Pulpectomy.                                                                                     |   | MK | <b>Flipped classroom</b> |
|    | o Apexogenesis.                                                                                   |   | MK |                          |
|    | o Apexification                                                                                   |   | MK |                          |
|    | Obturation Techniques & material used for primary, young permanent & permanent teeth in children. |   | MK |                          |
| 6. | <b>STAINLESS STEEL, POLYCARBONATE &amp; RESIN CROWNS.</b>                                         | 1 | MK | Didactic Lecture         |
| 7. | <b>TRAUMATIC INJURIES IN CHILDREN:</b>                                                            | 5 |    | Didactic Lecture         |



|     |                                                                                 |   |    |                         |
|-----|---------------------------------------------------------------------------------|---|----|-------------------------|
|     | Classification & importance.                                                    |   | MK |                         |
|     | Sequelae & reaction of teeth to trauma.                                         |   | MK | Small group discussions |
|     | Management of traumatized teeth.                                                |   | MK |                         |
| 8.  | <b>CHILD PSYCHOLOGY</b>                                                         |   |    | Didactic Lecture        |
|     | Definition.                                                                     |   | MK |                         |
|     | Theories of child psychology.                                                   |   | MK |                         |
|     | Psychological development of children with age.                                 |   | MK |                         |
|     | Principles of psychological growth & development while managing child patient.  |   | MK |                         |
|     | Dental fear and its management.                                                 |   | MK |                         |
|     | Factors affecting child's reaction to dental treatment.                         |   | MK |                         |
| 9.  | <b>CHILD BEHAVIOUR &amp; BEHAVIOUR MANAGEMENT</b>                               | 4 |    | Didactic Lecture        |
|     | Definitions                                                                     |   | MK |                         |
|     | Types of behavior encountered in the dental clinic.                             |   | MK | Small group discussions |
|     | Non-pharmacological & pharmacological methods of behavior management.           |   | MK |                         |
| 10. | <b>PREVENTIVE &amp; INTERCEPTIVE ORTHODONTICS</b>                               |   |    | Didactic Lecture        |
|     | Definition.                                                                     |   | MK |                         |
|     | Problems encountered during primary, mixed dentition phases & their management. |   | MK |                         |
|     | Space management                                                                |   | MK | Didactic Lecture        |

|     |                                                                                                                     |   |    |                         |
|-----|---------------------------------------------------------------------------------------------------------------------|---|----|-------------------------|
|     | Serial extraction                                                                                                   |   | DK |                         |
| 11. | <b>ORAL HABITS IN CHILDREN</b>                                                                                      | 4 |    | Didactic Lecture        |
|     | Definition, etiology & classification.                                                                              |   | MK |                         |
|     | Clinical features of digit sucking, Tongue thrusting, mouth breathing & various other deleterious secondary habits. |   | MK | Small group discussions |
|     | Management of oral habits in children.                                                                              |   | MK |                         |
| 12. | <b>DENTAL CARE OF CHILDREN WITH SPECIAL NEEDS.</b>                                                                  | 4 |    | Didactic Lecture        |
|     | Definition, etiology, classification, behavioral and clinical features & management of children with.               |   | MK |                         |
|     | o Physically handicapping conditions.                                                                               |   | DK |                         |
|     | o Mentally compromising conditions.                                                                                 |   | MK |                         |
|     | o Medically compromising conditions.                                                                                |   | MK |                         |
|     | - Genetic disorders and aspects in Pediatric dentistry.                                                             |   | NK | Didactic Lecture        |
| 13. | <b>DENTAL EMERGENCIES IN CHILDREN AND THEIR MANAGEMENT</b>                                                          | 1 | DK | Didactic Lecture        |
| 14. | <b>CHILD ABUSE &amp; NEGLECT, FORENSIC DENTISTRY</b>                                                                | 1 | DK | Didactic Lecture        |
| 15. | <b>SETTING UP OF PEDIODONTIC CLINIC</b>                                                                             | 1 | MK | Didactic Lecture        |
| 16. | <b>CONGENITAL ABNORMALITIES IN CHILDREN</b>                                                                         | 2 |    | Didactic Lecture        |
|     | Definition, classification, clinical features & management.                                                         |   | NK | Didactic Lecture        |

|     |                                                           |   |    |                  |
|-----|-----------------------------------------------------------|---|----|------------------|
| 17. | DENTAL HEALTH EDUCATION & SCHOOL DENTAL HEALTH PROGRAMMES | 1 | NK | Didactic Lecture |
| 18. | ETHICS                                                    | 1 | NK |                  |
| 19. | EMERGING AND RE-EMERGING INFECTIONS                       | 1 |    |                  |
|     | Definition & Classification and diagnosis                 |   | NK | Didactic Lecture |

## **B. CLINICALS : 100 Hours**

Following is the recommended clinical quota for under graduate students in the subject of Pediatric & Preventive Dentistry.

### **CLINICAL EXERCISES**

| SI No. | Treatment                                      | No. of Cases |
|--------|------------------------------------------------|--------------|
| 1      | Case History                                   | 05           |
| 2      | Oral Prophylaxis                               | 10           |
| 3      | Fluoride Application                           | 05           |
| 3      | Restorative procedures (Class II restorations) | 25           |
| 4      | Extraction                                     | 15           |
| 5      | Pulp Therapy (Only Demonstration)              | 10           |
| 6      | Space Maintainers (Only Demonstration)         | 10           |

## SCHEME OF EXAMINATION

### A. Theory : 70 Marks

#### Distribution of Topics and Types of Questions

| Contents                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Type of Questions and Marks | Marks           |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|-----------------|
| Multiple Choice Questions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | M.C.Q.<br>20 X 01 Marks     | 20-Marks        |
| Long Essay<br>a) One question from the following topics :<br>i) Psychology.<br>ii) Child Behavior , Behavior Management.<br>iii) Dental caries & management in children.<br>iv) Restorative & Esthetic Dentistry in Children.<br>v) Pulp Therapy.<br>vi) Preventive & Interceptive Orthodontics.<br>b) One question from the following topics :<br>i) Occlusal Guidance & Space Management.<br>ii) Management of traumatic injuries to teeth and associated structures in children.<br>iii) Oral habits and their management.<br>iv) Management of handicapped patients.<br>v) Gingival & Periodontal diseases and management in children,<br>Oral surgery for children. | Long Essay<br>02 X 10 Marks | 20-Marks        |
| Short Answers                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Short Essays                |                 |
| i) Introduction, Definition & Scope of Pediatric Dentistry.<br>ii) Applied aspects of Growth and Development.<br>iii) Genetic Aspects.<br>iv) Chronology of Human Dentition.<br>v) Examination, Investigation, Diagnosis & Treatment in Pediatric Dentistry.<br>vi) Setting of Pediatric Dental clinic.<br>vii) Management of developmental and acquired disturbances of teeth.<br>viii) Oral manifestation of systemic diseases.<br>ix) Management of pain.<br>x) Teething Disorders.<br>xi) Fluorides .<br>xii) Bacterial, Viral & Fungal diseases in children.<br>xiii) Dental Health Education & School Dental Health programmes.                                    | 10 X 03 Marks               | 30-Marks        |
| Questions can be asked from any chapter of the syllabus                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                             |                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>Total</b>                | <b>70-Marks</b> |

**B. Viva Voce : 20 Marks**

**C. Internal Assessment –Theory : 10 Marks, Practical : 10 Marks**

**D. Clinical Examination : 90 Marks**

Clinical Examination consists of two exercise:

**Exercise 1 : Marks allotted : 35**

(Common for all students)

- Clinical Examination and recording of Long Case History 10 -Marks
- Diagnosis, Treatment planning & Management 15 –Marks
- Record book 10- Marks

**Exercise 2: Marks allotted: 55**

(Any one of the following Exercise)

1. Oral Prophylaxis Fluoride Application
  - Management of Child 10 -Marks
  - Oral Prophylaxis 20 -Marks
  - Topical Fluoride Application 20 -Marks
  - Post Operative Instructions 05 –Marks
2. Restoration of Tooth
  - Management of Child 10 -Marks
  - Cavity Preparation 20- Marks
  - Isolation, Lining, Matrix Band Application 10- Marks
  - Filling, Carving & Finishing 10- Marks
  - Post- operative Instructions 05 -Marks
3. Extraction of tooth
  - Management of Child 10- Marks
  - Local Anesthesia 15 -Marks
  - Extraction 20- Marks
  - Prescription 05 -Marks
  - Post- operative Instructions 05 -Marks

## **BOOKS RECOMMENDED & REFERENCE**

1. Pediatric Dentistry (Infancy through Adolescences) – Pinkham.
2. Kennedy's Pediatric Operative Dentistry – Kennedy & Curzon
3. Occlusal guidance in Pediatric Dentistry – Stephen H. Wei.
4. Clinical use of Fluorides - Ripa
5. Pediatric Oral & Maxillofacial Surgery – Kaban.
6. Pediatric Medical Emergencies - P. S. Whatt.
7. Understanding of Dental Caries. – Niki Foruk.
8. An Atlas of Glass Ionomer cements – G. J. Mount.
9. Clinical Pedodontics - Finn.
10. Text Book of Pediatric Dentistry – Braham Morris.
11. Primary Preventive Dentistry – Norman O. Harris
12. Hand Book of Clinical Pedodontics - Kenneth. D
13. Preventive Dentistry – Forrester
14. The Metabolism and Toxicity of Fluoride – Garry M. Whitford.
15. Dentistry for the child and Adolescence – Mc. Donald.
16. Pediatric Dentistry – Damle. S. G.
17. Behaviour Management – Wright
18. Pediatric Dentistry – Mathewson.
19. Traumatic Injuries – Andreson.
20. Occlusal guidance in Pediatric Dentistry – Nakata.
21. Pediatric Drug Therapy – Tomare.
22. Contemporary Orthodontics – Profitt.
23. Preventive Dentistry. – Soben Peter.
24. Metabolism & Toxicity of Fluoride – Withford G. M.
25. Endodontic Practice - Grossman.
26. Principles of Endodontics – Munford.

27. Endodontics – Ingle
28. Pathway of Pulp –Cohen.
29. Management of Traumatized anterior Teeth – Hargreaves.
30. Text book & Pedodontics - Shobha Tendon
31. Pediatric Dentistry - Nikhil Marwah
32. Pediatric Dentistry - M.S. Muthu
33. Text book of Pedodontics - Arati Rao

## 4.9 ORAL MEDICINE AND RADIOLOGY

### GOALS

To imbibe necessary skills and attitudes to attain the competence in diagnosis, investigations and appropriate treatment planning of oral and para oral lesions.

### OBJECTIVES

#### 1. KNOWLEDGE

By the end of the third year the student should be able to:

Demonstrate knowledge of theoretical, clinical and practical knowledge of mucosal to oral and paraoral lesions, diagnostic procedures pertaining to them and current information of intraoral methods.

#### 2. SKILLS

By the end of the third year the student should be able to:

- 1) Demonstrate diagnostic skills in recognition of oral lesions and their management.
- 2) Record case history, perform thorough clinical examination of the patient, essential diagnostic procedures and other relevant tests and interpreting them to arrive at diagnosis.
- 3) Perform intraoral radiography & interpretation of intraoral radiography.

#### 3. ATTITUDE

Demonstrate Human values, ethical practice and communication skills.

### Course Outcomes - Theory

| At the end of Oral Medicine and Radiology course, the students should be able to: |                                                                                                                                                         |
|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| T 2.4.9.1                                                                         | Discuss orofacial disorders (mucosal/non mucosal/paraoral structure/pain) with clinical features, diagnostic methods, radiography & medical management. |
| T 2.4.9.2                                                                         | Describe effects of systemic diseases on oral health                                                                                                    |
| T 2.4.9.3                                                                         | Describe basics of radiology, intraoral, extra oral, radiography and specialized imaging.                                                               |
| T 2.4.9.4                                                                         | Describe clinical & radiographic aspects of forensic odontology.                                                                                        |



### Programme Outcome & Course Outcome (POCO) Matrix - Theory

| Course Outcome       | PO1         | PO2      | PO3         | PO4         | PO5         | PO6      | PO7        |
|----------------------|-------------|----------|-------------|-------------|-------------|----------|------------|
| T.2.4.9.1            | 2           | 2        | 2           | 2           | 1           | 2        | 2          |
| T.2.4.9.2            | 2           | 2        | 2           | 2           | 2           | 2        | 2          |
| T.2.4.9.3            | 1           | 2        | 1           | 1           | 1           | 2        | 1          |
| T.2.4.9.4            | 2           | 2        | 2           | 2           | 1           | 2        | 1          |
| <b>Average Score</b> | <b>1.75</b> | <b>2</b> | <b>1.75</b> | <b>1.75</b> | <b>1.25</b> | <b>2</b> | <b>1.5</b> |

### Course Outcomes - Clinical

|                                                                                   |                                                                                                                                                                     |
|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| At the end of Oral Medicine and Radiology course, the students should be able to: |                                                                                                                                                                     |
| C 2.4.9.1                                                                         | Record appropriate history, perform comprehensive extraoral & intraoral examination, diagnose and provide medical line of treatment for common orofacial disorders. |
| C 2.4.9.2                                                                         | Demonstrate adequate understanding of influence of systemic disease on oral health and prescribe appropriate referral.                                              |
| C 2.4.9.3                                                                         | Demonstrate proficiency in intraoral radiography with appropriate safety & protection measures                                                                      |
| C 2.4.9.4                                                                         | Demonstrate the understanding of maintaining dental records and age estimation by radiological methods.                                                             |

### Programme Outcome & Course Outcome (POCO) Matrix - Practical

| Course Outcome       | PO1        | PO2        | PO3        | PO4         | PO5         | PO6      | PO7         |
|----------------------|------------|------------|------------|-------------|-------------|----------|-------------|
| C.2.4.9.1            | 3          | 3          | 3          | 2           | 2           | 2        | 3           |
| C.2.4.9.2            | 2          | 2          | 2          | 2           | 1           | 2        | 2           |
| C.2.4.9.3            | 3          | 3          | 3          | 3           | 2           | 2        | 2           |
| C.2.4.9.4            | 2          | 2          | 2          | 2           | 2           | 2        | 2           |
| <b>Average Score</b> | <b>2.5</b> | <b>2.5</b> | <b>2.5</b> | <b>2.25</b> | <b>1.75</b> | <b>2</b> | <b>2.25</b> |

**Curriculum and Course Content for III BDS**  
**Theory – 20 Hours, Clinics – 70 Hours**

| Sr. No. | Topic                                                                                                                                                                                                                                                                                                                                   | Teaching hours | Must know /<br>Desirable to know /<br>Nice to Know | Suggested teaching methodology |
|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------------------------------------------|--------------------------------|
| 1.      | <b>Introduction to Oral Medicine &amp; Radiology</b><br><br>Definitions Scope<br><br>Clinical applications                                                                                                                                                                                                                              | 1 hours        | <b>Must know</b>                                   | Interactive lecture            |
| 2.      | <b>Occupational Hazards</b>                                                                                                                                                                                                                                                                                                             | 1 hour         | <b>Desirable to know</b>                           | Interactive lecture            |
| 3.      | <b>Teeth</b><br><br>Developmental abnormalities<br>Causes of destruction of teeth and their sequelae<br>Discoloration of teeth                                                                                                                                                                                                          | 1 hour         | <b>Desirable to know</b>                           | Interactive lecture            |
| 4.      | <b>Stomatitis</b><br><br>Classification<br>Systemic conditions causing stomatitis<br>Dental materials causing stomatitis                                                                                                                                                                                                                | 1 hour         | <b>Must know</b>                                   | Interactive lecture            |
| 5.      | <b>Disease of the tongue</b><br><br>Aglossia, Ankyloglossia, Bifid tongue, Fissured tongue, Scrotal tongue, Macroglossia, Microglossia, Geographic tongue, Median Rhomboid Glossitis, Depapillation of tongue, Hairy tongue, Atrophic tongue, Reactive Lymphoid Hyperplasia, Glossodynia, Glossopyrosis, Ulcers, White and Red patches. | 1 hour         | <b>Desirable to know</b>                           | Interactive lecture            |

|                  |                                                                                                                                                                                                                                                                                                                                        |         |                     |                     |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|---------------------|---------------------|
|                  | <ul style="list-style-type: none"> <li>• Classification</li> <li>• Clinical Examination of tongue</li> <li>• Local &amp; Systemic conditions and Syndromes affecting the tongue</li> <li>• Differential Diagnosis and treatment</li> </ul>                                                                                             |         |                     |                     |
| 6.               | <b>Cervicofacial lymphadenopathy</b><br><br>Classification, Etiopathogenesis, differential diagnosis, investigations and dental considerations                                                                                                                                                                                         | 1 hour  | <b>Must know</b>    | Interactive lecture |
| <b>Radiology</b> |                                                                                                                                                                                                                                                                                                                                        |         |                     |                     |
| 7.               | Introduction to Oral Radiology- Definitions, Scope & Limitations                                                                                                                                                                                                                                                                       | 1 hour  | <b>Must know</b>    | Interactive lecture |
| 8.               | History of Radiology                                                                                                                                                                                                                                                                                                                   | 1 hour  | <b>Nice to know</b> | Interactive lecture |
| 9.               | Radiation Physics of radiation <ul style="list-style-type: none"> <li>• Nature and types of radiations</li> <li>• Source of radiations</li> <li>• Production of X-rays &amp; Properties of X-rays</li> <li>• Compton effect</li> <li>• Coherent effect</li> <li>• Photoelectric effect</li> <li>• Radiation measuring units</li> </ul> | 2 hours | <b>Must know</b>    | Interactive lecture |
| 10.              | Radiation Biology                                                                                                                                                                                                                                                                                                                      | 1 hour  | <b>Must know</b>    | Interactive lecture |
| 11.              | Radiation Safety and Protection measures                                                                                                                                                                                                                                                                                               | 1 hour  | <b>Must know</b>    | Interactive lecture |
| 12.              | Principles of image production : Projection Geometry                                                                                                                                                                                                                                                                                   | 1 hour  | <b>Must know</b>    | Interactive lecture |

|                                                   |                                                                                                                                                                                                                                                    |        |                          |                                               |
|---------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|--------------------------|-----------------------------------------------|
| 13.                                               | Radiographic techniques :<br>Intra-Oral <ul style="list-style-type: none"> <li>• Periapical radiographs (Bisecting and Paralleling techniques)</li> <li>• Bite wing radiographs</li> <li>• Occlusal radiographs</li> </ul>                         | 1 hour | <b>Must know</b>         | Interactive lecture<br>Followed by demo       |
| 14.                                               | 1. Factors in production of ideal radiographs<br>(a) K.V.P. and mA. of X-ray machine<br><br>(b) Filters<br><br>(c) Collimations<br><br>(d) Intensifying screens<br><br>(e) Grids<br><br>(f) X-ray films (g)<br>Exposure time<br><br>(h) Techniques | 1 hour | <b>Must know</b>         | Interactive lecture                           |
| 15.                                               | Radiographic normal anatomical landmarks                                                                                                                                                                                                           | 1 hour | <b>Must know</b>         | Interactive Lecture with videos               |
| 16.                                               | Radiographic processing & faults                                                                                                                                                                                                                   | 1 hour | <b>Must know</b>         | Interactive Lecture followed by demonstration |
| 17.                                               | Radiographic appearance of Periodontal & periapical diseases                                                                                                                                                                                       | 1 hour | <b>Must know</b>         | Interactive Lecture                           |
| <b>DISCUSSION: TAKEN DURING CLINICAL POSTINGS</b> |                                                                                                                                                                                                                                                    |        |                          |                                               |
| 18.                                               | Principles of Oral Diagnosis.                                                                                                                                                                                                                      |        | <b>Desirable to know</b> | Interactive lecture                           |
| 19.                                               | Introduction <ul style="list-style-type: none"> <li>• Ethics</li> <li>• Communication skill</li> <li>• Patient and Operator's position</li> <li>• Chair position</li> </ul>                                                                        |        | <b>Must know</b>         | Interactive lecture                           |

|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |  |                  |                                                    |
|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|------------------|----------------------------------------------------|
|     | <ul style="list-style-type: none"> <li>• Sterilization in Oral Medicine &amp; Radiology</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |                  |                                                    |
| 20. | <p>Case history taking</p> <ul style="list-style-type: none"> <li>• Physical examination methodologies – General</li> <li>• Extra oral examination</li> <li>• Intra oral examination</li> <li>• Concepts of Provisional Diagnosis, Differential Diagnosis</li> <li>• Clinical Chair side Investigations &amp; Radiological Investigations</li> <li>• Hematological, Microbiological, Histopathological Investigations</li> <li>• Special Investigation - Biochemical, Sialochemical studies, Serology, Immunological</li> <li>• Final diagnosis</li> <li>• Formulation of Treatment plan</li> <li>• Referral for opinions</li> </ul> |  | <b>Must know</b> | <p>Interactive lecture</p> <p>Followed by demo</p> |
| 21. | Gingiva & Gingivitis                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  | <b>Must know</b> | Interactive lecture                                |
| 22. | Periodontium & Periodontitis                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  | <b>Must know</b> | Interactive lecture                                |
| 23. | Pulp & Periapical diseases                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  | <b>Must know</b> | Interactive lecture                                |
| 24. | Normal radiographic anatomical landmarks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  | <b>Must know</b> | Interactive lecture                                |
| 25. | Principles of Intraoral Radiographic Techniques & Clinical Demo.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  | <b>Must know</b> | Interactive lecture                                |
| 26. | Manual, automatic method of processing & faults                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |  | <b>Must know</b> | Demonstration                                      |
| 27. | Principles of Radiographic Interpretation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  | <b>Must know</b> | Interactive lecture                                |

**Clinical Exercises: 70 Hours**

| <b>Sl. No.</b> | <b>Topics</b>                                    | <b>Quota</b>   |
|----------------|--------------------------------------------------|----------------|
| 1.             | Clinical discussion & observations               | -              |
| 2.             | Case demonstrations and observation / assistance | -              |
| 3.             | Radiology demonstrations and observations        | -              |
| 4.             | Case history taking and discussion :             | 10 cases       |
| 5.             | Radiograph making, processing and interpreting   | 20 Radiographs |

**Curriculum and Course Content for IV BDS**  
**Theory – 49 Hours, Clinics – 130 Hours**

| Sr. No. | Topic                                                                                                                                                                                                                                                                                                                                                                                                  | Teaching hours | Must to know /<br>Desirable to know /<br>Nice to Know | Suggested teaching methodology |
|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------------------------------------------------------|--------------------------------|
| 28.     | Vesiculobullous lesions of oral mucosa: Herpes simplex, Herpes Zoster, Herpangina, Bullous lichen planus, Pemphigus, Cicatricial Pemphigoid, Erythema Multiforme, Aphthous Ulcers.                                                                                                                                                                                                                     | 2 hours        | <b>Must Know</b>                                      | Integrated Teaching Learning   |
| 29.     | Red lesions : Erythroplakia, Stomatitis Venenata & Medicamentosa, Erosive lesions and Denture Sore Mouth.                                                                                                                                                                                                                                                                                              | 1 hour         | <b>Must Know</b>                                      | Integrated Teaching Learning   |
| 30.     | White lesions : Chemical burns, Leukodema, Leukoplakia, Fordyce's Spots, Stomatitis Nicotina Palatinus, White Sponge Nevus, Oral Submucous fibrosis, Candidiasis, Lichen planus, Discoid Lupus Erythematosus                                                                                                                                                                                           | 1 hour         | <b>Must Know</b>                                      | Integrated Teaching Learning   |
| 31      | Dermatological lesions : Ectodermal dysplasia, Lupus erythematosus, Psoriasis, Scleroderma, Dermatomyositis, Rheumatoid arthritis, Pachyonychia Congenita, Darier's disease, Epidermolysis Bullosa, Dermatitis herpetiformis.                                                                                                                                                                          | 1 hour         | <b>Nice to know</b>                                   | Interactive lecture            |
| 32      | Tobacco Hazards , Tobacco cessation & Oral Cancer<br><br><ul style="list-style-type: none"> <li>• Etiology, Classification &amp; Epidemiology</li> <li>• Screening, Clinical Features, Clinical staging &amp; Diagnosis</li> <li>• Laboratory Investigations &amp; Other Investigations including radiographs</li> <li>• Chemotherapy / Radiotherapy</li> <li>• Postradiation therapy care.</li> </ul> | 2 hours        | <b>Must know</b>                                      | Integrated Teaching Learning   |
| 33.     | Diseases of Salivary glands<br><br><ul style="list-style-type: none"> <li>• Development disturbances : Aplasia, Atresia and Aberration</li> <li>• Functional disturbances : Xerostomia, ptyalism</li> <li>• Inflammatory conditions : Non-specific sialadenitis, Mumps, Sarcoidosis, Heerfort's Syndrome (uveoparotid fever), Necrotising Sialometaplasia</li> </ul>                                   | 2 hours        | <b>Desirable to know</b>                              | Integrated Teaching Learning   |

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|     | <ul style="list-style-type: none"> <li>• Cysts and Tumors: Mucocoele, Ranula, Pleomorphic Adenoma, Mucoepidermoid Carcinoma</li> <li>• Miscellaneous: Sialolithiasis, Sjogren's Syndrome, Miculicz's Disease, Sialosis and Sialography</li> </ul>                                                                                                                                                                                                                                                                                                                                                                           |         |                          |                     |
| 34. | <p>Immunological diseases – Immunodeficiency disorders &amp; autoimmune disease</p> <p>(a) Lupus Erythematosus (b) Scleroderma (c) Dermatomyositis</p> <p>(d) Rheumatoid arthritis</p> <p>(f) Recurrent oral ulcerations including Behcet's syndrome and Reiter's syndrome</p>                                                                                                                                                                                                                                                                                                                                              | 2 hours | <b>Nice to know</b>      | Interactive lecture |
| 35. | <p>AIDS</p> <p>Prevalence, structure of HIV virus, pathogenesis, Clinical Features, oral manifestations, investigations, postexposure prophylaxis and treatment&amp; dental considerations.</p>                                                                                                                                                                                                                                                                                                                                                                                                                             | 1 hour  | <b>Must know</b>         | Interactive lecture |
| 36. | <p>Sexually Transmitted diseases</p> <p>Classification, Etiopathogenesis, differential diagnosis, investigations and treatment of syphilis, gonorrhea, hepatitis and dental considerations</p>                                                                                                                                                                                                                                                                                                                                                                                                                              | 1 hour  | <b>Nice to know</b>      | Didactic lecture    |
| 37. | <p>Diseases of bone &amp; Osteodystrophies</p> <ul style="list-style-type: none"> <li>• Classification of diseases of bone manifested in jaws, etiology</li> <li>• Types, clinical features, radiographic features and types</li> <li>• Diagnosis, investigations, treatment dental consideration and follow up of the following diseases</li> <li>• Developmental disorders: Anomalies, Exostosis&amp; tori, infantile, cortical hyperostosis, Marfans syndrome, Fibrous dysplasia, Cementoosseousdysplasias - PCOD, FCOD, Osseous fibroma, Cherubism, Paget's disease, Osteopetrosis, Osteogenesis imperfecta,</li> </ul> | 1 hour  | <b>Desirable to know</b> | Interactive lecture |



|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |         |                          |                              |
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| 38. | <p>Diseases of Nerves – neuropraxia, neuritis</p> <p>a) Facial nerve paralysis including Bell's palsy,<br/>b) Melkersson Rosenthal syndrome and Ramsay Hunt syndrome<br/>c) Neuroma<br/>d) Neurofibromatosis<br/>e) Frey's syndrome<br/>f) Trigeminal neuralgia</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1 hour  | <b>Nice to know</b>      | Interactive lecture          |
| 39. | <p>Diseases of Muscles</p> <p>(a) Myositis Ossificans<br/>(b) Trismus<br/>(c) MPDS</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 1 hour  | <b>Nice to know</b>      | Interactive lecture          |
| 40. | <p>Diseases of the TMJ</p> <p>Temporomandibular joint: Developmental abnormalities of the condyle. Rheumatoid arthritis, Osteoarthritis, Subluxation and Luxation, Myofascial Pain Dysfunction Syndrome</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 2 hours | <b>Desirable to know</b> | Integrated Teaching Learning |
| 41. | <p>Orofacial Pain</p> <p>i) Organic pain:</p> <p>Pain arising from the diseases of orofacial tissues like teeth, pulp, gingival, periodontal tissue, mucosa, tongue, muscles, blood vessels, lymph tissue, bone, paranasal sinus, salivary glands etc.</p> <p>(ii) Pain arising due to C.N.S. diseases:</p> <p>(a) Pain due to intracranial and, extracranial involvement of cranial nerves: Multiple sclerosis, cerebrovascular diseases, Trotter's syndrome etc<br/>(b) Neuralgic pain due to unknown causes: Trigeminal Neuralgia, Glossopharyngeal Neuralgia, Sphenopalatine Ganglion Neuralgia, Periodic Migrainous Neuralgia and Atypical Facial Pain</p> <p>(iii) Referred pain: Pain arising from distant tissues like heart, spine etc</p> | 2 hours | <b>Must know</b>         | Interactive lecture          |
| 42. | <p>Management of Dental problems in medically compromised persons :</p> <p>a. Physiological changes (Puberty, Pregnancy, Menopause)<br/>b. The patients suffering with cardiac, respiratory, liver, kidney, bleeding disorder, hypertension, diabetes, post irradiated patients</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1 hour  | <b>Desirable to know</b> | Interactive lecture          |

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| 43. | Medical Emergency Management – Cardiac Patient, Cardiac arrest, Space infections, Syncope, Anaphylaxis. Asthma, bleeding disorders, hypertension and diabetes                                                                                                                                                                                                                                     | 1 hour | <b>Must know</b>         | Interactive lecture |
| 44. | Forensic Odontology<br>(a)Medicolegal aspects of orofacial injuries<br>(b)Identification of bite marks<br>(c)Determination of age and sex: lip prints<br>(d) Identification of cadavers by Dental Appliances, Restorations and Tissue Remnants<br>Radiographic age estimation and postmortem radiographic examination                                                                             | 1 hour | <b>Desirable to know</b> | Interactive lecture |
| 45. | Geriatrics<br><br>Definition, hard and soft tissue disorders and treatment                                                                                                                                                                                                                                                                                                                        | 1 hour | <b>Desirable to know</b> | Interactive lecture |
| 46. | Therapeutics: General therapeutic measures - drugs commonly used in oral medicine viz., antibiotics, chemotherapeutic agents, anti-inflammatory & analgesic drugs, astringents, mouth washes, styptics, demulcents, local surface anesthetics, sialogogues, antisialogogues and drugs used in the treatment of malignancy. Antioxidants, corticosteroids, drug interactions and immunomodulators. | 1 hour | <b>Must know</b>         | Interactive lecture |
| 47. | Pharmacotherapeutics in Oral Medicine<br><br>• Antivirals<br>• Antifungals<br>• Analgesics<br>• Antibiotics<br>• Antioxidants                                                                                                                                                                                                                                                                     | 1 hour | <b>Must know</b>         | Interactive lecture |
| 48. | Foci of infection and their ill effects on general health<br><br>Definitions, mechanism of focal infection, pulp, periodontal, pericoronal foci of infection causing arthritis, pneumonia, SLE, low birth weight babies, two way relationship between oral foci of infection and diabetes                                                                                                         | 1 hour | <b>Nice to know</b>      | Interactive lecture |
| 49. | Granulomatous diseases with contents as: Tuberculosis, sarcoidosis, midline lethal granuloma, Crohn's disease                                                                                                                                                                                                                                                                                     | 1 hour | <b>Nice to know</b>      | Interactive lecture |
| 50. | Lasers in Oral Medicine.                                                                                                                                                                                                                                                                                                                                                                          | 1 hour | <b>Nice to know</b>      | Interactive lecture |

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|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|--------------------------|---------------------|
| 51. | Allergy <ul style="list-style-type: none"> <li>• Local allergic reactions</li> <li>• Anaphylaxis</li> <li>• Serum sickness</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1 hour  | <b>Nice to know</b>      | Interactive lecture |
| 52. | Blood Dyscrasias including diagnosis with Investigations & Dental considerations <ul style="list-style-type: none"> <li>• Causes of bleeding in the oral cavity</li> <li>• Diseases of R.B.C –Anemias Iron Deficiency anemia Plummer – Vinson syndrome Pernicious anemia Haemolytic anemia Thalassemia Sick cell anemia Erythroblastosisfetalis Aplastic anemia Polycythemia</li> <li>• Diseases of WBC – Neutropenia Cyclic neutropenia Agranulocytosis Infectious mononucleosis Leukemias Multiple Myeloma</li> <li>• Diseases of platelets – Thrombocytopenic Purpura Hemophilia Christmas disease Von Willebrand's disease</li> </ul> | 3 hours | <b>Must know</b>         | Interactive lecture |
| 53. | Orofacial Pigmentations <ul style="list-style-type: none"> <li>• Exogenous pigmentation on soft tissue and hard tissues</li> <li>• Endogenous pigmentation on soft tissue and hard tissues</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1 hour  | <b>Nice to know</b>      | Interactive lecture |
| 54. | Metabolic and Nutritional deficiencies <ul style="list-style-type: none"> <li>• Disorders of Carbohydrate, Protein and Lipid metabolism &amp; their oral manifestations</li> <li>• Vitamins &amp; Minerals deficiency disorders and their oral manifestations</li> </ul>                                                                                                                                                                                                                                                                                                                                                                  | 1 hour  | <b>Nice to know</b>      | Interactive lecture |
| 55. | Endocrine diseases and Investigations & Dental considerations <ul style="list-style-type: none"> <li>• Pituitary - Gigantism, Acromegaly, Hypopituitarism</li> <li>• Thyroid - Hyperthyroidism, Hypothyroidism</li> <li>• Parathyroid - Hyper parathyroidism, Hypoparathyroidism.</li> </ul>                                                                                                                                                                                                                                                                                                                                              | 1 hour  | <b>Desirable to know</b> | Interactive lecture |

|                  |                                                                                                                                                                                                                                                                                                                            |         |                          |                                     |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|--------------------------|-------------------------------------|
|                  | <ul style="list-style-type: none"> <li>Adrenal - Addison's disease, Cushing's Syndrome</li> <li>Pancreas - Diabetes Mellitus</li> </ul>                                                                                                                                                                                    |         |                          |                                     |
| <b>RADIOLOGY</b> |                                                                                                                                                                                                                                                                                                                            |         |                          |                                     |
| 56               | Infections and inflammation of the jaws                                                                                                                                                                                                                                                                                    | 1 hour  | <b>Must know</b>         | Interactive lecture                 |
| 57               | Radiographic appearance of Odontogenic cysts                                                                                                                                                                                                                                                                               | 2 hour  | <b>Must know</b>         | Integrated Teaching Learning        |
|                  | Radiographic appearance of Non-odontogenic cyst                                                                                                                                                                                                                                                                            |         | <b>Desirable to know</b> |                                     |
| 58               | Radiographic appearance of tumors - Odontogenic&Nonodontogenic                                                                                                                                                                                                                                                             | 2 hours | <b>Must know</b>         | Integrated Teaching Learning        |
| 59               | Radiographic appearance of fibro- osseous lesions                                                                                                                                                                                                                                                                          | 1 hour  | <b>Desirable to know</b> | Integrated Teaching Learning        |
| 60               | Periapical Radiolucencies & Periapical Radiopacities                                                                                                                                                                                                                                                                       | 1 hour  | <b>Must know</b>         | Interactive lecture                 |
| 61               | Pericoronal Radiolucencies & Radiopacities                                                                                                                                                                                                                                                                                 | 1 hour  | <b>Desirable to know</b> | Interactive lecture                 |
| 62               | Extra-oral <ul style="list-style-type: none"> <li>Lateral projections of skull, jaw bones and paranasal sinuses</li> <li>Cephalograms, PA, Townes, Reverse Townes</li> <li>Orthopantomography</li> <li>Projections of temporomandibular joint and condyle of mandible</li> <li>Projections for Zygomatic arches</li> </ul> | 2 hour  | <b>Nice to know</b>      | Interactive Lecture & Demonstration |
| 63               | Specialised techniques <ul style="list-style-type: none"> <li>RVG, OPG Scintigraphy</li> <li>Xeroradiography, Ultrasonography</li> <li>Tomography, CT, MRI, CBCT, Contrast radiography</li> </ul>                                                                                                                          | 3 hours | <b>Nice to know</b>      | Interactive lecture & demo RVG      |
| 64               | Radiographic features of maxillary sinus diseases                                                                                                                                                                                                                                                                          | 1 hour  | <b>Nice to know</b>      | Didactic lecture                    |
| 65               | Emerging & Reemerging infections-COVID - 19:<br><br>Etiology, Screening, Clinical Features, Oral Manifestations                                                                                                                                                                                                            | 1 hour  | <b>Desirable to know</b> | Didactic lecture                    |

**Clinical Exercises: 130 Hours**

| Sl. No. | Topics                                         | Quota |
|---------|------------------------------------------------|-------|
| 1       | Case history taking and discussion             | 20    |
| 2       | Radiograph making, processing and interpreting | 30    |
| 3       | Special case history taking and discussion     | 5     |

**INSTRUCTION METHODS PRACTICED IN OMR**

- Interactive Lectures
- Integrated teaching
- Case Based learning (Chair side)
- Seminars by final year students

**ASSESSMENT****SCHEME OF EXAMINATION****Summative- Theory & Clinical**

| <b>THEORY : 100 Marks</b>  |                         | <b>PRACTICAL : 100 Marks</b>  |            |
|----------------------------|-------------------------|-------------------------------|------------|
| Theory examination         | : 70 Marks              | Practical Examination         | : 90 Marks |
| Theory Internal Assessment | : 10 Marks              | Practical Internal Assessment | : 10 Marks |
| Viva Voce                  | : 20 Marks<br>100 Marks |                               | :100 Marks |

**Distribution of Topics and type of Questions (Theory)**

| Contents                                                                                  | Type of Questions and Marks | Marks     |
|-------------------------------------------------------------------------------------------|-----------------------------|-----------|
| <b>MCQ</b>                                                                                | 20 x 1 marks                | 20        |
| <b>Long essays</b><br>1 Long essay from Oral Medicine<br>1 Long essay from Radiology      | 2 x 10 marks                | 20        |
| <b>Short answer</b><br>5 Short answer from Oral Medicine<br>5 Short answer from Radiology | 10 x 3 marks                | 30        |
|                                                                                           | <b>Total</b>                | <b>70</b> |

**Viva-Voce: 20 marks**

**PRACTICAL - Clinical Examination: 90 Marks**

**Case History : 40 Marks**

**X – Ray : 40 Marks**

**Record Book :10 Marks**

**Internal Assessment**

| <b>Practical: 10 Marks<br/>(Clinical)</b>        | <b>Theory : 10 Marks<br/>(Formative Assessment)</b> |
|--------------------------------------------------|-----------------------------------------------------|
| Clinical end posting<br>DOPS<br>OSCE<br>MINI CEX | Essay<br>MCQ<br>Viva voce                           |

**Text Books to be Referred**

| <b>Sl. No.</b> | <b>Name of the book</b>                                      | <b>Name of author</b>                 |
|----------------|--------------------------------------------------------------|---------------------------------------|
| 1.             | Burkitt's Oral Medicine New XII Ed                           | Michel Glick                          |
| 2.             | Oral & Maxillofacial Pathology, 3 <sup>rd</sup> Ed           | Neville, Damron, Burdick              |
| 3.             | Fundamentals of Oral medicine and radiology                  | Bailoor, Nagesh                       |
| 4.             | Medical Emergencies in the Dental Office VI Ed               | Stanley Malamed                       |
| 5.             | Text Book of Oral pathology VII Ed                           | William Shafer,<br>Maynard H, Barnett |
| 6.             | Oral Manifestations of Systemic Diseases II Ed               | David Mason & J Harold Jone           |
| 7.             | Oral Radiology (Principles & Interpretation) VI Ed.          | White and Pharoah                     |
| 8.             | Differential diagnosis of Oral & Maxillofacial Lesions V Ed. | Norman K. Wood Paul,<br>W-Goaz        |
| 9.             | Essentials of Dental Radiography & Radiology IV Edition      | Eric Whaites                          |

# VALUE ADDED COURSES FOR INTERNS

## Preamble

We believe that Dental education goes beyond addressing the capacity-demand problem and may serve as an ideal starting point for building a new vision for the future of Dental education. In the first year of dental programme if the students are engaged in basic dental care team and involve in meaningful roles of providing care appropriate to their stage of training will motivate them to be more pro-active in subsequent years of training.

We addressed these courses as “value-added courses for interns”, where powerful pragmatic learning experiences will add value and capacity to the dental care delivery system. This can be attained by training and involving dental students in targeted patient care duties. Students are generally motivated and look forward to engage in direct patient care and hence take on the responsibilities with enthusiasm.

Leadership is required to be persuasive to achieve the vision, to build relationships with the clinical training methods. These **course** can provide basis of leadership skills that helps in decision making, effective planning, work independently and as a team for best clinical outcome. This will require to set in early clinical training, including patient communication and physical exam courses. Value-added educational courses have the potential to develop interest, capacity building and actively engage in patient care chores that contribute to the Dental health of their patient populations.

## **DEPARTMENT OF ORAL MEDICINE AND RADIOLOGY**

**Topic:** i) Therapeutic ultrasound and Trans Electric Nerve stimulation-  
Duration - 5 hours

ii) Intra-lesional steroid Injections – Duration - 5hour

iii) CBCT in dentistry –Duration - 5hour

**1) Therapeutic ultrasound and Trans Electric Nerve stimulation-Duration - 5 hours**

**Aim:** To Provide the basic knowledge about the use of

- Therapeutic ultrasound
- Transcutaneous Electric Nerve stimulation (TENS)

**Course Objectives:** By the end of this course all Interns should be able to

1. Recall the theoretical and practical knowledge of therapeutic ultrasound and Transcutaneous electric nerve stimulation.
2. Perform the palpation of muscles of mastication
3. Understand the principles of therapeutic ultrasound and Transcutaneous electric nerve stimulation.
4. Recall the steps in performing the therapeutic ultrasound and Transcutaneous electric nerve stimulation procedure.

**Course Content:** Therapeutic ultrasound and Transcutaneous electric nerve stimulation

1. Introduction and brief anatomy of muscles of mastication.
2. Examination and palpation of muscles of mastication and temporomandibular joint
3. Indication of therapeutic ultrasound and Transcutaneous electric nerve stimulation.
4. Principles of therapeutic ultrasound and Transcutaneous electric nerve stimulation.
5. Demonstration of technique of therapeutic ultrasound and Transcutaneous electric nerve stimulation. (video, PPT and. Demonstration of patients)

**Teaching methods:** Didactic lecture and Demonstration of therapeutic ultrasound and Trans Electric Nerve stimulation

**Assessment:** After session – Oral viva, MCQ



**Reference:**

Koneru J, Alaparathi R V, Yalamanchali S, Reddy S. Therapeutic ultrasound - the healing sound and its applications in oral diseases: a review of literature. J OrofacSci 2012; 4(1):3-6.

Johnson M. Transcutaneous electrical nerve stimulations (Tens) and TENS- like devices. Do they provide pain relief? Pain Rev 2001; 8: 121-8.

**2) Intra-lesional steroid Injections – Duration - 5 hours**

**Aim:** To provide the basic knowledge about the use of intra-lesional steroid injection.

**Course Objectives:** By the end of this course all interns should be able to

1. Recall the signs and symptoms of oral sub-mucous fibrosis.
2. Understand the mechanism of action of Intraregional injections.
3. Know the indications of Intra-lesional Injection.
4. Recall the procedure of Intra-lesional injections.

**Course Content:** Intra-lesional steroid injections.

1. Introduction to Oral sub-mucous fibrosis.
2. Clinical features and examination of the Oral cavity.
3. Management of Oral sub-mucous fibrosis.
4. Demonstration of Intra-Lesional Injection. (Video, PPT and Demonstration of Patient).

**Teaching methods:** Didactic lecture and Demonstration of intra-lesional steroid injections in oral submucous fibrosis

**Assessment:** After session –Oral viva

**References:**

Arekeri G, Brennan PA. Oralsubmucous fibrosis: an overview of the aetiology, pathogenesis, classification and principles of management Brit Jour of Oral and Maxillofac Sur 2013(51): 587-593

**3) CBCT in dentistry –Duration - 5 hours**

**Aim:** To provide basic knowledge (practical) about applications of CBCT in Dentistry

**Course Objectives:** By the end of this course all interns should be able to

1. Recall the principle and technique of CBCT.
2. Identify the CBCT views.
3. Recall the indications and applications in dentistry.

**Course Content:** Introduction to specialized radiographic techniques.

1. Demonstration of CBCT technique.
2. Demonstration of software use in CBCT
3. Demonstration of applications of CBCT in various fields of dentistry.  
(Video, PPT and Demonstration of patient)

**Teaching methods:** Group discussion and Demonstration

**Assessment:** After session –MCQ

**References:**

White and Pharoah's Oral Radiology: Principles and Interpretation. 8<sup>th</sup> edition.

## **DEPARTMENT OF PUBLIC HEALTH DENTISTRY**

**Topic : Preparation for Entrance Examination**

**Duration – 15 hours** during clinical rotations

**Aim :** To sensitize students to the NEET preparation of Public Health Dentistry.

**Objective :**

By the end of the course at least 90% of the interns will be able to

1. Understand the importance Public Health Dentistry questions in NEET.
2. Improve their competency level in attempting questions of Public Health Dentistry
3. Recall the correct answers of the MCQ's.

**Course Content :**

1. Indices
2. Preventive dentistry
3. General epidemiology
4. Survey and planning
5. Epidemiology of dental diseases
6. Biostatics
7. Flourides
8. Environment and health
9. Health education

**Approach:**

Lectures and Demonstrations

**Assessment and Monitoring :**

MCQ Test

**Reference Books:**

1. Dental Pulse
2. Gouri Shankar
3. Manish Prabakar
4. Vivek Jain
5. Satish Chandra

## **DEPARTMENT OF PROSTHODONTICS CROWN & BRIDGE**

**Topic : Smile Designing Principles & Veneer preparation : Hands-on course**

**Duration : 16 hours**

**Aim :** To provide knowledge to students for Practical orientation of case selection in Veneer preparation for management and esthetic treatment of patients to improve esthetic smile.

**Objectives :**

By the end of the course the Interns should be able to demonstrate competence in the following skills

1. Learn diagnosis and evaluation of patient for Veneers
2. Understand and use of Diagnostic tools
3. Acquire knowledge in model preparation by incorporating smile design principles
4. Learn the detail techniques of Veneer preparation on study models

**Approach :**

- Module - 1 Introduction to case selection, use of Diagnostic tools, Crown and Bridge teeth preparation (4 hours)
- Module - 2 Soft Tissue management, Impression making, Temporization. ( 4 hours)
- Module - 3 Wax pattern fabrication, Temporization cementation procedures (4 hours)
- Lectures and demonstrations (4 hours)

**Course Content :**

1. Case selection
2. Use of Diagnostic tools
3. Veneer preparation on Study models
4. Wax up
5. Soft Tissue management
6. Impression making

7. Temporization
8. Cementation procedures.

**Assessment :**

By conducting Objective Structured Clinical Examination (OSCE)

**Reference Books :**

1. Esthetic in dentistry by R. E. Goldstein, 3<sup>rd</sup> Edition Vol 1 & 2 willey Publisher
2. Science and art of Porcelain laminate Veneers by Gulop Gurel Quintessence publishing 1<sup>st</sup> Edition.
3. Change your smile by Ronald E. Goldstein, 4<sup>th</sup> Edition Quintessence publishers

# DEPARTMENT OF ORAL & MAXILLOFACIAL PATHOLOGY & ORAL MICROBIOLOGY

**Topic : Hematological Interpretations**

**Course duration: 15 hrs (One hour every day for 15 days)**

**Aim:** To make interns training programme in clinical pathology effective so as to develop independent capabilities in a student to learn and apply the knowledge of hematology through interpretation of test results in identifying blood related problems and their diagnosis.

**Objectives:**

1. To train a student so as to ensure higher competency in clinical pathology dealing with blood (blood related diseases, their causes, processes and effects).
2. He/she is expected to perform collection of blood from different sites depending on age of patient and procedures to be done.
3. He/she is expected to perform routine haematological evaluation such as complete blood count (haemoglobin estimation, bleeding time, clotting time, Random blood sugar, total RBC count, total WBC count and Differential WBC count) of collected blood samples.
4. He/she is expected to have an understanding of collection and interpretation of data. He/she is expected to have an understanding of normal ranges and altered values, diseases in which they are altered and processes involved.
5. He/she is expected to deal with correct professional handling, examination, interpretation.

**Skills:**

1. To develop confidence in graduate students to handle and to manage laboratory and research responsibilities in future.

**Course Content:**

- I. Introduction and scope of hematology
- II. Physiology of Blood
  - a. Blood cells
    - i. RBC
    - ii. WBC
    - iii. Platelets

- b. Plasma
- III. Hematology Tests: complete blood count tests
- IV. Interpretation of complete blood count tests
  - a. Normal values
  - b. Altered values
    - i. Conditions in which values are increased
    - ii. Conditions in which values are decreased
- V. Blood disorders and disease processes

**Approach:** Topics to be covered as didactic lectures, demonstrations and seminars.

**Assessment and monitoring:**

1. Log books.
2. Objective structures clinical examination (on patients) with checklist.
3. Objective structures practical examination (using previously stained slides of blood smears and questions framed relating to the interpretation).

**Reference Books:**

1. Textbook of Haematology by Tejindar Singh
2. Bethesda Handbook of Clinical Hematology 3rd Edition
3. Hematology for Students and Practitioners by Ramnik Sood
4. Practicals and Quick Review by Ganga S. Pilli
5. For Applied aspects : Textbook of Oral Pathology by Shafer
6. Text book of human physiology by Chatterjee

## **DEPARTMENT OF ORAL AND MAXILLOFACIAL SURGERY**

**Topic : Trans-alveolar method of Tooth Extraction and IM/IV Demonstration**

### **I. Trans-alveolar method of tooth extraction**

**Duration : 15 hours**

#### **Objectives:**

By the end of the course all the interns will be able to

1. Understand the indications for transalveolar extraction.
2. Identify instruments required for trans-alveolar extraction.
3. Understand the principles of incision and flap design, methods of bone cutting, tooth removal, suturing.
4. Perform transalveolar extraction (open extraction) on patients.

#### **Course Content for transalveolar extraction : -**

1. Introduction of trans-alveolar extraction – 1 hour
2. Indications of trans-alveolar extraction – 1 hour
3. Principles of incision and flap design – 1 hour
4. Methods of bone removal, tooth division, socket toilet – 2 hours
5. Video demonstration of bone removal, tooth division, socket toilet – 1 hour
6. Suturing and aftercare – 1 hour

#### **Approach :**

1. Lectures
2. Video demonstration
3. Live demonstration of transalveolar extraction

#### **Assessment and monitoring**

1. Assessment while performing on patients using checklist

### **II. IM/ IV injection Techniques - 8 hours**

**Aim :** To train the students perform IM/ IV injection



**Objective:-** At end of the course, students should be able to explain how to give IM/ IV injection and individually perform IM/IV injections

**Duration:** – 8 hours

1. Power Point Presentation on anatomical landmarks for IV – 1 hour
2. Power Point Presentation on anatomical landmarks for IM – 1 hour
3. Video demonstration of IV / IM - 2 hour
4. Demonstration on the patient for IM - 1 hour
5. Demonstration on the patient for IV - 1 hour
6. Students to perform on patient - 2 hours

**Course contents:-**

1. Introduction and Brief anatomy at the area of injection.
2. Technique of IM/IV injection - theoretic knowledge and demonstration

**Approach :**

1. Power point presentation of IM/IV techniques
2. Video demonstration
3. Live demonstration of IM/IV techniques

**Assessment of students** – To assess how much each student has understood about the course by observation and checklist.

**Reference Books :**

1. Clinical Surgery – Michael H.
2. Fundamental of Nursing Potter and Perry and Jeoffrey Thomson

## **DEPARTMENT OF PEDODONTICS AND PREVENTIVE DENTISTRY**

**Topic : Stainless Steel Crown in Primary Molars of Children**

**Duration : 16 hours**

**Aims :**

The interns should acquire adequate knowledge and necessary skills towards placement of a Stainless Steel Crown also understand the basic concepts in occlusion.

**Objectives :**

The interns should acquire the following during the period of training:

1. Knowledge about Anatomy of primary and permanent teeth
2. Attributes, Indications and contraindications for stainless steel crowns.
3. Demonstrate Crown Preparation methods for Stainless steel crowns.

**Skills :**

1. Able to differentiate indications and contraindications for placement of Stainless Steel Crown.
2. Acquire skills to prepare a tooth for receiving a Stainless Steel Crown.
3. Select an appropriate size crown.
4. Skills to maintain occlusal relation and to identify any occlusal disharmony and take measures to correct it if any need arises.

**Course Content :**

Week 1:

1. Introduction to anatomy of primary and permanent teeth in brief and different crowns in Pediatric Dentistry
2. Introduction to stainless steel crowns.
3. Indications and contraindications for stainless steel crowns.
4. Crown Preparation for Stainless steel crowns.

**Week 2:**

1. Methods of Placement of Stainless steel crowns.
2. Demonstration of Placement of Stainless steel crown on typhodont/ extracted teeth by the faculty.
3. Placement of Stainless steel crown on typhodont/ extracted teeth by the Interns.

**Week 3:**

1. Live Demonstration on placement of Stainless steel crown on patient by faculty.
2. Placement of Stainless steel crown on extracted tooth by interns.

**Approach :**

1. Lectures and demonstrations
2. Hands-on training with dummy models.

**Assessment :**

Review of Performance by the Interns

**References Books :**

1. Mathewson R. J. Fundamentals of Pediatric Dentistry, 3<sup>rd</sup> Edition. Boston : Quintessenec Books, 1995
2. Kennedy DB, Roberts JF, Curzon ME, J Kennedy's Pediatric Dentistry, 4<sup>th</sup> edition, Oxford Wright, 1997
3. Tandon S. Textbook of Pedodontics. 2<sup>nd</sup> Eition. Hydrabad : Paras Publications 2009

## **PLACEMENT OF ESTHETIC CROWN ON PRIMARY INCISORS**

### **Goals**

The Interns should acquire adequate knowledge and necessary skills towards placement of a Esthetic Crown and to understand the basic concepts of esthetics.

### **Objectives**

The Interns should acquire the following during the period of training:

1. Anatomy of primary and permanent teeth in brief and different crowns in Pediatric Dentistry
2. Esthetic Crowns their composition and various modifications.
3. Indications and contraindications for Esthetic crowns.
4. Crown Preparation methods for Esthetic crowns

### **Skills**

1. Able to differentiate indications and contraindications for placement of Esthetic Crown.
2. Acquire skills to prepare a tooth for receiving a Esthetic Crown.
3. Select an appropriate size crown.
4. Skills to maintain occlusal relation and to identify any occlusal disharmony and take measures to correct it if any need arises.

## **CONTENTS OF THE COURSE**

### **WEEK 1:**

1. Introduction to anatomy of primary and permanent teeth in brief and different crowns in Pediatric Dentistry
2. Introduction to Esthetic Crowns
3. Indications and contraindications for Esthetic crowns.
4. Crown Preparation for Esthetic Crowns (Strip crowns and Polycarbonate crowns)

### **WEEK 2:**

1. Methods of Placement .
2. Demonstration of Placement of Esthetic Crown on typhodont/ extracted teeth by the faculty.
3. Placement of crown on typhodont/ extracted teeth by the Interns.

### **WEEK 3:**

1. Live Demonstration on placement of Esthetic crown on patient by faculty.
2. Placement of Esthetic Crown (Strip crown/Polycarbonate Crown) on extracted tooth by interns.

### **WEEK 4:**

1. Review of Performance of the Interns
2. Award of Certificate to successful Interns.

## **DEPARTMENT OF CONSERVATIVE DENTISTRY & ENDODONTICS**

**Topic : Molar Endodontics (Root Canal Treatment on Extracted molar tooth using hand instruments)**

**Duration of Course : 15 Hours Maximum**

**Aim :** To provide basic knowledge about molar root canal therapy to aid in clinical practice

**Objectives :**

By the end of this course all the interns should be able

1. To know the root canal anatomy of molar teeth.
2. To identify and use endodontic hand instruments and material required for the procedure.
3. Perform all the steps involved in Molar Endodontics
4. Perform RCT on extracted molar using endodontic hand instruments.

**Course Content :**

1. Basic knowledge on anatomy of molar and root canal system – 1 hour
2. Lecture and demonstration on Access Opening - 2 hours
3. Methods of measurement of Working Length - 2 hours
4. Demonstration of Cleaning and Shaping - 2 hours
5. Discussion on Irrigation Protocol - 2 hours
6. Interaction on Master Cone - 2 hours
7. Methods of Obturation - 2 hours
8. Techniques of Core Buildup - 2 hours

**Approach :** Discussion and Demonstrations

**Assessment and Monitoring :**

1. Observation using check list
2. The Faculty on intern duty will be monitoring the work done by interns.

**Reference Books :**

1. Grossman's Endodontics Practice – 12<sup>th</sup> Edition B. Suresh Chandra V. Gopi C. Krishna
2. Ingle's Endodontics 6<sup>th</sup> Edition Ingle, Bakland, Baumgartner.

## Clinical work Quota for Interns

| SI No | Procedure                                                                 | No. of Procedures to be completed / assisted |
|-------|---------------------------------------------------------------------------|----------------------------------------------|
| 1.    | Management of pulp less , single – rooted teeth without periapical lesion | 04 cases<br>Completed                        |
| 2.    | Use of tooth coloured restorative materials                               | 10 cases                                     |
| 3.    | Restoration of extensively mutilated teeth                                | 02 cases                                     |
| 4.    | Inlay & onlay preparations                                                | 01 case<br>Assist                            |
| 5.    | Management of dento alveolar fracture                                     | 01 case<br>Assist                            |
| 6.    | Management of pulp less, single rooted teeth with periapical lesion       | 01 case<br>Assist                            |
| 7.    | Treatment of discolored vital and non- vital teeth                        | 01 case<br>Assist                            |
| 8.    | Management of acute dento alveolar infections                             | 02 case<br>Assist                            |

# **DEPARTMENT OF ORTHODONTICS AND DENTOFACIAL ORTHOPAEDICS**

**Topic : General & Clinical Photography**

**Duration : 15 hours**

**Aim : –**

1. To train to students in clinical dental Photography

**Objectives :-**

By the end of the course at least 80% of the Interns will be able to

1. Recall Theoretical , practical, esthetic aspects of photography
2. Recall concepts in Medical and Dental photography
3. Demonstrate proficiency in Dental photography

**Course Content :-**

## **1. Applications of Photography for**

- i. Documentation and record
- ii. Progress of the case
- iii. Education, Teaching, Presentation
- iv. Publication, Communication, Teledentistry
- v. Marketing

**Approach :**

Lectures and demonstrations

1. Specific lenses
2. Standardized views
  - a. Extra-oral
  - b. Intra-oral
  - c. Single tooth
  - d. Pathology



**Assessment**

3 rounds of Practical assessment

1. Extra oral front photograph
2. Extra oral lateral photograph
3. Extra oral 3/4<sup>th</sup> photograph
4. Intraoral front photograph
5. Intraoral right lateral photograph
6. Intraoral left lateral photograph
7. Intraoral upper occlusal photograph
8. Intraoral lower occlusal photograph

**Reference Books :**

1. Clinical photography in Dentistry – A new perspective – Peter Sheridan

## **DEPARTMENT OF PERIODONTICS**

**Topic : Minor surgical procedures**

**Duration : 15 hours**

**Objectives :-**

At the end of the training the Intern should be able to:

Recall, understand and perform minor periodontal surgical procedures which include Gingivectomy, Gingivoplasty, Frenotomy, Frenectomy, Gingival depigmentation, Operculectomy & Crown lengthening.

**Course Content:**

1. Introduction to non surgical periodontal therapy
2. Discussion & demonstration of Local Drug Delivery systems in treatment of periodontal disease.
3. Discussion & demonstration of subgingival irrigation
4. Treatment modalities for dentinal hypersensitivity
5. Discussion on minor periodontal surgical procedures which include Gingivectomy, Gingivoplasty, Frenotomy, Frenectomy, Gingival depigmentation, Operculectomy & Crown lengthening.
6. Demonstration of various minor surgical procedures using different surgical techniques – Scalpal, Electrocautery & Laser

**Approach**

- Lectures and discussions
- Live demonstrations on patients indicated for the procedures.
- Screening of video demonstrations on performed cases.

**Assessment**

Monitoring & observation by the in-charge faculty while the student is performing the procedure.

**Reference Books :**

1. Carranza's Clinical Periodontology – 13<sup>th</sup> edition
2. Clinical periodontology and implant dentistry volume 1 and volume 2 – 6<sup>th</sup> edition - Jan. Lindhe.
3. Decision making in periodontology 3<sup>rd</sup> edition -Walter B. Hall.

**Value Added Course Periodontology**

|                                            |                   |
|--------------------------------------------|-------------------|
| <b>Module Duration</b>                     | <b>: 15 Hours</b> |
| • Theory                                   | : 3 Hours         |
| • Practical Demonstrations                 | : 8 Hours         |
| • Monitoring of cases performed / assisted | : 3 hours.        |
| • Assessment                               | : 1 Hour          |

**Practical Demonstrations Includes**

- Scaling & Root Planing : 1 Hour
- Local Drug Delivery : 1 Hour
- Subgingival irrigation : ½ Hour
- Treatment of dentinal Hypersensitivity : ½ Hour
- Surgical demonstration using Scalpel, Electrocautery & Laser for various procedures
  - 1. Frenotomy/ Frenectomy : 1 Hour
  - 2. Gingivectomy / Gingivoplasty : 1 Hour
  - 3. Gingival depigmentation : 1 Hour
  - 4. Operculectomy : 1 Hour
  - 5. Crown lengthening : 1 Hour

