# Ordinance Governing
# Master of Dental Surgery (M.D.S.)
# Degree Course

***

# Syllabus / Curriculum
# 2024 - 25

KLE
EMPOWERING PROFESSIONALS

***Accredited 'A+' Grade by NAAC (3rd Cycle)***
***Placed in Category 'A' 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)]***

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## 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

(Deemed-to-be-University)

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

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Ref. No. KAHER/24-25/D-27122428 21st December, 2024

## NOTIFICATION

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

Ref : Minutes of the 57th Academic Council meeting held on 18th 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 **57th Academic Council** meeting held on **18th October, 2024,** has approved revision in the curriculum for **Master of Dental Surgery (MDS)** 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.

# Contents

## SECTION I

# REGULATIONS

1. **Title of the Course** : Master of Dental Surgery (MDS)
2. **Branches of Study** : The following are the subjects of speciality for the MDS degree:
    a. Prosthodontics and Crown & Bridge.
    b. Periodontology.
    c. Oral and Maxillofacial Surgery.
    d. Conservative Dentistry and Endodontics.
    e. Orthodontics and Dentofacial Orthopaedics.
    f. Oral Pathology and Oral Microbiology.
    g. Public Health Dentistry (Community Dentistry).
    h. Paediatrics and Preventive Dentistry (Paedodontics).
    i. Oral Medicine and Radiology.

**3. Eligibility**

A candidate for admission to the MDS course must have a degree of BDS (Bachelor of Dental Surgery) from a college and University recognized by Dental Council of India or an equivalent qualification recognized by K.L.E. Academic of Higher Education and Research (KAHER) and the Dental Council of India. Candidates not possessing a recognized Dental qualification for the above purpose should secure prior approval of his/her qualifications by the Dental Council of India before admission to the MDS course.

**4. Criteria For Selection For Admission**

The selection of students will be based on National Eligibility-cum-Entrance Test (NEET) for admission to Postgraduate Dental Courses in each academic year. The overall superintendence, direction and control of National Eligibility-cum-Entrance Test shall vest with Dental Council of India or any other authority selected by Central Government.

In order to 'be eligible for admission to any postgraduate course in a particular academic year, it shall be necessary for a candidate to obtain minimum of marks at 50 percentile (or as per the regulations of Central Government Notification) in "National Eligibility-cum-Entrance Test for Postgraduate Courses" held for the said academic year.

**5. Eligibility Certificate from KAHER**

No candidate shall be admitted to any postgraduate MDS course unless the candidate has obtained and produced eligibility certificate issued by University. The candidate has to make an application to the University with the following documents along with the prescribed fee:

1. BDS pass / degree certificate issued by the University.
2. Marks cards of I to IV BDS issued by the University.
3. Attempt Certificate issued by the Principal.
4. Certificate recognition by the Dental Council of India of the Dental College.
5. Completion of rotatory internship certificate from a recognized college.
6. Registration by any State Dental Council.
7. Proof of SC/ ST or Category I, as the case may be.

Candidates should obtain the Eligibility Certificate before the last date for admission as notified by the KAHER.

A candidate who has been admitted to postgraduate course should register his / her name in the University within a month of admission after paying the registration fee.

**6. Duration of the Course**

The Course shall be of three years duration. All the candidates for the degree of MDS are required to pursue the recommended course for three academic years as full time candidates, including the period of examination. The time period required for passing out of the MDS course shall be a maximum of six years from the date of admission in said course

**7. Method of Training**

The training of postgraduate shall be full time with graded responsibilities in the diagnosis, management and treatment of patients entrusted to his/her care. The participation of the students in all facets of educational process is essential. Every candidate should take part in seminars, group discussions, grand rounds, case demonstration, clinics, journal review meetings, and clinical meetings. Every candidate should participate in the teaching and training programme of undergraduate students. Training should include involvement in laboratory and experimental work and in research studies. Dental Education Programmes : The trainees shall also be encouraged to attend such programmes conducted outside their university or institute.

All the students of the specialty departments shall complete the minimum quota for the teaching and learning activities, as follows:—

| Sl. No. | Particulars | Number per year |
|---|---|---|
| a | Journal Clubs | 5 |
| b | Seminar | 5 |
| c | Clinical Case Presentations | 4 |
| d | Lectures for undergraduates students | 2 |
| e | Scientific Paper / Poster Presentations In State / National Level Conferences | 4 papers / posters In 3 years |
| f | Clinico Pathological Conferences | 2 presentations |
| g | Scientific Publications (optional) | 1 in any indexed scientific journal |
| h | Submission of Synopsis | Within 6 months |
| i | Submission of Dissertation | 6 months before uni. examination |
| j | Submission of Library Dissertation / Systematic Review | Within18 months |

## 8. Attendance, Progress and Conduct

A candidate pursuing degree course should work in the concerned department of the institution for the entire duration of the course as a full time student. No candidate is permitted to run a clinic / work in clinic / laboratory / nursing home while doing postgraduate course. No candidate shall join any other degree / diploma / certificate course of study or appear for any other degree examination conducted by any other University in India or abroad during the period of registration, other than those offered by KAHER.

Every candidate shall attend symposia, seminars, conferences, journal review meetings, grand rounds, case presentation, clinics and lectures during each year as prescribed by the department and not remain absent from work without valid reasons.

Each year shall be taken as a unit for the purpose of calculating attendance. Every candidate shall have not less than 80 percent of attendance in each year of the course. However, candidates should not remain absent for long duration during the course.

## 9. Monitoring Progress of Studies

**Work diary / Log Book**: Every candidate shall maintain a work diary and record of his/ her participation in the training programme conducted by the department such as

journal reviews, seminars, etc. Special mention may be made of the presentations done by the candidate, as well as details of clinical or laboratory procedures, if any, conducted by the candidate. The work diary shall be scrutinized and certified by the Head of the Department and Head of the Institution and presented in the University practical / clinical examination.

**Periodic tests:** The concerned departments should conduct three tests, one at the end of first year and the other in the second year. The third test should be held three months before the final examination. The tests should include written papers, practical / clinical and viva voce. Records and marks obtained in such tests will be maintained by the Head of the Department and sent to the Principal and when called for to the University.

**10. Dissertation**

Every candidate pursuing MDS degree course is required to carry out research work on a selected research project under the guidance of a recognized post graduate teacher. The results of such a work shall be submitted in the form of a dissertation to the University six months before the final university examination.

The dissertation is aimed to train a postgraduate student in research methods and techniques. It includes identification of a problem, formulation of a hypothesis, search and review of literature, getting acquainted with recent advances, designing of a research study, collection of data, critical and statistical analysis and comparison of results and drawing conclusions.

Every candidate shall submit to the Registrar of the K.L.E. University in the prescribed proforma, a synopsis containing particulars of proposed dissertation work within six months from the date of commencement of the course or on the dates notified by the University. The synopsis shall be sent through the proper channel.

Such synopsis will be reviewed and the University will register the dissertation topic. No change in the dissertation topic or guide shall be made without prior approval of the University.

**The dissertations should be written under the following headings :**

Structured abstract ; Introduction ; Aims and Objectives of study ; Review of Literature ; Material and Methods ; Results and Observations ; Discussion ; Conclusion ; Summary ; References ; Annexures

The written text of dissertation shall not be less than 50 pages and shall not exceed 100 pages excluding references, questionnaires and other annexures. It should be neatly typed in single line spacing, in Arial font size of 12 on both side of A4 paper (A4 size - 8.27" x 11.69") and bound properly. The Guide, Head of the Department and Head of the Institution shall certify the dissertation.

Four hard copies and one soft copy of dissertation thus prepared shall be submitted to the Registrar (Evaluation), six months before final examination on or before the dates notified by the University.

Examiners appointed by the University shall value the dissertation. Approval of dissertation work is an essential precondition for a candidate to appear at the University examination.

**Guide** : The guide shall be a recognised postgraduate teacher of K.L.E. University.

**Co-guide**: A co-guide may be included provided the work requires substantial contribution from any other faculty of a different department (not from the same department where the student is enrolled) or from any other institution recognised for teaching / training by KAHER.

**Change of guide**: In the event of a registered guide leaving the institution for any reason or in the event of death of guide, change of guide should be done with prior written permission from the University.

### 11. Scheme of Examination

**Eligibility** : The following requirements shall be fulfilled by every candidate to become eligible to appear for the final university examination.

i. Attendance: Every candidate shall fulfill the attendance minimum 80% as prescribed by the University during each academic year of the postgraduate course.

ii. Progress and conduct: Every candidate shall have participated in seminars, journal review meetings, symposia, conferences, case presentations, clinics and didactic lectures during each year as stipulated by the concerned department through the ordinance governing MDS Course of KAHER.

iii. Work diary and Logbook: Every candidate shall maintain a work diary and logbook for recording his/her participation in the training programmes conducted by the department. The work diary and logbook shall be verified and certified by the Head of the Department and Head of the institution. The certification of satisfactory

progress by the Head of the Department and Head of the Institution shall be based on (i), (ii) and (iii) mentioned above.

**Schedule of University Examination**: The examination for MDS Programme shall be held at the end of first year for Part I and at the end of third year for Part II. Repeat examination will be conducted once within six months of previous examinations.

**12. University Examination**

M.D.S. Degree examinations in any branch of study shall consist of dissertation, written examination (Theory), Practical / Clinical and Viva voce.

**(a) Dissertation:**

Acceptance of dissertation shall be a precondition for the candidate to appear for the final examination.

**(b) Written Examination (Theory):**

Written examination shall consist of Part-I with Basic Sciences paper of three hours duration shall be conducted at the end of First year of MDS course. Part-II Examination shall be conducted at the end of Third year of MDS course.

**Part-I**: There shall be a theory examination of only **one paper** of 100 marks in the subject of Basic Sciences at the end of 1st year of course. The candidates shall have to secure a minimum of 50% in the Basic Sciences. The candidate should pass the Part-I examination at least six months prior to the final (Part-II) examination.

**Part-II**: Shall consist of three papers as Paper-I, Paper-II & Paper-III of 100 marks each (Total : 300 Marks). Paper-I & Paper-II shall consist of two long answer questions carrying 25 marks each and five questions carrying 10 marks each. Paper-III will be on Essays. In Paper-III three Questions will be given and student has to answer any two questions. Each question carries 50 marks. Questions on recent advances may be asked in any or all the papers.

**Part-I** : Applied Basic Sciences

**Part II** consists of three papers as Paper I, Paper II and Paper III

*The topics assigned to the different papers are generally evaluated under those sections. However a strict division of the subject may not be possible and some overlapping of topics is inevitable. Students should be prepared to answer overlapping topics.

**(c) Practical / Clinical Examination**: In case of practical examination, it should be aimed at assessing competence and skills of technique and procedures. It should also aim at testing student's ability to make relevant and valid observations, interpretation and inference of laboratory or experimental or clinical work relating to his/her subject for undertaking independent work as a specialist. The actual formats of clinical examination in various specialities are given along with course description of the concerned specialty.

Total marks for practical / clinical examination : 200 marks

For viva voce & Pedagogy : 100 marks.

**Viva Voce**: Viva-Voce examination shall aim at assessing depth of knowledge, logical reasoning, confidence and oral communication skills. The total marks shall be 100 and the distribution of marks shall be as under:

| | | |
|---|---|---|
| (i) | For examination of all components of syllabus | 80 Marks |
| (ii) | For Pedagogy (demonstration of teaching skills) / Dissertation | 20 Marks |

**Valuation of Answer Books**:

**Part-I** : Answer book/s shall be evaluated by the internal and external examiner/s

**Part-II** : Answer books shall be evaluated by four examiners, two internal and two external and the average marks shall be computed.

**Examiners** : The examiners shall be appointed as per the DCI guidelines and KAHER norms.

**Part I**: There shall be one internal and one external examiner for three students appointed by KAHER for evaluating the answer scripts of the same speciality. However, the number of examiner/s may be increased with the corresponding increase in number of students.

**Part II:** There shall be four examiners in each subject. Out of them, two (50%) shall be external examiners and two (50%) shall be internal examiners. Both external examiners shall be from a university other than the KAHER and one examiner shall be from a university of different State.

**Qualification and Experience for Examiners**:

(i) Shall possess qualification and experience of a Professor in a post-graduate degree programme;

(ii) A person who is not a regular post-graduate teacher in the subject shall not be appointed as an examiner;

(iii) The internal examiner in a subject shall not accept external examinership in a college for the same academic year;

(iv) No person shall be appointed as an external examiner for the same institution for more than two consecutive years. However, if there is a break of one year, the person can be re-appointed.

**13. Criteria for Declaring as Pass**

To pass in the University examination, a candidate shall secure in theory examination for **Part I,** a minimum of 50 out of 100 marks (50%) and in **Part II,** a minimum of 150 marks out of 300 marks (50%). In practical / clinical including viva voce examination, a minimum of 150 marks out of 300 marks (50%) shall be considered as pass.

A candidate securing marks below 50% in either theory of practical / clinical or both as mentioned above shall be declared to have failed in the examination. The candidate will have to repeat the Part II examination of theory and practical / clinical as per the DCI guidelines and KAHER norms.

A candidate whose dissertation has been accepted by the examiners, but who is declared to have failed at the examination will be permitted to reappear at the subsequent MDS examination without having to prepare a new dissertation. If, however, the dissertation is rejected, the authorities shall give reasons thereof and suggestion for the improvement of the same and the dissertation thus improved will have to be resubmitted to the examiners for acceptance before appearing in MDS Examination.

A candidate who is declared successful in the MDS Examination shall be granted a Degree of Master of Dental Surgery in the speciality.

## Distribution of topics in Theory Papers in various branches of study specialities:

### Prosthodontics and Crown & Bridge

**Part I Paper I :** Applied Basic Sciences : Applied Anatomy, Embryology, Growth and Development Genetics, Immunology, Anthropology, Physiology, Nutrition and Biochemistry, Pathology, Microbiology, Virology, Applied Pharmacology, Research Methodology and Biostatistics, Applied Dental Anatomy and Histology, Oral Pathology & Microbiology, Adult and Geriatric Psychology, Applied Dental Materials.

**Part II : Paper I:** Removable Prosthodontics and Implant supported Prosthesis (Implantology) Geriatric Dentistry and Cranio Facial Prosthodontics.

**Part II Paper II :** Fixed Prosthodontics, Occlusion, TMJ and Esthetics.

**Part II Paper III :** Essay.

### Periodontology

**Part I Paper I :** Applied Basic Sciences: Applied Anatomy, Physiology, & Biochemistry, Pathology, Microbiology, Pharmacology, Research Methodology and Bio-statistics.

**Part II Paper I :** Normal Periodontal structure, Etiology and Pathogenesis of Periodontal diseases, Epidemiology as related to Periodontics.

**Part II Paper II :** Diagnosis in Periodontics, therapy and oral Implantology.

**Part II Paper III:** Essay.

### Oral and Maxillofacial Surgery

**Part I Paper I :** Applied Basic Sciences : Applied Anatomy, Physiology, Biochemistry, General and Oral Pathology and Microbiology and Pharmacology.

**Part II Paper I :** Minor Oral Surgery and Trauma.

**Part II Paper II :** Maxillofacial Surgery.

**Part II Paper III :** Essay

## Conservative Dentistry and Endodontics

**Part I Paper I :** Applied Basic Sciences: Applied Anatomy, Physiology, Pathology including Oral Microbiology, Pharmacology, Bio-statistics and Research Methodology and Applied Dental Materials.

**Part II Paper I :** Conservative Dentistry.

**Part II Paper II :** Endodontics

**Part II Paper III :** Essay

## Orthodontics and Dentofacial Orthopaedics

**Part I Paper I :** Applied basic sciences: Applied anatomy, physiology, dental materials, genetics, pathology, physical anthropology, research methodology, bio-statistics and applied pharmacology.

**Part II Paper I:** Orthodontics history, concepts of occlusion and esthetics, child and adult psychology, etiology and classification of malocclusion, dentofacial anomalies, diagnostic procedures and treatment planning in Orthodontics, practice management in Orthodontics.

**Part II Paper II:** Clinical Orthodontics.

**Part II Paper III:** Essay.

## Oral Pathology and Oral Microbiology

**Part I Paper I :** Applied Basic Sciences : Applied Anatomy, Physiology(General and Oral), Cell Biology, General Histology, Biochemistry, General Pathology, General and systemic Microbiology, Virology, Mycology, Basic Immunology, Oral Biology (Oral and Dental Histology), Bio-statistics and Research Methodology.

**Part II Paper I:** Oral Pathology, Oral Microbiology and Immunology and Forensic Odontology.

**Part II Paper II:** Laboratory Techniques and Diagnosis and Oncology.

**Part II Paper III:** Essay.

## Public Health Dentistry (Community Dentistry)

**Part I Paper I:** Applied Basic Sciences: Applied Anatomy and Histology, Applied Physiology and Biochemistry, Applied Pathology, Microbiology, Oral Pathology, Physiology and Social Anthropology, Applied Pharmacology and Research Methodology and Bio-statistics.

**Part II Paper I:** Public Health.

**Part II Paper II:** Dental Public Health.

**Part II Paper III**: Essay.

## Paediatrics and Preventive Dentistry (Paedodontics)

**Part I Paper I:** Applied Basic Sciences: Applied Anatomy, Physiology, Pathology, Microbiology Nutrition & Dietics, Growth & Development and Dental Plaque.

**Part II Paper I:** Clinical Paedodontics

**Part II Paper II:** Preventive and Community Dentistry as applied to Pediatric Dentistry

**Part II Paper III:** Essay.

## Oral Medicine and Radiology

**Part I Paper I:** Applied Basic Sciences: Applied Anatomy, Physiology, Biochemistry, Pathology and Pharmacology.

**Part II Paper I**: Oral and Maxillofacial Radiology.

**Part II Paper II**: Oral Medicine, Therapeutics and Laboratory Investigations.

**Part II Paper III:** Essay.

## SECTION II
# GOALS AND OBJECTIVES

**Goals :**

The goals of postgraduate training in various specialities is to train B.D.S. graduate who will, after successful completion of the course :

- Practice respective speciality efficiently and effectively, backed by scientific knowledge and skill.
- Exercise empathy and a caring attitude and maintain high ethical standards.
- Continue to evince keen interest in continuing professional education in the speciality and allied specialities irrespective of whether in teaching or in practice.
- Willing to share the knowledge and skills with any learner, junior or a colleague.
- Develop the faculty for critical analysis and evaluation of various concepts and views, to adopt the most rational approach.

**Objectives :**

The objective is to train a student so as to ensure higher competence in both general and special area of interest and prepare him / her for a career in teaching, research and speciality practice. A candidate must achieve a high degree of clinical proficiency in the subject matter and develop competence in research and its methodology as related to the field concerned.

The above objectives are to be achieved by the time the candidate completes the course.

The objectives may be considered as under –

1. Knowledge (Cognitive domain)
2. Skills (Psycho motor domain)
3. Human values, ethical practice and communication abilities.

**Knowledge:**

- Demonstrate understanding of basic sciences relevant to speciality.
- Describe etiology, pathophysiology, principles of diagnosis and management of common problems within the speciality in adults and children.
- Identify social, economic, environmental and emotional determinants in a given case and take them into account for planning treatment.
- Recognise conditions that may be outside the area of speciality or competence and to refer them to an appropriate specialist.

- Update knowledge by self-study and by attending courses, conferences and seminars relevant to speciality.
- Undertake audit, use information technology and carry out research in both basic and clinical subjects with the aim of publishing or presenting the work at various scientific gatherings.

**Skills:**

1. Take a proper clinical history, examine the patient, perform essential diagnostic procedures and order relevant tests and interpret them to come to a reasonable diagnosis about the condition.
2. Acquire adequate skills and competence in performing various treatment procedures as required in the speciality.

**Human values, ethical practice and communication abilities:**

- Adopt ethical principles in all aspects of practice.
- Professional honesty and integrity are to be fostered.
- Patient care is to be delivered irrespective of social status, caste, creed or religion of the patient.
- Develop communication skills in particular and skill to explain various options available in management. Obtain a true informed consent from the patient, before starting the treatment.
- Provide leadership and get the best out of his /her team in a congenial working atmosphere.
- Apply high moral and ethical standards while carrying out human or animal research.
- Be humble and accept the limitations in his /her knowledge and skill and to ask for help from colleagues when needed.
- Respect patient's rights and privileges including patients right to information and right to seek a second opinion.

# 3.1 PROSTHODONTICS AND CROWN & BRIDGE

**GOAL**

To train dental graduates so as to ensure higher competence in both general and special area of Prosthodontics and prepare a candidate for teaching, research and clinical abilities including prevention and after care in prosthodontics including crown and bridge and Implantology.

**OBJECTIVES**

a) KNOWLEDGE

At the end of M.D.S. course the. Student is expected to

1. To understand theoretical, Clinical, attitude, communicative skills and ability to conduct research with understanding of social, cultural, educational and environmental background of the society.
2. To understand applied basic and systemic medical science knowledge in general and particular to head and neck.
3. To provide Prosthodontic therapy for patients with competence and understanding of applied medical behavior and clinical sciences.

b) SKILLS

1. Acquire skills in working out appropriate decisions regarding presentation, treatment and referral to deliver comprehensive oral health care for patients.
2. Acquire skills for handling various Prosthodontic treatment modalities.

## COURSE CONTENT

### PART - I

**I. Applied Anatomy of Head and Neck**

1. General Human Anatomy.
2. Embryology.
3. Growth and Development.
4. Dental Anatomy.
5. Histology.
6. Anthropology and Evolution.
7. Applied Genetics and Heredity.
8. Cell Biology.

**II. Applied Physiology and Nutrition**

1. Endocrines.
2. Applied nutrition.
3. Applied biochemistry.
4. Applied pharmacology and therapeutics.
5. Applied pathology.
6. Applied microbiology.
7. Applied oral pathology.
8. Laboratory investigative procedures.

**III. Biostatistics**

Introduction to biostatistics

**IV. Research methodology**

**V. Applied radiology**

Roentgenographic techniques

**VI. Applied dental materials**

**VII. Applied medicine, applied surgery and anesthesia**

**VIII. Selection of Topic for Library Dissertation**

**IX. Synopsis in main Dissertation**

1. Identifying and selection of topic
2. Synopsis writing
3. Presentation of synopsis to the Department, Institute, review board and ethical committee.
4. Submission to university.

**X. Prosthodontic treatment for edentulous patients: -**

1. Scope of Prosthodontics:- The Cranio Mandibular system and its functions, the reasons for loss of teeth and methods of restorations.
2. Complete Denture Prosthesis: - Definitions and terminology.
3. Infection control, cross infection barrier in clinic and laboratory.
4. Hospital and laboratory waste management.
5. Edentulous predicament, biological, biomechanics of the edentulous state and temporomandibular joint changes.
6. Effects of aging on edentulous patients.
7. Sequelae caused by wearing complete denture
8. Temporomandibular disorders in edentulous patients – epidemiology,

etiology, pharmacotherapy, physical modalities, bio-behavioral modalities and management.

9. Nutrition care for the denture wearing patient.
10. Preparing patient for complete dentures, Diagnosis and treatment planning for edentulous patients –
    a. History.
    b. Mental health – mental attitude, psychological changes and adaptability.
    c. Intra oral health – mucous membrane, alveolar ridges, palate and vestibular sulcus and dental health.
11. Data collection and recording, visual observation, palpation, radiography, measurement of sulci or fossae, extra oral measurement in the vertical dimension of occlusion and diagnostic casts.
12. Specific observations – existing dentures, soft tissue and hard tissue health.
13. Biomechanical considerations
14. Interpretation of diagnostic findings and treatment planning.
15. Pre-prosthetic surgery
    a. Non-surgical methods – rest for the denture supporting tissues, occlusal correction of the old prosthesis, nutrition, conditioning of the patients musculature.
    b. Surgical methods - for frenular attachments and pendulous maxillary tuberosities, ridge augmentation, corrections of congenial deformities, discrepancies in jaw size, relief of pressure on the mental foramen, enlargement of denture bearing areas, vestibuloplasty and ridge augmentation.
16. Immediate Dentures.
17. Single denture.
18. Art of communication in the management of the edentulous predicament.
19. Materials prescribed in the management of edentulous patients
20. Articulators – Classification, selection, limitations, precision, accuracy and sensitivity, and functional activities of the lower member of the articulator and uses.
21. Fabrications of complete dentures – Complete denture impressions – muscles of facial expressions and anatomical landmarks, support, retention, stability, aims and objectives Impression materials and techniques.
22. Developing an analogue/ substitute for the maxillary denture bearing area – anatomy of supporting structures
23. Developing an analogue/ substitute for the Mandibular denture bearing

area – Mandible – anatomy of supporting structure

24. Mandibular movements, maxillo mandibular relation and concepts of occlusion and gnathology. Identification of shape and location of arch form
25. Selecting and arranging artificial teeth and occlusion for the edentulous patient
26. The try in
27. Speech considerations with complete dentures
28. Waxing contouring and processing the dentures their fit and insertion and after care

**This is basic minimum requirement, however a student is expected to learn and know other than the above mentioned topics also.**

**APPROACH :** Topics to be covered as didactic lectures and clinical discussions. Maintenance of records and clinical postings.

**Pre-Clinical Work to be completed during First Year**

**I. Complete Dentures**

1. Arrangements in adjustable articulator for
   a. Class I
   b. Class II
   c. Class III
   d. Cross bite
2. Various face bow transfer to adjustable articulators
3. Processing of characterized anatomical denture

**II. Removable Partial Dentures**

1. Design for Kennedy's classification (Survey, block out and design)
   a. Class I
   b. Class II
   c. Class III
   d. Class IV
2. Designing of various components of RPD
3. Wax pattern on refractory cast
   a. Class I
   b. Class II
   c. Class III
   d. Class IV
4. Casting and finishing of metal frameworks

5. Acrylisation on metal frameworks for
    a. Class I
    b. Class III with modification

## III. Fixed Partial Dentures

1. Preparation in ivory teeth/ natural teeth
    a. Full Metal Crown
    b. Full Ceramic Crown
    c. Porcelain jacket crown
    d. Acrylic jacket crown
    e. Porcelain Fused to Metal crown
    f. 3/4$^{th}$ (canine, premolar and central)
    g. 7/8$^{th}$ posterior
    h. Proximal half crown
    i. Laminates
2. Preparation of different die system
3. Fabrication of wax pattern by drop wax build up technique
    a. Wax in increments to produce wax coping over dies of tooth preparations on substructures
    b. Wax additive technique
    c. 3-unit wax pattern (maxillary and mandibular)
4. Pontic design in wax pattern
    a. Ridge lap
    b. Sanitary
    c. Modified ridge lap
    d. Modified sanitary
    e. Spheroidal or conical
5. Fabrication of metal framework
    a. Full metal bridge for posterior (3 units)
    b. Coping for anterior (3 unit)
    c. Full metal with acrylic facing
    d. Full metal with ceramic facing
    e. Adhesive bridge for anteriors
    f. Coping for metal margin ceramic crown
6. Fabrication of crowns
    a. All ceramic crowns with characterization

b. Metal ceramic crowns with characterization
c. Full metal crown

**Clinical procedures to be completed in First Year**

1. Conventional complete dentures
2. Immediate complete denture
3. Single complete denture
4. Treatment partial denture

**PART - II**

**I. Library Dissertation / Systematic Review**

Evaluation and satisfactory completion of library dissertation / Systematic Review by the end of 18 months.

**II. Over Dentures** (tooth supported complete dentures) – Indications and treatment planning, advantages and disadvantages, selection of abutment teeth, loss of abutment teeth. Abutments with coping, non- coping and attachments, submerged vital roots and preparations of the retained teeth.

**III. Fixed Prosthodontics**

Scope, definition, terminology, classification, principles, design, mechanical and biological considerations of components – Retainers, connectors and pontics.

1. **Diagnosis and treatment planning** – Patient's detail history - systemic and emotional health, clinical examinations – Extraoral and intraoral examination. Preparation of diagnostic cast, radiographic interpretation, aesthetics and endodontic considerations. Abutment selection – bone support, root proximities and inclinations, selections of abutments for cantilever, pier abutments, splinting, available tooth structures and crown morphology.
2. **Periodontal considerations** – Fixed prosthodontics for periodontally compromised dentitions, placement of margin for restorations and periodontal splinting.
    a. Biomechanical principle of tooth preparations – Individual tooth preparations – Complete metal crowns, Porcelain fused to metal crowns, all porcelain restoration – Cerestore, Dicor, Inceram. Porcelain jacket crowns. Partial veneer, mesial half, radicular and telescopic crowns. Laminates and resin bonded bridges.
    b. Isolation and fluid control – Rubber dam applications, tissue dilation – soft tissue management for cast restoration, impression materials and techniques.

c. Resins, gold and gold alloys.

d. Restorations of endodontically treated teeth.

e. Stomatognathic dysfunction and managements.

f. Management of failed restorations.

**IV. Implant Supported Prosthesis**

1. Implant supported prosthesis for partially edentulous patients – Science of Osseointegration, clinical protocol for treatment with implant supported over dentures, managing problems and complications, implant Prosthodontics for edentulous patients, current and future directions.

2. Clinical and laboratory protocol: Managing problems and complications.
    a. Biological, clinical and surgical aspects of oral implants
    b. Diagnosis and treatment planning
    c. Radiological interpretation for selection of fixtures
    d. Splints for guidance for surgical placement of fixtures
    e. Intra oral plastic surgery
    f. Guided bone and tissue generation consideration for implants fixture
    g. Occlusion for implants support prosthesis.
    h. Peri-implant tissue and management.
    i. Management of failed restoration.
    j. Work authorization

**Commencement of Dissertation**

**V. Prosthodontic treatment for partially edentulous patients – Removable partial prosthodontics:-**

1. Scope, definition and terminology, classification of partially edentulous arches – requirements of acceptable methods of classification, Kennedy's classification, Applegate's rules for applying the Kennedy classification.

2. Components of RPD –

    a. Major connector – mandibular and maxillary, minor connectors, design, functions, form and location of major and minor connectors, tissue stops, finish lines, reaction of tissue to metallic coverage.

    b. Rest and rest seats – Form of the occlusal rest and rest seat, interproximal occlusal rest seats, internal occlusal rests, possible movements of partial dentures, support for rests, lingual rests on canines and incisor teeth.

c. Direct retainer – Internal attachment, extracoronal direct retainer, the basic principles of clasp design, circumferential, bar, combination clasp and other type of retainers.

d. Indirect retainer – Denture rotation about an axis, factors influencing effectiveness of indirect retainers, forms of indirect retainers and direct-indirect retention.

e. Principles of removable partial denture design – biomechanical considerations and the factors influencing mouth preparations.

f. Difference between tooth supported and tissue supported partial dentures, essential of partial denture design, components of partial denture design, tooth support, ridge support, stabilizing components, guiding planes, use of splint bar for denture support, internal clip attachments, overlay abutment as support for a denture base.

3. Education of patient
4. Diagnosis and treatment planning.
5. Design, treatment sequencing and mouth preparation.
6. Surveying – Description of dental surveyor, purposes of surveyor procedure of survey, aims and objectives in surveying of diagnostic and master cast, final path of placement, factors that determine path of placement and removal, recording relation of cast to surveyor, measuring retention, blocking of master cast – parallel, shaped and arbitrary blockouts.
7. Preparation of mouth for removable partial dentures – oral surgical preparation, conditioning of abused and irritated tissues, periodontal preparation – objectives of periodontal therapy, periodontal diagnosis, control therapy, periodontal surgery.
8. Preparation of Abutment teeth.
9. Impression materials and procedures for removable partial dentures – Rigid materials, thermoplastic materials, elastic materials, impressions of the partially edentulous arch, tooth supported, tooth - tissue supported and individual impression trays.
10. Support for the Distal extension denture base – Distal extension removable partial denture, factors influencing the support of distal extension base, methods for obtaining functional support for the distal extension base.
11. Laboratory procedure – Duplicating a stone cast, waxing of the partial denture

frame work, Anatomic replica patterns, spruing, investing, burnout, casting and finishing of the partial denture framework, making record bases, occlusion rims, making a stone occlusal template from a functional occlusal record, arranging posterior teeth to an opposing cast or template, types of anterior teeth, waxing and investing the partial denture before processing acrylic resin bases, processing the denture, remounting and occlusal correction to an occlusal template, polishing the denture.

12. Initial placement, adjustment and servicing of the removable partial denture
13. Relining and rebasing the removable partial denture and methods of reestablishing occlusion on a relined partial denture.
14. Repairs and additions to removable partial dentures.
15. Removable partial denture considerations in maxillofacial prosthetics – Maxillofacial, intra oral and mandibular flange prosthesis, design considerations, obturators, speech aids, palatal lifts and augmentations, treatment planning, framework design for class I and II resection cases.
16. Management of failed restorations and work authorization.

**This is basic minimum requirement, however a student is expected to learn and know other than the above mentioned topics also.**

APPROACH : **Topics to be covered as didactics lectures, clinical discussions and laboratory demonstrations.**

## CLINICAL PROCEDURES TO BE COMPLETED IN SECOND YEAR

1. Cast Partial Denture (All Partially edentulous situations)
2. Complete Dentures using semi adjustable articulators and facebows with balanced occlusion.
3. Rehabilitation of cleft palate patients with obturators
4. Fixed Partial dentures
   a. Full metal Crowns and Bridges
   b. Full ceramic Crowns
   c. Acrylic jacket crown
   d. Porcelain Jacket crown
   e. $3/4^{th}$ , $7/8^{th}$ and proximal half crowns
   f. Resin bonded bridges
5. Over Dentures

## PART - III

**I. Maxillofacial Rehabilitation**

Prosthesis for post cancer patients, cleft lip and palate, lip and cheek support, laryngectomy aids, obstructive sleep apnoea, tongue prosthesis, esophageal, vaginal radiation carrier, burn and nasal stents.

Acquired defects of the mandible, hard and soft palate. Maxillectomy patients, facial defects, restoration of speech and velopharyngeal function, auditory inserts, trismus appliances, mouth controlled devices for assisting the handicapped, custom prosthesis for lagophthalmos of the eye and cranial implants.

**II. Occlusion**

**Evaluation, Diagnosis and Treatment of Occlusal Problems:**

Scope, definition, terminology, anatomical, physiological, neuro-muscular, psychological, considerations of teeth, muscles of mastication, temporomandibular joint, intra oral and extra oral and facial musculatures, functions of cranio mandibular system and occlusal therapy.

**III. Dissertation completion and submission**.

**IV. Osseo integrated supported fixed prosthodontics –** Osseo integrated supported and tooth supported fixed prosthodontics.

**V. TMJ – Temporomandibular joint, definitions, and terminology:**

Temporomandibular joint its anatomy, function, disorders, etiology, differential diagnosis & management.

**This is basic minimum requirement, however a student is expected to learn and know other than the above mentioned topics also.**

**APPROACH :** Topics to be covered as didactics lectures, and clinical discussions and laboratory demonstrations.

## CLINICAL PROCEDURES TO BE COMPLETED IN THIRD YEAR

1. Clinical and laboratory practice continued from 2nd year
2. Implant Supported prosthesis - Clinical and Laboratory phases.
3. Maxillofacial Prosthesis for-
   a. Eye
   b. Ear
   c. Nose
   d. Finger
   e. Hemimaxillectomy
   f. Hemimandibulectomy

g. Guiding flange

4. Full mouth rehabilitation cases
5. Other Exercise
   a. TMJ splints - Stabilization appliances, maxillary and mandibular repositioning appliances.
   b. Anterior disclusion appliances
   c. Chrome cobalt and acrylic resin stabilization appliances
   d. Occlusal splint
   e. Periodontal Splint

- Minimum Academic Requirements from 7 to36 months

| No | Work | Quota |
|---|---|---|
| 1 | Seminars | 12 |
| 2 | Journal Clubs | 15 |
| 3 | Scientific Poster Presentations | 2 |
| 4 | Scientific Paper Presentations | 2 |
| 5 | Scientific Paper Publications/Submission | 1 |
| 6 | Log Book Submission | 3 |

At the end of M.D.S. course Post graduates students should complete following procedures.

| Sl. No. | Nature of work | Quota |
|---|---|---|
| 1 | Conventional Complete denture | 25 |
| 2 | Balanced Complete Denture | 15 |
| 3 | Immediate Complete Denture | 5 |
| 4. | Single complete Denture | 5 |
| 5. | Over Dentures | 5 |
| 6 | Provisional R.P.D. | 10 |
| 7 | Immediate R.P.D. | 5 |
| 8. | Cast Partial Dentures | 10 |
| 9 | Crowns | 10 |
| 10 | Mary land bridges | 5 |

| | | |
|---|---|---|
| 11 | Long span bridges | 25 |
| 12 | Full mouth rehabilitation | 2 |
| 13 | Post and core | 14 |
| 14 | Obturators | 5 |
| 15 | Guide flange prosthesis | 5 |
| 16 | Speech and palatal lift prosthesis | 5 |
| 17 | Ear, Nose, and Finger prosthesis | 2 |
| 18 | Hemimaxillectomy prosthesis | 2 |
| 19 | Hemimandibulectomy prosthesis | 2 |
| 20 | Implant supported prosthesis | 2 |

## SCHEME OF UNIVERSITY EXAMINATION

**A. Theory :**

**Part I : One paper of 100 marks of 3 hours duration at the end of 1st year of MDS Course.**

**Part II : Three papers (I, II, III) of 100 marks each of 3 hours duration at the end of 3rd year MDS Course (300 Marks)**

Written examination for Part I shall consist of 10 questions of 10 marks each (100 Marks). Part II shall consist of Paper I, II of 2 long essay questions of 25 marks each and 5 short essay questions of 10 marks each (Total 100 marks each) and Paper III shall consist 3 essay questions of 50 marks each out of which of any two questions have to be answered (Total 100 marks ).

Distribution of topics for each paper will be follows:*

**Part I Paper I :** Applied Basic Sciences : Applied Anatomy, Embryology, Growth and Development Genetics, Immunology, Anthropology, Physiology, Nutrition and Biochemistry, Pathology, Microbiology, Virology, Applied Pharmacology, Research Methodology and Biostatistics, Applied Dental Anatomy and Histology, Oral Pathology & Microbiology, Adult and Geriatric Psychology, Applied Dental Materials.

**Part II : Paper I:** Removable Prosthodontics and Implant supported Prosthesis (Implantology) Geriatric Dentistry and Cranio Facial Prosthodontics.

**Part II Paper II :** Fixed Prosthodontics, Occlusion, TMJ and Esthetics.

**Part II Paper III :** Essay.

*The topics assigned to the different papers are generally evaluated under those sections. However a strict division of the subject may not be possible and some overlapping of topics is inevitable. Students should be prepared to answer overlapping topics.

**B. PRACTICAL/ CLINICAL EXAMINATION : 200 Marks**

Examination shall be for three days. If there are more than 6 candidates, it may be extended for one more day. Each candidate shall be examined for a minimum of three days, six hours per day including viva voce.

**1. Presentation of treated patients and records during their 3 years training period: 35 marks**

| | |
|---|---|
| a. C.D. | - 1 mark |
| b. R.P.D. | - 2 marks |
| c. F.P.D. including single tooth and surface restoration | - 2 marks |
| d. I.S.P. | - 5 marks |
| e. Occlusal rehabilitation | - 5 marks |
| f. T.M.J | - 5 marks |
| g. Maxillofacial prosthesis | - 5 marks |
| h. Pre-Clinical Exercise | - 10 marks |

**2. Scheme of practical examination and distribution of**

**I) C.D. prosthesis and insertion: 75 marks**

| | |
|---|---|
| a. Discussion on treatment plan and patient review | - 10 marks |
| b. Tentative jaw relation records | - 5 marks |
| c. Face bow transfer | - 5 marks |
| d. Transferring it on articulators | - 5 marks |
| e. Extra oral tracing and securing centric and protrusive/ Lateral | - 15 marks |
| f. Transfer in an articulator | - 5 marks |
| g. Selection of teeth | - 5 marks |
| h. Arrangement of teeth | - 10 marks |
| i. Waxed up denture trial | - 10 marks |
| j. Fit, insertion and instruction of previously processed Characterized, anatomic complete denture prosthesis | - 5 marks |

All steps will include chair side, lab and viva voce

**II) Fixed Partial Denture : 35 marks**

| | |
|---|---|
| a. Case discussion and selection of patients for F.P.D. | - 5 marks |
| b. Abutment preparation isolation and fluid control | - 15 marks |
| c. Gingival retraction and impressions | - 10 marks |
| d. Cementation of provisional restoration | - 5 marks |

**III). Removable Partial Denture : 25 marks**

| | |
|---|---|
| a. Surveying and designing of partial dentate cast | - 5 marks |
| b. Discussion on components and material selection including occlusal scheme | - 20 marks |

**IV) Implant supported prosthesis (2nd stage- protocol) 30 marks**

| | |
|---|---|
| a. Case discussion including treatment planning and selection of patient for ISP | 10 marks |
| b. II stage preparation, Abutment selection, placement, evaluation | 10 marks |
| c. Implant impression and making of cast | 10 marks |

**C. VIVA VOCE: 100 Marks**

**I). Viva-Voce examination: 80 Marks**

All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach, expression, interpretation of data and communication skills. It includes all components of course contents. It includes presentation and discussion on dissertation also.

**II). Dissertations / Pedagogy Exercise: 20 Marks**

A topic is given to each candidate in the beginning of clinical examination. He/she is asked to make a presentation on the topic for 8-10 minutes.

**TOTAL (A + B + C ) = 700 Marks**

# 3.2 PERIODONTOLOGY

**GOAL**

- To train the postgraduate efficiently and effectively, backed by scientific knowledge and skill in Periodontology.

**OBJECTIVES**

To achieve a high degree of clinical proficiency in the subject matter and develop competence in research and its methodology in Periodontology.

The above objectives are achieved by

1. Knowledge
2. Skills
3. Human values, ethical practice and communication abilities

a) KNOWLEDGE

Discuss historical perspective to advancement in the subject proper and related topics

1. Describe the etiology, pathogenesis, diagnosis and management of common periodontal diseases with emphasis on Indian population.
2. Familiarize with the biochemical, microbiologic and immunologic genetic aspects of periodontal pathology.
3. Describe various preventive periodontal measures.
4. Describe various treatment modalities of periodontal disease from historical aspect to currently available ones.
5. Describe interrelationship between periodontal disease and various systemic conditions.
6. Identify rarities in periodontal disease and environmental/ Emotional determinates in a given case.
7. Update themselves him by attending course, conferences and seminars relevant to periodontics or by self-learning process.
8. Plan out/ carry out research activity both basic and clinical aspects with the aim of publishing the work in scientific journals.
9. Reach to the public to motivate and educate regarding periodontal disease, its prevention and consequences if not treated.
10. Plan out epidemiological survey to assess prevalence and incidence of early onset periodontitis and adult periodontitis in Indian population (Region wise).

11. Shall develop knowledge, skill in the science and practice of oral implantology.
12. Shall develop teaching skill in the field of periodontology and oral implantology.
13. Principals of Surgery and Medical Emergencies.
14. To sensitize students about inter disciplinary approach towards the soft tissues of the oral cavity with the help of specialist from other departments.

b) SKILLS

1. Take a proper clinical history, thorough intra oral and extra oral examination, medical history evaluation, advise essential diagnostic procedures and interpret them to come to a reasonable diagnosis
2. Effective motivation and education regarding periodontal disease maintenance before and after the treatment.
3. Perform non-surgical, surgical procedures and education regarding periodontal disease maintenance after the treatment.
4. Provide Basic Life Support Service (BLS) recognize the need for advance life support and do the immediate need for that.

**HUMAN VALUES, ETHICAL PRACTICE AND COMMUNICATION ABILITIES**

Adopt ethical principles in all aspects of treatment modalities. Professional honesty and integrity are to be fostered. Develop communication skills to make awareness regarding periodontal disease. Apply high moral and ethical standards while carrying out human or animal research. Be humble, accept the limitations in knowledge and skill, and ask for help from colleagues when needed. Respect patient's rights and privileges, including patient's right to information and right to seek a second opinion.

## COURSE CONTENTS

### PART - I

**I. Applied Anatomy**

1. Development of the Periodontium.
2. Micro and Macro-structural anatomy and biology of the periodontal tissues.
3. Age changes in the periodontal tissues.
4. Anatomy of the Periodontium.
   a. Macroscopic and microscopic anatomy.
   b. Blood supply of the Periodontium.
   c. Lymphatic system of the Periodontium.

d. Nerves of the Periodontium.

5. Temperomandibular joint, Maxilla and Mandible.
6. Cranial nerves (V, VII, IX, XI, and XII)
7. Tongue and oropharynx.
8. Muscles of mastication.
9. Spaces of Head & Neck

**II. Applied Physiology**

1. Blood.
2. Respiratory system - respiratory diseases related to periodontal diseases.
3. Cardiovascular system - blood pressure and Shock.
4. Endocrinology - hormonal influences on Periodontium.
5. Gastro-Intestinal System (GIT) - salivary secretion - composition, function and regulation.
6. Reproductive physiology - hormones – actions, regulations and role in periodontal disease.
7. Nervous system – pain pathways.
8. Family planning methods.
9. Hemostasis

**III. Applied Biochemistry**

1. Basics of carbohydrates, lipids, vitamins, proteins, enzymes and minerals.
2. Diet and nutrition.
3. Calcium and phosphorus.
4. Biochemical tests and their significance.

**IV. Applied Pathology**

1. Cell structure and metabolism.
2. Cellular growth and differentiation and regulation.
3. Inflammation, repair, necrosis and degeneration.
4. Immunology.
5. Circulatory disturbances - edema, haemorrhage, shock, thrombosis, embolism, infarction and hypertension.
6. Disturbances of nutrition.
7. Endocrinal influences on periodontal disease.
8. Hematological disorders.
9. Laboratory investigations.

**V. Applied Microbiology**

1. General bacteriology.
    a. Identification of bacteria.
    b. Culture media and methods.
    c. Sterilization and disinfection.
2. Systemic bacteriology with special emphasis on oral microbiology.
3. Virology.
4. Mycology.
5. Applied microbiology.
6. Diagnostic microbiology, immunology, hospital infections and management.

**VI. Applied Pharmacology**

1. General pharmacology
    a. Definitions - Pharmcokinetics with clinical applications, routes of administration including local drug delivery in Periodontics.
    b. Adverse drug reactions and drug interactions
2. Pre anesthetic medications.
3. Detailed pharmacology of, dental use and adverse effects of
    a. Analgesics - opioid and nonopioid.
    b. Local anesthetics.
    c. Haematinics, coagulants and anticoagulants.
    d. Vitamin D and Calcium.
    e. Anti diabetic, Antiepileptic and Antihypertensive drugs.
    f. Steroids.
    g. Antibiotics.
    h. Immunosuppressive drugs and their effects on oral tissues.
4. Brief pharmacology, dental use and adverse effects of
    a. General anesthetics
    b. Antipsychotics
    c. Antidepressants
    d. Anxiolytic drugs
    e. Sedatives
    f. Antiepileptics
    g. Antihypertensives
    h. Antianginal drugs
    i. Diuretics
    j. Hormones
    k. Pre-anesthetic medications

5. Drugs used in Bronchial asthma, cough

6. Drug therapy of
   a. Emergencies.
   b. Seizures.
   c. Anaphylaxis.
   d. Bleeding.
   e. Shock.
   f. Diabetic ketoacidosis.
   g. Acute Addisonian crisis.

7. Dental Pharmacology
   a. Antiseptics.
   b. Astringents.
   c. Sialogogues.
   d. Disclosing agents.
   e. Antiplaque agents.

8. Fluoride pharmacology

**VII. Applied Biostatistics**

1. Introduction, definition and branches of biostatistics
2. Collection of data, sampling, types, bias and errors
3. Compiling data-graphs and charts
4. Measures of central tendency (mean, median and mode), standard deviation and variability
5. Tests of significance (chi square test 't' test and Z-test)
6. Null hypothesis

**VIII. Gingival and periodontal diseases**

This is minimum basic syllabus mentioned but however a candidate should know the related aspect of same.

**PRACTICALS**

A) History, examination, diagnosis, prognosis and treatment planning

a) Clinical diagnosis
b) Radiographs and other aids in the diagnosis of periodontal diseases
c) Advanced diagnostic techniques
d) Risk assessment
e) Determination of prognosis
f) Treatment plan.

g) Periodontal instrumentation
h) Instrumentation
i) Principles of periodontal instrumentation
j) Plaque control
k) Anti microbial therapy.
l) Management of medical emergencies in periodontal practice
m) Biopsy
   - ❖ Microscopy.
   - ❖ Basic staining procedures.
   - ❖ Laboratory investigations.
   - ❖ Histology of hard and soft tissue.

**This is basic minimum requirement, however a student is expected to learn and know other than the above mentioned topics also.**

**Approach**

1. Lectures.
2. Discussions.
3. Clinical demonstration.
4. Posting - ORAL PATHOLOGY and ORAL MEDICINE.

**PART - II**

**I.**

1. Periodontal microbiology, Microbial interactions with host in periodontal disease.
2. Basic concepts of inflammation and immunity in periodontal disease.
3. Epidemiology of gingival and periodontal diseases.
4. Defense mechanisms of gingiva.
5. Classification of periodontal diseases – gingival disease and periodontal disease.
6. Genetic factors associated with periodontal diseases.
7. Influence of systemic diseases and disorders of the periodontium.
8. Role of environmental factors in the etiology of periodontal disease.
9. Stress and periodontal diseases.
10. Occlusion.
11. Para-functional habits in periodontal disease.
12. AIDS and Periodontium.

13. Periodontal medicine.
14. Oral Malodor.
15. Dentinal hypersensitivity.
16. Evidence based periodontics.
17. Advanced diagnostic aids.
18. Saliva, GCF and biomarkers including chairside diagnostic kits.
19. Pathogenesis of plaque associated periodontal diseases
20. Dental calculus
21. Role of iatrogenic and other local factors
22. Smoking and tobacco in the etiology of periodontal diseases

**This is basic minimum requirement, however a student is expected to learn and know other than the above mentioned topics also.**

## PAPER II

## PART II

## CLINICAL AND THERAPEUTIC PERIODONTOLOGY AND ORAL IMPLANTOLOGY

**Please note:**

Clinical periodontology includes gingival diseases, periodontal diseases, periodontal instrumentation, diagnosis, prognosis and treatment of periodontal diseases.

### (i) GINGIVAL DISEASES

1. Gingival inflammation
2. Clinical features of gingivitis
3. Gingival enlargement
4. Acute gingival infections
5. Desquamative gingivitis and oral mucous membrane diseases
6. Gingival diseases in the childhood

### (ii) PERIODONTAL DISEASES

1. Periodontal pocket
2. Bone loss and patterns of bone destruction
3. Periodontal response to external forces
4. Masticatory system disorders

5. Chronic periodontitis

6. Aggressive periodontitis

7. Necrotising ulcerative periodontitis

8. Interdisciplinary approaches

- Orthodontic

- Endodontic

**(iii) TREATMENT OF PERIODONTAL DISEASES**

A. History, examination, diagnosis, prognosis and treatment planning

1. Clinical diagnosis

2. Radiographic and other aids in the diagnosis of periodontal diseases

3. Advanced diagnostic techniques

4. Risk assessment

5. Determination of prognosis

6. Treatment plan

7. Rationale for periodontal treatment

8. General principles of anti-infective therapy with special emphasis on infection control in periodontal practice

9. Halitosis and its treatment

10. Bruxism and its treatment

B. Periodontal instrumentation

1. Periodontal Instruments

2. Principles of periodontal instrumentation

C. Periodontal therapy

1. Preparation of tooth surface

2. Plaque control

3. Anti microbial and other drugs used in periodontal therapy and wasting diseases of teeth

4. Periodontal management of HIV infected patients

5. Occlusal evaluation and therapy in the management of periodontal diseases

6. Role of orthodontics as an adjunct to periodontal therapy

7. Special emphasis on precautions and treatment for medically compromised patients

8. Periodontal splints

9. Management of dentinal hypersensitivity

**D. Periodontal surgical phase – special emphasis on drug prescription**

1. General principles of periodontal surgery

2. Surgical anatomy of periodontium and related structures

3. Gingival curettage

4. Gingivectomy technique

5. Treatment of gingival enlargements

6. Periodontal flap

7. Osseous surgery (resective and regenerative)

8. Furcation; Problem and its management

9. The periodontic – endodontic continuum

10. Periodontic plastic and esthetic surgery

11. Recent advances in surgical techniques

**E. Future directions and controversial questions in periodontal therapy**

1. Future directions for infection control

2. Research directions in regenerative therapy

3. Future directions in anti-inflammatory therapy

4. Future directions in measurement of periodontal diseases

**F. Periodontal maintenance phase**

1. Supportive periodontal treatment

2. Results of periodontal treatment

**(iv) ORAL IMPLANTOLOGY**

1. Introduction and historical review
2. Biological, clinical and surgical aspects of dental implants
3. Diagnosis and treatment planning
4. Implant surgery
5. Prosthetic aspects of dental implants
6. Diagnosis and treatment of Peri implant complications
7. Prosthetic failures in implantology Special emphasis on plaque control measures in implant patients
8. Maintenance phase

**(v) MANAGEMENT OF MEDICAL EMERGENCIES IN PERIODONTAL PRACTICE**

**Periodontology treatment should be practiced by various treatment plans and more number of patients to establish skill for diagnosis and treatment and after care with bio-mechanical, biological, bio-esthetics, bio-phonetics and all treatment should be carried out in more number for developing clinical skill.**

**Approach**

1. Lectures.
2. Discussions.
3. Clinical demonstration.

## PART - III

**I. Theory and Practicals**

1. Periodontal splints.
2. Osseous surgery (resective and regenerative).
3. Furcation; Problem and its management.
4. Periodontic / Orthodontic / Prosthodontic and Endodontic related problems and their therapy.
5. Periodontal plastic and esthetic surgery.
6. Recent advances in surgical techniques.

**II. Oral Implantology**

1. Introduction and historical review.
2. Biological, clinical and surgical aspects of dental implants.
3. Diagnosis and treatment planning.
4. Periodontal and functional aspects of dental implants.
5. Special emphasis on plaque control.
6. Complication and management.

| S.NO | Year Wise | ACTIVITIES WORKS TO BE DONE |
|---|---|---|
| 1 | Module 1<br>(First Year) | **Orientation to the PG program**<br>**Pre-clinical work (4 months)**<br>**a. Dental**<br>1. Practice of incisions and suturing techniques on the typodont models.<br>2. Fabrication of bite guards and splints.<br>3. Occlusal adjustment on the casts mounted on the articulator<br>4. X-ray techniques and interpretation.<br>5. Local anaesthetic techniques.<br>6. Identification of Common Periodontal Instruments.<br>7. To learn science of Periodontal Instruments maintance (Sharpening , Sterlization and Storate)<br>8. Concept of Biological width<br>**a. Typhodont Exercise**<br>**(i) Class II Filling with Band and Wedge Application**<br>**(ii) Crown cuttings**<br>**b. Medical**<br>**1.** Basic diagnostic microbiology and immunology, collection and handling of sample and culture techniques.<br>2. Introduction to genetics, bioinformatics.<br>3. Basic understanding of cell biology and immunological diseases.<br>**Clinical work**<br>1. Applied periodontal indices - 10 cases<br>2. Scaling and root planning:- with Proper written history<br>a. Manual - 20 Cases<br>b. Ultrasonic - 20 Cases<br>**3. Observation / assessment of all periodontal procedures including implants** |
| 2 | **Module 2**<br>**(First Year)** | 1. Interpretation of various bio-chemical investigations.<br>2. Practical training and handling medical emergencies and basic life support devices.<br>3. Basic biostatistics – Surveying and data analysis.<br>Clinical<br>1. Case history and treatment planning - 10 cases<br>2. Root planning - 50 cases<br>3. Observation / assessment of all periodontal procedures including implant.<br>4. Selection of topic for Library dissertation and submission of Dissertation Synopsis. |

| | | |
|---|---|---|
| 3 | **Module 3 (First Year)** | **Minor surgical cases - 20 cases**<br>(i) Gingival Depigmentation - 3 Cases<br>(ii) Gingival Curettage no limits<br>(iii) ENAP - 1 Case<br>(iv) Gingivectomy/ Gingivoplasty - 5 cases<br>(v) Operculectomy - 3 cases<br>Poster Presentation at the Speciality conference |
| **4** | **Module 4 (Second Year)** | **Clinical work**<br>1. Case history and treatment planning - 10 cases<br>2. Occlusal adjustments - 10 cases<br>3. Perio splints - 10 cases<br>4. Local drug delivery techniques - 5 cases<br>5. Screening cases for dissertation |
| **5** | **Module 5 (Second Year)** | **1. Periodontal surgical procedures.**<br>a. Basic flap procedures - 20 cases<br>**2. Periodontal plastic and esthetic - 10 cases**<br>a. Increasing width of attached gingival - 5 cases<br>b. Root coverage procedures / Papilla Preservation and Reconstruction - 5 cases<br>c. Crown lengthening procedures - 5 cases<br>d. Frenectomy - 5 cases<br>e. Vestibuloplasty 5 cases<br>**3. Furcation treatment (Hemisection, Rootsection, Tunelling) - 5 cases**<br>**4. Surgical closure of diastema - 2 cases** |
| 6 | Module 6 (Third Year) | **1. Ridge augmentation procedures - 5 cases**<br>**2. Implants Placements and monitoring - 5 cases**<br>**3. Sinus lift procedures - 2 cases**<br>**4. Case selection, preparation and investigation of implants.**<br>**5. Interdisciplinary Periodontics - 2 each**<br>**(i) Ortho – Perio**<br>**(ii) Endo – Perio**<br>**(iii) Restorative Perio**<br>**(iv) Preprosthetic**<br>**(v) Crown Prep**<br>**6. Osseous Surgery - 2 each**<br>**(i) Resective**<br>**(ii) Regenerative**<br>**7. Scientific paper/ poster presentation at the conference.** |

| | | |
|---|---|---|
| 7 | **Module 7 (Third Year)** | **Clinical work**<br>1. Flap surgeries & regenerative techniques - 25 cases (using various grafts & barrier membranes)<br>2. Assistance / observation of advanced surgical procedure - 5 each<br>3. Micro Surgery - 5 each<br>4. Record maintenance & follow-up of all treated cases including implants.<br>5. Submission of dissertation – 6 months before completion of III year.<br>6. Scientific paper presentation at conferences. |
| 8 | **Module 8 (Third Year)** | 1. Refining of surgical skills.<br>2. Publication of an article in a scientific journal.<br>3. Preparation for final exams. |
| 9 | **Module 9 (Third Year)** | 1. Preparation for final exams.<br>2. University exam |

## ACADEMIC REQUIREMENTS OF THE COURSE

| Sl. No. | | Quota |
|---|---|---|
| 1 | Seminars | 15 |
| 2 | Journal clubs | 25 |
| 3 | Case presentation | 25 |
| 4 | Undergraduate classes | 2 |
| 5 | Dental camps | 2 |
| 6 | Scientific poster presentation | 2 |
| 7 | Scientific Paper Presentation | 2 |
| 8 | Scientific Paper Publication | 1 |
| 9 | Interdepartmental Presentations | 1 |
| 10 | Log book submission | Once in 6 months |
| 11 | Display of academically oriented 'Case of the month' | 10 |
| 12 | Library Dissertation | End of 18 months |
| 13 | Dissertation | 6 months before university examination |

## SCHEME OF UNIVERSITY EXAMINATION

### Scheme of Exams (Institutional Level)

**a) First internal assessments at the end of first year**

**b) Second Internal assessments at the end of second year**

**c) Preliminary exam in the last 6 months.**

### UNIVERSITY EXAMINATION (Final)

**A. Theory :**

**Part I : One paper of 100 marks of 3 hours duration at the end of 1st year of MDS Course.**

**Part II : Three papers (I, II, III) of 100 marks each of 3 hours duration at the end of 3rd year MDS Course (300 Marks)**

Written examination for Part I shall consist of 10 questions of 10 marks each (100 Marks). Part II shall consist of Paper I, II of 2 long essay questions of 25 marks each and 5 short essay questions of 10 marks each (Total 100 marks each) and Paper III shall consist 3 essay questions of 50 marks each out of which of any two questions have to be answered (Total 100 marks ).

Distribution of topics for each paper will be follows:*

**Part I Paper I :** Applied Basic Sciences: Applied Anatomy, Physiology, & Biochemistry, Pathology, Microbiology, Pharmacology, Research Methodology and Bio-statistics.

**Part II Paper I :** Normal Periodontal structure, Etiology and Pathogenesis of Periodontal diseases, Epidemiology as related to Periodontics.

**Part II Paper II :** Diagnosis in Periodontics, therapy and oral Implantology.

**Part II Paper III:** Essay.

*The topics assigned to the different papers are generally evaluated under those sections.

However a strict division of the subject may not be possible and some overlapping of topics is inevitable. Students should be prepared to answer overlapping topics.

**B. PRACTICAL / CLINICAL EXAMINATION: 200 Marks**

The clinical examination shall be of two days duration

**1st DAY**

Case discussion

- Long case - One
- Short cases - One

Periodontal surgery - Periodontal flap surgery on a previously prepared case in one quadrant of the mouth after getting approval from the examiners.

**2nd DAY**

Post-surgical review and discussion of the case treated on the 1st day.

Presentation of dissertation and discussion.

All the examiners shall participate in all the aspects of clinical examinations / Viva Voce.

Distribution of Marks for Clinical examination (recommended).

a) Long Case discussion 060

b) 1 short cases 040

c) Periodontal surgery 075

d) Post - operative review 025

**Total 200**

**C. VIVA VOCE : 100 Marks**

a.) VIVA VOCE Examination 80 MARKS

b) Dissertation VIVA/Pedogogy 20 MARKS

**TOTAL MARKS (A + B + C) = 700 Marks**

# 3.3 ORAL AND MAXILLOFACIAL SURGERY

**GOALS**

The goals of Postgraduate training in the subject of Oral and Maxillofacial Surgery

1. Central goal:
    a. Cure:
        i. Diagnostic and Treatment procedures.
        ii. Medication.
    b. Supportive Goal:
        i. Nursing Care
        ii. Provide an atmosphere for rest, quietness and comfort and facilitate healing
        iii. Reassure the patient.
    c. Extended Goals:
        i. Teaching of PG's to attain self sufficiency in the field of Oral & maxillofacial Surgery
        ii. Community out reach programmes.
        iii. Clinical Research.
        iv. Department/ subject Promotion.

**OBJECTIVE**

**a) KNOWLEDGE**

1. To have acquired adequate knowledge and understanding of the etiology, patho- physiology and diagnosis, treatment planning of various common Oral and Maxillofacial surgical problems both minor and major in nature.
2. To have understood the general surgical principles like pre and post surgical management, particular evaluation, post surgical care, fluid and electrolyte management, blood transfusion and post surgical pain management.
3. Understanding of basic sciences relevant to practice or Oral and Maxillofacial surgery
4. Able to identify social, cultural, economic, genetic and environment factors and their relevance to disease process management in the Oral and Maxillofacial surgery
5. Essential knowledge of personal hygiene and infection control, prevention of cross infection and safe disposal of hospital waste keeping in view the high prevalence of Hepatitis and HIV.

**b) SKILLS**

1. To obtain proper clinical history, methodical examination of the patients, perform essential diagnostic procedures and other relevant laboratory test and interpret them and to arrive to a reasonable diagnosis about the surgical condition.
2. To perform with competence minor oral surgical procedures and common maxillofacial Surgeries.
3. Capable of providing care for maxillofacial surgery patients.

## COURSE CONTENT

### PART - I

**I. Applied Anatomy**

1. Surgical anatomy of the scalp, temporal area and face
2. Anatomy of the triangles of neck and deep structures of the neck.
3. Cranial and facial bones and its surrounding soft tissues with its applied aspects in maxillofacial injuries.
4. Muscles of head and neck.
5. Arterial supply, venous drainage and lymphatics of head and neck.
6. Congenital abnormalities of the head and neck.
7. Surgical anatomy of the cranial nerves.
8. Anatomy of the tongue and its applied aspects.
9. Surgical anatomy of the temporal and infratemporal regions.
10. Anatomy and its applied aspects of salivary glands, pharynx, thyroid and parathyroid gland, larynx, trachea esophagus.
11. Tooth eruption, morphology, and occlusion.
12. Surgical anatomy of the nose.
13. The structure and function of the brain including surgical anatomy of intra cranial venous sinuses.
14. Autonomous nervous system of head and neck.
15. Functional anatomy of mastication, deglutition, speech, respiration and circulation.
16. Development of face, paranasal sinuses and associated structures and their anomalies.
17. TMJ: surgical anatomy and function.
18. Surgical anatomy of Iliac, Rib and tibial bone region.

## II. Physiology

1. Nervous system

   Physiology of nerve conduction, pain pathway, sympathetic and parasympathetic nervous system, hypothalamus and mechanism of controlling body temperature.

2. Blood
   a. Composition
   b. Haemostasis, various blood dyscrasias and its management of patients with the same.
   c. Hemorrhage and its control.
   d. Capillary and lymphatic circulation.
   e. Blood grouping, transfusing procedures.
3. Digestive system
   a. Saliva - composition and functions of saliva.
   b. Mastication deglutition, digestion, assimilation.
   c. Urine formation, normal and abnormal constituent.
4. Respiration
   a. Control of ventilation anoxia, asphyxia, artificial respiration.
   b. Hypoxia -types and management.
5. Cardiovascular system
   a. Cardiac cycle.
   b. Shock.
   c. Heart sounds.
   d. Blood pressure
   e. Hypertension
6. Endocrinology
   a. General endocrinal activity and disorder relating to thyroid gland,
   b. Parathyroid gland, adrenal gland, pituitary gland, pancreas and gonads:
   c. Metabolism of calcium
7. Nutrition
   a. General principles balanced diet, effect of dietary deficiency, protein energy malnutrition, Kwashiorkor, Marasmus
   b. Fluid and Electrolyte balance in maintaining homeostasis and significance in minor and major surgical procedures

## III. Biochemistry

1. General principles governing the various biological activities of the body, such as osmotic pressure, electrolytes, dissociation, oxidation, reduction etc.
2. General composition of the body
3. Intermediary metabolism
4. Carbohydrates, proteins, lipids, and their metabolism
5. Nucleoproteins, nucleic acid and nucleotides and their metabolism
6. Enzymes, vitamins and minerals
7. Hormones
8. Body and other fluids.
9. Metabolism of inorganic elements.
10. Detoxification in the body.
11. Antimetabolites.

## IV. Pathology

1. Inflammation
    a. Repair and regeneration, necrosis and gangrene
    b. Role of component system in acute inflammation
    c. Role of arachidonic acid and its metabolites in acute inflammation
    d. Growth factors in acute inflammation
    e. Role of molecular events in cell growth and intercellular signaling cell surface receptors
    f. Role of NSAIDs in inflammation
    g. Cellular changes in radiation injury and its manifestation
2. Haemostasis
    a. Role of endothelium in thrombogenisis.
    b. Arterial and venous thrombi.
    c. Disseminated Intravascular coagulation.
3. Shock
    a. Pathogenesis of hemorrhagic, neurogenic, septic, cardiogenic shock.
    b. Circulatory disturbances, ischemia hyperemia, venous congestion, edema, infarction.
4. Chromosomal Abnormalities
    a. Marfans Syndrome, Ehler's Danlos Syndrome, Fragile X- Syndrome

5. Hypersensitivity
    a. Anaphylaxis, type 2 hypersensitivity, type 3 sensitivity and cell mediated reaction. And its clinical importance, systemic lupus erythematosus.
    b. Infection and infective granulomas.

6. Neoplasia
    a. Classification of tumors.
    b. Carcinogenesis and carcinogen- chemical, viral and microbial.
    c. Grading and staging of cancers, tumor Angiogenesis, Paraneoplastic syndrome, spread of tumors.
    d. Characteristics of benign and malignant tumors.

7. Others
    a. Sex linked agamma globulinemia.
    b. AIDS.
    c. Management of immune deficiency patients requiring surgical procedures.
    d. Crohns complex, post primary pulmonary tuberculosis -pathology and pathogenesis.

8. Oral Pathology
    a. Developmental disturbances of oral and Para oral structures.
    b. Regressive changes of teeth.
    c. Bacterial, viral and mycotic infections of oral cavity.
    d. Dental caries„ diseases of pulp and periapical tissues.
    e. Physical and chemical injuries of the oral cavity.
    f. Oral manifestations of metabolic and endocrinal disturbances.
    g. Diseases of jawbones and TMJ.
    h. Diseases of blood and blood forming organs in relation of oral cavity.
    i. Cysts of the oral cavity.
    j. Salivary gland diseases.
    k. Role of laboratory investigations in oral surgery.

9. Microbiology
    a. Immunity.
    b. Knowledge of organisms commonly associated with disease of oral cavity.
    c. Morphology cultural characteristics of strepto, staphylo, pneumo, gono, meningo, clostridium group of organism, spirochetes, organisms of TB, leprosy, diphtheria, actinomycosis and moniliasis.

d. Hepatitis B and its prophylaxis.
e. Culture and sensitivity test.
f. Laboratory determinations.
g. Blood groups, blood matching, RBC and WBC count.
h. Bleeding and clotting time etc, smears and cultures.
i. Urine analysis and cultures.

**V. Applied Pharmacology and Therapeutics**

1. Definition of terminologies used
2. Dosage and mode of administration of drugs.
3. Action and fate of drugs in the body
4. Drug addiction, tolerance and hypersensitivity reactions.
5. Drugs acting on the CNS
6. General and local anesthetics, hypnotics, analeptics, and tranquilizers.
7. Chemo therapeutics and antibiotics
8. Analgesics and antipyretics
9. Antitubercular and antisyphilitic drugs.
10. Antiseptics, sialogogues and antisialogogues
11. Haematinics
12. Antidiabetics
13. Vitamins A, B-complex, C, D, E, K

**This is basic minimum requirement, however a student is expected to learn and know other than the above mentioned topics also.**

## PART - II
## MINOR ORAL SURGERY AND TRAUMA

**I. Minor Oral Surgery**

1. **Principles of Surgery**: Developing a surgical diagnosis, basic necessities for Surgery, Aseptic Technique, Incisions, Flap Design Tissue handling, Haemostasis, dead space management, decontamination and debridment, Suturing, Oedema control, patient general health and nutrition.
2. **Medical Emergencies**: Prevention and management of altered consciousness (syncope, orthostatic hypotension, seizures, diabetes mellitus, adrenal insufficiency), hypersensitivity reactions, chest discomfort, and respiratory difficulty.

3. **Examination and Diagnosis:** Clinical history, physical and radiographic, clinical and laboratory diagnosis, oral manifestations of systemic diseases, implications of systemic diseases in surgical patients.
4. **Haemorrhage and Shock:** Applied physiology, clinical abnormalities of coagulation, extra vascular hemorrhage, and hemorrhagic lesions, management of secondary hemorrhage, shock.
5. **Exodontia:** Principles of extraction, indications and contraindications, types of extraction, complications and their management, principles of elevators and elevators used in oral surgery.
6. **Impaction**: Surgical anatomy, classification, indications and contraindications, diagnosis, procedures, complications and their management.
7. **Surgical Aids to Eruption Of Teeth:** Surgical exposure of unerupted teeth, surgical repositioning of partially erupted teeth.
8. **Transplantation of Teeth**
9. **Surgical Endodontics:** Indications and contraindications, diagnosis, procedures of periradicular surgery
10. **Procedures To Impove Alveolar ridge:** Requirements, types (alveloplasty, tuberosity reduction, mylohyoid ridge reduction, genial reduction, removal of exostosis, vestibuloplasty) Hypermobile tissues-operative / sclerosing method, epulis fissuratum, frenectomy and frenotomy
11. **Infection of Head and Neck:** Odontogenic and non Odontogenic infections, factors affecting spread of infection, diagnosis and differential diagnosis, management of facial space infections, Ludwig angina, cavernous sinus thrombosis.
12. **Chronic Infections of the Jaws**: Osteomyelitis (types, etiology, pathogenesis, management) osteoradio necrosis
13. **Maxillary Sinus:** Maxillary sinusitis - types, pathology, treatment, closure of Oro - antral fistula, Caldwell- luc operation
14. **Cysts of the Orofacial region:** Classification, diagnosis, management of OKC, dentigerous, radicular non-odontogenic, ranula etc.
15. **Neurological Disorders of the maxillofacial region:** Diagnosis and management of trigeminal neuralgia, MPDS, bell's palsy, Frey's syndrome, nerve injuries.

16. **Implantlogy**: Definition, classification, indications and contraindications, advantages and disadvantages, complications and surgical procedure.
17. **Anesthesia**
    a. **Local Anesthesia**: Classification of local anesthetic drugs, modes of action indications and contra indications, advantages and disadvantages, techniques, complications and their management.
    b. **General Anesthesia**: Classification, stages of GA, mechanism of action, indications, and contra indications, advantages and disadvantages, post anesthetic complications and emergencies, anesthetic for dental procedures in children, pre medication, conscious sedation, legal aspects for GA
18. **Trauma**
19. **Surgical Anatomy of head and Neck**
20. **Etiology of Injury**
21. **Basic Principles of Treatment**
22. **Primary Care:** Resuscitation, establishment of airway, management of hemorrhage, management of head injuries and admission to hospital.
23. **Diagnosis**: Clinical, radiological
24. **Soft Tissue Injury of Face and Scalp:** Classification and management of soft tissue wounds, injuries to structure requiring special treatment.
25. **Dento Alveolar Fractures**: Examination and diagnosis, classification, treatment, prevention.
26. **Mandibular Fractures:** Classification, examination and diagnosis, general principles of treatment, complications and their management
27. **Fracture of Zygomatic Complex**: Classification, examination and diagnosis, general principles of treatment, complications and their management.
28. **Orbital Fractures**: Blow out fractures / in fractures
29. **Nasal / Nasoethmoidal Complex Fractures.**

30. **Fractures of Middle third of the Facial Skeleton**: Emergency care, fracture of maxilla, and treatment of le fort I, II, III, fractures of Naso orbito ethmoidal region.
31. **Opthalmic Injuries**: Minor injuries, non-perforating injuries, perforating injuries, retro bulbar hemorrhage, and traumatic optic neuropathy.
32. **Traumatic Injuries to Frontal sinus:** Diagnosis, classification, treatment
33. **Maxillofacial injuries in Geriatric and pediatric Patients**
34. **Gun shot wounds and War Injuries / Residual deformities.**
35. **Osseointegration in Maxillofacial Reconstruction**
36. **Metabolic response to Trauma**: Neuro endocrine responses, inflammatory mediators, clinical implications
37. **Healing of Traumatic Injuries**: Soft tissues, bone, cartilage, response of peripheral nerve to injury
38. **Nutritional Consideration following Trauma**
39. **Tracheostomy:** Indications and contraindications, procedure, complications and their management.

**This is basic minimum requirement, however a student is expected to learn and know other than the above mentioned topics also.**

## PART - III
## MAXILLOFACIAL SURGERY

**I. Salivary Gland**

1. Sialography.
2. Salivary fistula and management.
3. Diseases of salivary gland - developmental disturbances, cysts, inflammation and sialolithiasis.
4. Mucocele and Ranula.
5. Tumors of salivary gland and their management.
6. Staging of salivary gland tumors.
7. Parotidectomy.

**II. Temporomandibular Joint**

1. Etiology, history signs, symptoms, examination and diagnosis of temporomandibular joint disorders.
2. Ankylosis and management of the same with different treatment modalities.
3. MPDS and management.
4. Condylectomy - different procedures.
5. Various approaches to TMJ.
6. Recurrent dislocations - Etiology and Management.

**III. Oncology**

1. Biopsy.
2. Management of pre-malignant tumors of head and neck region.
3. Benign and Malignant tumors of Head and Neck region.
4. Staging of oral cancer and tumor markers.
5. Management of oral cancer.
6. Radial Neck dissection.
7. Modes of spread of tumors.
8. Diagnosis and management of tumors of nasal, paranasal, neck, tongue, cheek, maxilla and mandible.
9. Radiation therapy in maxillofacial regions.
10. Lateral neck swellings

**IV. Orthognathic Surgery**

1. Diagnosis and treatment planning.
2. Cephalometric analysis.
3. Model surgery.
4. Maxillary and mandibular repositioning procedures.
5. Segmental osteotomies.
6. Management of apertognathia.
7. Genioplasty.
8. Distraction osteogenesis.

**V. Cysts and tumors of oro facial region.**

1. Odontogenic and non-Odontogenic tumors and their management.
2. Giant cell lesions of jawbone.
3. Fibro osseous lesions of jawbone.
4. Cysts of jaw.

**VI. Laser Surgery**

1. The application of laser technology in surgical treatment of lesions
2. Cryosurgery

**VII. Surgical management Cleft lip and palate surgery**

1. Detailed knowledge of the development of the face, head and neck
2. Diagnosis and treatment planning
3. Current concepts in the management of cleft lip and palate deformity
4. Knowledge of Naso endoscopy and other diagnostic techniques in the evaluation of speech and hearing
5. Concept of multidisciplinary team management

**VIII. Aesthetic Facial Surgery**

1. Detailed knowledge of the structures of the face and neck including skin and underlying soft tissue.
2. Diagnosis and treatment planning of deformities and conditions affecting facial skin.
3. Underlying facial muscles, bone. Eyelids external ear.
4. Surgical management of post acne scarring, facelift, blepharoplasty, otoplasty, facial bone recontouring, etc.

**IX. Craniofacial Surgery**

1. Basic knowledge of developmental anomalies of the face, head and neck.
2. Basic concepts in the diagnosis and planning of various head and neck anomalies including facial clefts, craniosynostosis, syndromes, etc.
3. Current concept in the management of Craniofacial anomalies.

**X. Monitoring Learning Progress**

It is essential to monitor the learning progress to each candidate through continuous appraisal and regular assessment. It not only helps teachers to evaluate students, but also students to evaluate themselves. The monitoring to be done by the staff of the department based on participation of students in various teaching / learning activities. It may be structured and assessment be done using checklists that assess various aspects.

**This is basic minimum requirement, however a student is expected to learn and know other than the above mentioned topics also.**

| Sl.No | Procedure | Category | Year | Number |
|---|---|---|---|---|
| 1. | Injection I.M. and I.V | P1 | I-II | 50,20 |
| 2. | Minor suturing and removal of sutures | PI | I | N,A |
| 3. | Incision & drainage of an abscess | PI | I | 10 |
| 4. | Surgical extraction | PI | I | 15 |
| 5. | Impacted teeth | PI, PA | I, II | 20,10 |
| 6. | Pre prosthetic surgery | PI | | |
| | a) Corrective procedures | PI | I | 15 |
| | b) Ridge extension | PA | 1,11 | 3 |
| | c) Ridge reconstruction | A | 11,111 | 3 |
| 7. | OAF closure | PI, PA | I, II | 3,2 |
| 8. | Cyst enucleation | PI,PA | I, II | 5,5 |
| 9. | Mandibular fractures | PI,PA | 1,11 | 1,2 |
| 10. | Peri-apical surgery | PI,PA | I | 5 |
| 11. | Infection management | PI,PA | I, II | N,A |
| 12. | Biopsy procedures | PI | I, II | N,A |
| 13. | Removal of salivary calculi | PA | II,III | 1,1 |
| 14. | Benign tumors | PA, A | II, III | 2,2 |
| 15. | Mid face fractures | PA, A | II, III | 3,5 |
| 16. | Implants | PA,A | II, III | 5,5 |
| 17. | Tracheostomy | PA,A | II, III | 2,2 |
| 18. | Skin grafts | PA | III | 3,5 |
| 19. | Orthognathic surgery | PA,A | II, III | 3 |
| 20. | Harvesting bone & cartilage grafts | | | |
| | a) Iliac crest | PA | III | 3 |
| | b) Rib | A | III | 1 |
| | c) Calvarial | A | III | 1 |
| | d) Fibula | A,O | III | 1 |
| 21. | T.M. Joint surgery | PA, A | II, I, | 1 |
| 22. | Jaw resections | PA, A | III, II | 3,3 |
| 23. | Onco surgery | A,O | III, III | 3,3 |
| 24. | Micro vascular anastomosis | A,O | III | 2,2 |
| 25. | Cleft lip & palate | PA,A | II, III | 10,15 |
| 26. | Distraction osteogenesis | A,O | II, III | 2,3 |
| 27. | Rhinoplasty | A,O | III | 3,5 |
| 28. | Access osteotomies and base of skull surgeries | A,O | III | 1,3 |

**Key:**

O - Observed
A - Assisted a senior surgeon.
PI - Performed independently.

## DEPARTMENT OF ORAL & MAXILLOFACIAL SURGERY
## POSTGRADUATE TIME TABLE

| **PGY1 Level** | | |
|---|---|---|
| OMFS Exodontia / Hospital Posting | 6 Months | Orientation, exodontia, ward rounds and OT schedule |
| Internal Medicine | 1 Month | System review, Investigations and management. |
| An aesthesia | 2 Months | Local and General anaesthesia |
| Applied Anatomy / Clinical Pharmacology | 1 Month | Specifically Head & Neck and clinical pharmacology. |
| Orthodontic / Prosthodontics | 1 Month | Cephalometrics, Assessment, Surgical orthodontics/surgical obturators. |
| **PGY 2 Level** | | |
| Oral & Maxillofacial Surgery | 7 Months | Minor Oral Surgical procedures |
| ENT / Opthalmology | 1 Months | Surgeries of Nose & Paranasal sinuses / Ophthalmological implications in OMFS |
| General Surgery | 1 Month | Surgical principles and management of surgical patients |
| Neurosurgery / A&E | 1 Month | Head injury and its management |
| Orthopedics | 1 Month | Principles of ORIF |
| Oncology Posting | 1 Month | Exposure to Head & Neck Oncology |
| **PGY 3 Level** | | |
| Oral & Maxillofacial Surgery | 9 Months | Major surgical procedures and dissertation |
| Plastic & Recons Surgery | 1 Month | Aesthetic and Corrective procedures of facial region |
| Elective (GSR) | 1 Month | Posting of choice to peruse area of interest in OMFS |
| Oncology Posting | 1 Month | Exposure to Head & Neck Oncology |

1. Academic Clinical programme *(applicable for all three years):* Seminars(2) to be presented a in a week. Journal clubs (departmental and interdepartmental) to be conducted once in two weeks.
2. Departmental and interdepartmental discussions to be held once in a month.
3. Minimum 2 scientific papers should be presented.
4. Every candidate shall maintain a logbook to record his/hers wok or participation in all activities such as journal clubs, seminars, CDE programs etc. this work shall be scrutinized and certified by the head of the departmental and head of the institution and presented to the university every year
5. One scientific paper / publication should be submitted.

**Dissertations**

a) Synopsis
    1. Identifying and selection of topic
    2. Synopsis writing
    3. Presentation of synopsis to the department, institute review board and ethical committee.
    4. Submission to University (End of first 6 months)

b) Main Dissertation submission 6 Months before university examination.

c) Library dissertation/systematic review –submission to be made within 18 months of the course.

**Scheme of Exams (Institutional level)**

a) First Internal assessments at the end of first year.
b) Second Internal assessments at the end of second year.
c) Preliminary examination in the last 6 months.

**Assessment and monitoring**

a) Log books
b) Scheme of Exams (Institutional level)
    - ❖ First Internal assessments on basic sciences at the end of first year (Theory)
    - ❖ Second internal assessments at the end of second year (Theory and practical / clinical)
    - ❖ Preliminary examination in the last 6 months (Theory and practical / clinical and viva voce)

## SCHEME OF UNIVERSITY EXAMINATION

**A. Theory :**

**Part I : One paper of 100 marks of 3 hours duration at the end of 1st year of MDS Course.**

**Part II : Three papers (I, II, III) of 100 marks each of 3 hours duration at the end of 3rd year MDS Course (300 Marks)**

Written examination for Part I shall consist of 10 questions of 10 marks each (100 Marks). Part II shall consist of Paper I, II of 2 long essay questions of 25 marks each and 5 short essay questions of 10 marks each (Total 100 marks each) and Paper III shall consist 3 essay questions of 50 marks each out of which any two questions have to be answered (Total 100 marks ).

Distribution of topics for each paper will be follows:*

**Part I Paper I :** Applied Basic Sciences: Applied Anatomy, Physiology, & Biochemistry, Pathology, Microbiology, Pharmacology, Research Methodology and Bio-statistics.

**Part II Paper I :** Minor oral surgery & trauma

**Part II Paper II :** Maxillofacial surgery

**Part II Paper III:** Essay (Complete syllabus)

*The topics assigned to the different papers are generally evaluated under those sections. However a strict division of the subject may not be possible and some overlapping of topics is inevitable. Students should be prepared to answer overlapping topics.

**B. PRACTICAL / CLINICAL : 200 Marks**

1) Minor Oral Surgery: 100 Marks

Each candidate is required to perform the minor oral surgical procedure under LA. The minor surgical case may include removal of impacted lower third molar, cyst enucleation, any similar procedure where student can exhibit their professional skill.

2) a. One Long case 60 Marks
   b. Two Short case 40 Marks (20 Marks each)

**C. VIVA VOCE EXAMINATION : 100 Marks**

a) Viva voce 80 Marks
b) Dissertation / Pedagogy 20 Marks

**Total Marks (A + B + C) = 700 Marks**

# 3.4 CONSERVATIVE DENTISTRY AND ENDODONTICS

**GOAL**

To design a post graduate training programme to develop independent capability in a student, to learn to restore the tooth defects most conservatively, to achieve original form, function and esthetics, in harmony with adjacent soft and hard tissues. Treat pulpal and periapical pathologies to retain every permanent tooth.

**OBJECTIVES**

a) KNOWLEDGE

At the end of scheduled training, the student should be able to:

1. Describe aetiology, pathophysiology, periapical diagnosis and management of common restorative situations, endodontic situations that will include contemporary management of dental caries, management of trauma and pulpal pathoses including periodontal situations.
2. Demonstrate an understanding of basic sciences as relevant to conservative / restorative dentistry and endodontics.
3. Have a thorough knowledge of infection control measures in dental clinical environment and laboratories.
4. Identify risk factors at socio-economic, environmental and emotional levels individually and for the community at large.
5. Ability to recognize conditions that may require multi disciplinary approach and refer to appropriate specialist.
6. Impart the desire for self- study by attending basic and advanced courses, conferences, seminars, and workshops in the specialty of conservative dentistry and endodontics, dental materials and restorative dentistry.
7. Ability to teach and guide colleagues and other students.
8. Use information technology tools and carry out research both basic and clinical with the aim of publishing and presenting the same at a scientific platform.

b) SKILLS

1. To acquire history, perform relevant tests and interpret them to come to a reasonable diagnosis about the dental condition in general and conservative dentistry and endodontics in particular.
2. Manage acute pulpal and endo-periodontal conditions.

3. Perform all levels of restorative work and conservative esthetic treatment, surgical and non-surgical endodontics, as well as endo-periodontal surgical procedures as part of multidisciplinary approach.
4. Provide Basic Life Support (BLS) in emergency situations.

## COURSE CONTENT

### PART - I

**I. Applied Anatomy**

1. Development
   a. Face.
   b. Paranasal sinuses and the associated structures and their anomalies.
   c. Cranial and facial bones.
2. Anatomy
   a. TMJ anatomy and function.
   b. Brief consideration of structures and functions of brain.
   c. Muscles of face and neck including muscles of mastication, deglutition and speech and their functional anatomy.
   d. Arterial supply and venous drainage of head and neck.
   e. Brief consideration of cranial nerves (V, VII, IX and XI) and autonomic nervous system of head and neck.
   f. Salivary glands – development, anatomy, functions and clinical considerations.

**II. Applied Histology**

Skin, oral mucosa, bone, cartilage, blood vessels, lymphatics, nerves, muscles, tongue and its significance.

**III. Oral anatomy and Histology**

1. Detailed anatomy of deciduous and permanent teeth, general considerations in physiology of permanent dentition, form, function, alignment, contact, occlusion and its significance.
2. Enamel - Development and composition, physical characteristics, chemical properties, structure
3. Dentin - Development, physical and chemical properties, structure, type of dentin, innervation, age and functional changes.
4. Pulp - Development, histological structure, innervation, functions, regressive changes and clinical considerations.

5. Cementum - Composition, cementogenesis, structure, function and clinical considerations.
6. Periodontal ligament - Development, structure, function and clinical considerations.
7. Alveolar bone.
8. Age changes of teeth.
9. Eruption of teeth.

**IV. Applied Physiology**

1. Mastication, deglutition, digestion and assimilation, fluid and electrolyte balance.
2. Physiology of saliva - Composition, function, clinical significance.
3. Blood - composition, volume, function, blood groups, hemostasis, coagulation, blood transfusion, circulation, heart, pulse, blood pressure, shock.
4. Respiration - control, anoxia, hypoxia, asphyxia & artificial respiration.
5. Endocrinology - Pituitary, thyroid, parathyroid, adrenals including pregnancy and lactation.
6. Sympathetic and Para sympathetic nervous system: Physiology of pain, pain pathways, physiology of pulpal pain, Odontogenic and Non-odontogenic pain.
7. Biochemistry: Osmotic pressure, electrolytic dissociation, oxidation, reduction, carbohydrates, proteins, lipids, nucleoproteins, nucleic acid and their metabolism. Enzymes, vitamins and minerals, metabolism of inorganic elements, detoxification in the body, anti metabolites, chemistry of blood, lymph, urine and their clinical significance.

**V. General Pathology**

1. Inflammation, repair, degeneration, necrosis and gangrene.
2. Circulatory disturbances - Ischemia, hyperemia, edema, thrombosis, embolism, infarction.
3. Neoplasms - Classifications of tumors, characteristics of benign and malignant tumors and spread of tumors.
4. Blood dyscrasias.

**VI. Oral Pathology**

1. Developmental disturbances of oral and para oral structures, dental caries, regressive changes of teeth, pulp, periapical pathology, pulp reaction to dental caries and dental procedures.
2. Bacterial, viral and mycotic infections of the oral cavity.

**VII. General Microbiology**

1. Cross infection, infection control, sterilization and disinfection.
2. Immunology - antigen antibody reaction, allergy, hypersensitivity and anaphylaxis, auto immunity, grafts, viral hepatitis, HIV infections and AIDS.

**VIII. Oral Microbiology**

1. Oral flora and microorganisms associated with endodontic diseases. Pathogenesis, host defense, bacterial virulence factors and theory of focal infections.
2. Identification and isolation of microorganisms from infected root canals. Culture medium and culturing techniques (Aerobic and anaerobic interpretation and antibiotic sensitivity test).

**IX. Pharmacology**

1. Pharmacokinetics of drugs, drug addiction and tolerance, hypersensitivity reactions.
2. Local anesthesia - Agents and chemistry, pharmacological actions, fate and metabolism of anaesthetics, ideal properties, techniques and complications.
3. Immunosuppressant, sympathomimetic drugs, antibiotics and analgesics, antihistamines, corticosteroids, chemotherapeutic, haemostatic agents, anticoagulants, anti sialogogue, vitamins (A, B, C, D, E, K,), minerals (Iron), antiseptics, disinfectants, anti viral agents and drugs acting on CNS.
4. Drug resistance and interactions.

**X. Biostatistics**

1. Statistical principles, data collection, method of presentation, method of summarizing.
2. Methods of analysis - Sampling and sampling techniques, tests of significance. Experimental models, design and interpretation. Development of skills for preparing clear, concise and cogent scientific abstracts and publication.

**XI. Applied Research Methodology**

Experimental design, animal experimental protocol, principles in the development, execution and interpretation of methodologies, critical scientific appraisal of literature.

**XII. Applied Dental Materials**

1. Physical, mechanical properties and biocompatibility of dental materials.
2. Tarnish and corrosion.

3. Detailed study of various restorative materials and their recent advances : Dental amalgam, direct filling gold, casting alloys, inlay wax, die materials, investments, dental cements for restoration and pulp protection (luting agents, liners, bases), cavity varnishes, restorative resins, bonding agents and impression materials.
4. Casting procedures and defects
5. Dental ceramics and their recent advances.
6. Finishing and polishing materials.
7. Dental burs - design and mechanics of cutting & other modalities for tooth preparation.

**XIII. Conservative Dentistry**

1. Examination, diagnosis and treatment plan.
2. Infection control procedures and isolation.
3. Occlusion as related to conservative dentistry, contact, contour and its significance.
4. Dental caries – diagnosis.
5. Hand and rotary cutting instruments, speed ranges and hazards.
6. Separation of teeth and matrices.
7. Tooth preparation and restorative techniques for amalgam, composite (direct and indirect) and glass ionomer cements.
8. Impression procedures.
9. Cast metal restorations, indications, contraindications, tooth preparation for inlay, onlay and full crown restorations. Direct and indirect methods of fabrication, investment and casting procedures.
10. Indirect tooth colored restorations- ceramic inlays, onlays, veneers and crowns.

**XIV. Endodontics**

1. Rationale of endodontics.
2. Knowledge of internal anatomy of permanent teeth, anatomy of root apex and its implications in endodontic treatment.
3. Dentin and pulp complex.
4. Pulp and periapical pathology
5. Case selection and treatment planning
6. Various aids used for diagnosis.
7. Infection control.
8. Local anesthesia in endodontics.
9. Access cavity preparation - objectives and principles

10. Hand and rotary instruments and instrumentation.
11. Working length determination and cleaning and shaping of root canal system
12. Root canal irrigants
13. Obturation – materials and techniques.
14. Restoration of endodontically treated teeth

**Pre Clinical Work**

**To be completed in the first 6 months**

- **Wax carving –** Permanent teeth.
- **Manipulation of dental cements** – All cements in luting and restorative consistency
- **Making of impression and separable die** - Alginate and rubber base impressions.

**a. Extracted Permanent human teeth**

1. Dental Amalgam – Class II
   a. Conservative Preparation - 02 nos.
   b. Conventional Preparation - 02 nos.
   c. Pin retained amalgam on molar teeth - 02 nos.
2. **Cast restorations (Tooth preparation, wax pattern, removable dies, casting)**
   a. Inlays on Premolars and Molars (MO, DO, MOD) - 04 nos.
   b. Onlays on Molars - 02 nos.
   c. Full Crown Anterior, Posterior - 03 each.
   d. Post and core Anterior, posterior - 02 each.
3. Composite (Class II) - 03 nos.
4. Diasteam closures - 01 no.
5. Veneers on anterior teeth (indirect method) - 02 nos.
6. Demonstration & use of surgical operating microscope
7. Demonstration & use of lasers

- **Typhodont teeth**

1. Dental Amalgam – Class II
   a. Conservative Preparation - 03 nos.
   b. Conventional Preparation - 03 nos.
2. Cast restorations (Tooth Preparation, Wax Pattern, Casting)
   a. Inlays on Premolars and Molars (MO, DO, MOD) - 06 nos.

b. Onlays on Molars - 02 nos.
c. Full Crown – Anterior, Posterior - 02 each.

**Endodontics**

1. Tooth sectioning of all maxillary and mandibular permanent teeth
2. Full mouth IOPA & bite wing radiographs of patient.
3. Rubber dam application on phantom head.
4. Root canal therapy of maxillary and mandibular permanent teeth - 12nos.
   a. Access cavity preparation
   b. Cleaning and Shaping techniques ( hand and rotary ) - 03 each
      - ❖ Conventional preparation
      - ❖ Step back
      - ❖ Crown down
   c. Obturation - 03 each.
      - ❖ Lateral condensation
      - ❖ Vertical condensation
      - ❖ Hybrid technique

**CLINICAL WORK (NEXT 6 MONTHS)**

1. Dental amalgam restorations -10 nos.
2. Composite restorations [anterior and posterior] -20 nos.
3. Glass ionomer cement restorations -20 nos.
4. Root canal treatment for anterior teeth -20 nos.
5. Ceramic crowns -05 nos.

**Approach of**

1. Seminars and journal clubs – 5 by each student.
2. Submission of synopsis at the end of first 6 months
3. Commencement of library dissertation work
4. Internal assessment - theory and clinicals.

**This is basic minimum requirement, however a student is expected to learn and know other than the above mentioned topics also.**

## PART - II

**I. Conservative Dentistry**

1. Dental caries- epidemiology, recent concept of etiological factors, pathophysiology, Histopathology, diagnosis, caries activity tests, prevention

of dental caries and management - recent methods.

2. Development of rotary equipment - recent developments
3. Tissue management
4. Direct gold restorations.
5. Recent advances in restorative materials and techniques.
6. Failures of restorations and their management .
7. Management of non-carious lesions.
8. Minimal intervention dentistry.
9. Recent advances in restoration of endodontically treated teeth and grossly mutilated teeth.
10. Hypersensitivity, theories, causes and management.

**II. Endodontics**

1. Diagnostic procedure - recent advances and various aids.
2. Endodontic instruments and instrumentation -detailed description and recent developments.
3. Recent developments in techniques of working length determination / cleaning and shaping of root canal system.
4. Root canal irrigants and intra canal medicaments.
5. Recent advances in obturation.
6. Endodontic microbiology.
7. Traumatic injuries and management - endodontic treatment for young permanent teeth.
8. Pediatric endodontics - treatment of immature apex.
9. Endodontic surgeries.
10. Drugs and chemicals used in endodontics.
11. Endodontic emergencies and management.
12. Biologic response of pulp to various restorative materials and operative procedures.
13. Endodontic radiology- digital technology in endodontic practice.
14. Procedural errors in endodontics and their management.
15. Endodontic failures and retreatment.

16. Endo-perio interrelationship, endo-perio lesions and management.
17. Single visit endodontics, current concepts and controversies.

**CLINICAL WORK**

| | |
|---|---|
| 1. Case discussion | -5 nos. |
| 2. Cast gold inlay | -5 nos. |
| 3. Composite direct restorations | -15 nos. |
| 4. Composite inlay + veneers (direct and indirect) | -5 nos. |
| 5. Bleaching - Vital teeth | -5 nos. |
| Non vital teeth | -5 nos. |
| 6. Ceramic jacket crowns | -10 nos. |
| 7. Full crowns for posterior teeth | -15 nos. |
| 8. Post and core for anterior teeth and posterior teeth | -10 nos. |
| 9. Other special types of work such as splinting, reattachment of fractured teeth. | -05 nos. |
| 10. Root canal treatment of Anterior teeth | -20 nos. |
| 11. Root canal treatment of Posterior teeth | -30 nos. |
| 12. Endo surgery – assisting and observation | -05 nos. |
| 13. Management of Endo - Perio problems | -05 nos. |

**Approach :**

1. Under graduate teaching program 02 lectures
2. Seminars & Journal club - 5 each
3. Dissertation work
4. Scientific paper and poster presentation at conferences and clinical meeting
5. Library dissertation submission
6. II Internal assessment - theory and clinical

**This is basic minimum requirement, however a student is expected to learn and know other than the above mentioned topics also.**

## PART - III

**I. Conservative dentistry**

1. CAD-CAM & CAD-CIM in restorative dentistry
2. Dental imaging and its applications in restorative dentistry (clinical photography)
3. Principles of esthetics
   a. Color
   b. Facial analysis

c. Smile design
d. Principles of esthetic integration
e. Treatment planning in esthetic dentistry

**II. Endodontics**

1. Multidisciplinary approach to endodontic situations.
2. Resorption and its management.
3. Endodontic surgeries, recent developments in techniques and devices, endoosseous endodontic implants.
4. Restoration of endodontically treated teeth & recent advances.
5. Geriatric endodontics
6. Microscopes in endodontics.
7. Lasers in endodontics.

**Clinical work**

| | |
|---|---|
| 1. Cast gold inlay- Onlay, cuspal restoration | 10 nos. |
| 2. Post and core | 20 nos. |
| 3. Molar endodontics | 50 nos. |
| 4. Endodontic retreatment | 10 nos. |
| 5. Endodontic surgeries | 05 nos. |
| 6. All other types of surgeries including crown lengthening, perioesthetics, hemisection, splinting & replantation. | 05 nos. |

**Approach :**

1. Dissertation work to be submitted 6 months before final examination.
2. Seminars & Journal Clubs 5 each.
3. Conducting undergraduates lectures 02 nos.
4. Preliminary exams- Theory , clinical and viva voce.

**This is basic minimum requirement, however a student is expected to learn and know other than the above mentioned topics also.**

**Dissertation**

1. Synopsis
   a. Identifying and selection of topic
   b. Synopsis writing
   c. Presentation of synopsis to the department, institute review board and ethical committee.

d. Submission to University (End of first 6 months).

2. Library Dissertation : Completion and submission by 18 months of commencement of post graduate programme.
3. Main Dissertation : Submission 6 months before the university examination.

**Scheme of Exams (Institutional Level)**

a. First internal assessment at the end of first year.
b. Second internal assessment at the end of second year.
c. Prelim exam in the last six months.

**Assessment and monitoring**

1. Log Books.
2. Scheme of exams (Institutional Level)
   a. First internal assessment on basic sciences at the end of first year(Theory).
   b. Second internal assessment at the end of second year (Theory and practical / clinical).
   c. Preliminary examination in the last six months (Theory and practical / clinical and viva voce).

**Academic Requirements**

| | | |
|---|---|---|
| 1) | Scientific Poster Presentations | 2 |
| 2) | Scientific Paper presentations | 2 |
| 3) | Scientific paper Publications/Submission | 1 |

## SCHEME OF UNIVERSITY EXAMINATION

**A. Theory :**

**Part I : One paper of 100 marks of 3 hours duration at the end of 1st year of MDS Course.**

**Part II : Three papers (I, II, III) of 100 marks each of 3 hours duration at the end of 3rd year MDS Course (300 Marks)**

Written examination for Part I shall consist of 10 questions of 10 marks each (100 Marks). Part II shall consist of Paper I, II of 2 long essay questions of 25 marks each and 5 short essay questions of 10 marks each (Total 100 marks each) and Paper III shall consist 3 essay questions of 50 marks each out of which of any two questions have to be answered (Total 100 marks ).

Distribution of topics for each paper will be follows:*

**Part I Paper I :** Applied Basic Sciences: Applied Anatomy, Physiology, & Biochemistry, Pathology, Microbiology, Pharmacology, Research Methodology and Bio-statistics.

**Part II Paper I :** Conservative Dentistry.

**Part II Paper II :** Endodontics.

**Part II Paper III:** Essay.

*The topics assigned to the different papers are generally evaluated under those sections. However a strict division of the subject may not be possible and some overlapping of topics is inevitable. Students should be prepared to answer overlapping topics.

**B. PRACTICAL / CLINICALS : 200 Marks**

The duration of Clinical and Viva Voce examination will be 2 days for a batch of six students. If the *number* of candidates exceeds 6, the programme can be extended to 3rd day.

1. Clinical Exercise I - Inlay Exercise : 80 Marks
   a. Tooth Preparation - 30 marks
   b. Direct Wax Pattern - 20 marks
   c. Retraction and Elastomeric Impression - 10 marks
   d. Casting - 10 marks
   e. Cementation - 10 marks

2. Clinical Exercise II - Class IV Composite Restoration : 60 Marks
   a. Tooth preparation - 20 Marks
   b. Matricing - 10 Marks
   c. Restoration (Shade selection, contact-contour and finishing and polishing) - 30 Marks

3. Clinical Exercise III - Molar Endodontics : 60 Marks
   a. Local Anaesthesia and Rubber Dam application - 10 Marks
   b. Access Cavity - 15 Marks
   c. Working length determination - 20 Marks
   d. Master cone selection - 15 Marks

## C. VIVA VOCE EXAMINATION : 100 MARKS

### 1. Viva-Voce : 80 Marks

All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach, expression, interpretation of data and communication skills. It includes all components of course contents.

### 2. Dissertation / Pedagogy Exercise: 20 Marks

Either a topic will be given to each candidate at the beginning of the clinical examination, which he/she will present for 8-10 minutes or present and discuss the dissertation.

**TOTAL MARKS (A + B + C = 700)**

# 3.5 ORTHODONTICS AND DENTOFACIAL ORTHOPAEDICS

## GOALS

1. The program outlined, addresses both the knowledge needed in Orthodontics and allied medical specialities in its scope. A minimum of three years of formal training through a graded system of education as specifies, will equip the trainee with skill and knowledge at its completion to be able to practice basic orthodontics and have the ability to intelligently pursue further apprenticeship towards advanced orthodontics.
2. Develop an attitude to adopt ethical principles in all aspects of orthodontic practice.
3. Professional honesty and integrity are to be fostered.
4. Treatment care is to be delivered irrespective of the social Status, cast, creed or colleagues.
5. Willingness to share the knowledge and clinical experience with professional colleagues.
6. Willingness to adopt, after a critical assessment, new methods and techniques of orthodontic management developed from time to time based on scientific research, which are in the best interest of the patient.
7. Respect patients rights and privileges, including patients right to information and right to seek a second opinion.
8. Develop attitude to seek opinion from allied medical and dental specialists as and when required.

## OBJECTIVES

The training programme in Orthodontics is to structure and achieve the following objectives

## KNOWLEDGE

1. The dynamic interaction of biologic processes and mechanical forces acting on the stomatognathic system during orthodontic treatment
2. The etiology, pathophysiology, diagnosis and treatment planning of various common orthodontic problems.
3. Various treatment modalities in Orthodontics; preventive interceptive and corrective.
4. Basic sciences relevant to the practice of Orthodontics.
5. Interaction of social, cultural, economic, genetic and environmental factors and their relevance to management of oro - facial deformities.

6. Factors affecting the long-range stability of orthodontic correction and their management.
7. Personal hygiene and infection control, prevention of cross infection and safe disposal of hospital waste, keeping in view the high prevalence of Hepatitis and HIV and other highly contagious diseases.

SKILLS

1. To obtain proper clinical history, methodical examination of the patient, perform essential diagnostic procedures, and interpret them and arrive at a reasonable diagnosis about the Dentofacial deformities.
2. To be competent to fabricate and manage the most appropriate - intra or extra oral, removable or fixed, mechanical or functional, and active or passive appliances - for the treatment of any orthodontic problem to be treated singly or as a part of multidisciplinary treatment of orofacial deformities.
3. Develop adequate communication skills particularly with the patients giving them the various options available to manage a particular Dentofacial problem and to obtain a true informed consent from them for the most appropriate treatment available at that point of time.
4. Develop the ability to communicate with professional colleagues, in Orthodontics or other specialities through various media like correspondence, Internet, e-video, conference, etc. To render the best possible treatment.

## COURSE CONTENT

**Spread of the Curriculum**

Six months teaching of basic subjects including completion of pre - clinical exercises. Rest 2 1/2 years will cover all the relevant topics in orthodontics, clinical training involving treatment of patients and submission of dissertation.

**I. Applied Anatomy:**

1. Prenatal growth of head
   Stages of embryonic development of head, face & teeth.
   **Postnatal growth of head: Bones of skull, the oral cavity, development of chin, the hyoid bone, general growth of head & face .**
2. Bone growth
   Development of bone, composition of bone, units of bone structure, schedule of Ossification, mechanical properties of bone, roentgenographic appearance of bone.
3. Assessment of growth and development

Growth prediction, growth spurts, the concept of normality and growth increments of growth, differential growth, gradient of growth, methods of gathering growth data. Theories of growth and recent advances. Factors affecting physical growth.

4. Muscles of mastication

   Development of muscles, muscle change during growth, muscle function and facial development, muscle function and malocclusion.

5. Development of dentition and occlusion

   Dental development periods, sequence of tooth eruption, chronology of teeth formation, periods of occlusal development & pattern of occlusion.

6. Assessment of skeletal age

   The carpal bones, carpal x - rays, cervical vertebrae.

**II. Applied Physiology**

1. Endocrinology and its disorders
   Growth hormone, thyroid hormone, parathyroid hormone, ACTH, pituitary gland hormones,
2. Calcium and its metabolism
3. Nutrition-metabolism and disorders:
   Proteins, Carbohydrates, Fats, Vitamins And Minerals.
4. Muscle physiology.
5. Bleeding disorders.

**III. Dental materials**

1. Gypsum products: dental plaster, dental stone and their properties, setting reaction etc.
2. Impression materials: impression materials in general and alginate impression material in particular.
3. Acrylics: chemistry, composition physical properties
4. Composites: composition types, properties setting reaction
5. Banding and bonding cements: Zn (P04)2, zinc silicophosphate, Zinc polycarboxylate, resin cements and glass lonomer cements
6. Wrought metal alloys: deformation, strain hardening, annealing, recovery, recrystallization, grain growth, properties of metal alloys
7. Orthodontic arch wires: stainless steel, gold, wrought cobalt chromium nickel alloys, alpha & beta titanium alloys
8. Elastics: Latex and non-latex elastics.
9. Applied physics, Bioengineering and metallurgy. Specification and testing methods

used for materials used in Orthodontics. Survey of all contemporary literature and Recent advances in above - mentioned materials.

**IV. Genetics**

1. Cell structure, DNA, RNA, protein synthesis, cell division
2. Chromosomal abnormalities
3. Principles of orofacial genetics, Genetics in malocclusion
4. Molecular basis of genetics
5. Genetic studies related to malocclusion
6. Recent advances in genetics related to malocclusion, Genetic counseling
7. Bioethics and relationship to Orthodontic management of patients.

**V. Physical Anthropology**

1. Evolutionary development of dentition
2. Evolutionary development of jaws.

**VI. Pathology**

1. Inflammation
2. Necrosis

**VII. Biostatistics**

1. Statistical principles, Data Collection, Method of presentation, Method of summarizing.
2. Methods of analysis - Sampling and Sampling techniques, tests of significance. Experimental models, design and interpretation. Development of skills for preparing clear concise and cognent scientific abstracts and publication.

**VIII. Applied research methodology in orthodontics**

Experimental design Animal experimental protocol, Principles in the development, execution and interpretation of methodologies in Orthodontics, Critical Scientific appraisal of literature.

**IX. Applied pharmacology**

Anti plaque agents, topical fluorides, analgesics prostaglandin inhibiting factors.
Microbiology
Management of Medical Emergencies.

**X. Orthodontic history**

Historical perspective, Evolution of orthodontic appliances, history of Orthodontic peers, history of Orthodontics in India

**XI. Concepts of occlusion and esthetics**

Structure and function of all anatomic components of occlusion, Mechanics of articulation, Recording of masticatory function, Diagnosis of Occlusal dysfunction, Relationship of TMJ anatomy and pathology and related neuromuscular physiology.

**XII. Etiology and Classification of malocclusion**

A comprehensive review of the local and systemic factors in the causation of malocclusion

Various classifications of malocclusion

**XIII. Dentofacial Anomalies**

Anatomical, physiological and pathological characteristics of major groups of developmental defects of the orofacial structures.

**XIV. Child and Adult Psychology**

Stages of child development. Theories of psychological development. Management of child in orthodontic treatment. Management of physically challenged child.

Motivation and Psychological problems related to malocclusion / orthodontics,

Adolescent psychology, Behavioral psychology and communication

**XV. Diagnostic procedures and treatment planning in orthodontics**

**Emphasis on the process of data gathering, synthesis and translating it into a treatment plan.**

Problem cases - analysis of cases and its management. Adult cases, physically and mentally challenged cases and their special problems. Critique of treated cases.

Cephalometrics instrumentation, image processing tracing and analysis.

Advanced cephalometric techniques: Comprehensive review of literature, Video imaging principles and application.

**XVI. Practice management in Orthodontics**

Economics and dynamics of solo and group practices.

Personal management.

Materials management.

Public relations.

Professional relationship.

Dental ethics and jurisprudence.

Office sterilization procedures.
Community based Orthodontics.

**XVII. Clinical Orthodontics Myofunctional Orthodontics:**

Basic principles, Contemporary appliances -their design and manipulation. Case selection and evaluation of the treatment results. Review of the current literature.

Dentofacial Orthopedics Principles & Biomechanics. Appliance design and manipulation. Review of contemporary literature.

**Cleft lip and palate rehabilitation:**

Diagnosis and treatment planning Mechanotherapy, Special growth problems of cleft cases. Speech physiology, pathology and elements of therapy as applied to orthodontics. Team rehabilitative procedures.

**Biology of tooth movement:**

Principles of tooth movement - Review of contemporary literature. Applied histophysiology of bone, periodontal ligament Molecular and ultra cellular consideration in tooth movement.

**Orthodontic / Orthognathic surgery:**

Orthodontist's role in conjoint diagnosis and treatment planning, Pre and post-surgical Orthodontics, Participation in actual clinical cases, progress evaluation and post retention study. Review of current literature Ortho / interdisciplinary inter relationship.

Principles of interdisciplinary patient treatment Common problems and their management

Basic principles of Mechanotherapy Includes Removable appliances and fixed appliances Design Construction Fabrication Management.

**Review of current literature on treatment methods and results**
Applied preventive aspects in Orthodontics: Caries and periodontal disease prevention, Oral hygiene measures.

**Clinical procedures Interceptive Orthodontics Principles**

Growth guidance

Diagnosis and treatment planning Therapy emphasis on:

a. Dento-facial problems.

b. Tooth material discrepancies.

c. Minor surgery for Orthodontics.

d. Retention and relapse
Mechanotherapy -special reference to stability of results with various procedures. Post retention analysis Review of contemporary literature.

**XVIII. Recent advances**

Use of implants - TAD's
Lasers.
Application of F.E.M.
Distraction Osteogenesis.
Application of CAD/CAM
3D Printing

**Pre - Clinical Exercises**

1. General Wire bending exercises to develop the manual dexterity.
2. Clasps, Bows and springs used in the removable appliances.
3. Soldering and welding exercises.
4. Fabrication of removable habit breaking, mechanical and functional appliances, also all types of space maintainers and space regainers.
5. Bonwill Hawley Ideal arch preparation.
6. Construction of orthodontic models trimmed and polished preferably as per specifications of Tweed or American Board of Orthodontics.
7. Cephalometric tracing, various analysis & superimposition methods
   a. Training shall be imparted in one basic technique i.e. Standard Edgewise / Begg technique or its derivative/ Straight wire etc., with adequate exposure to latest techniques.
   b. Typodont exercise
      - ❖ Band making
      - ❖ Bracket positioning and placement
      - ❖ Different stages in treatment appropriate to technique taught
8. Fixed appliance typodont exercises.
9. Clinical photography
10. Computerized imaging - Use of Surgical Simulation Software DOLPHIN
11. Preparation of surgical splints, and splints for TMJ problems.

12. Handling of equipments like vacuum forming appliances and hydro solder etc.

**This is basic minimum requirement, however a student is expected to learn and know other than the above mentioned topics also.**

## PART - I
## Training Schedule

I. Basic Pre-Clinical Exercise: First 6 Months

### 1. Non-appliance exercises

All the following exercises should be done with 0.7 or 0.8mm wire

| Sl. No. | Exercise | No. |
|---|---|---|
| 1. | **Straightening of 6" & 8" long wire** | 1 each |
| 2. | Square | 1 |
| 3. | Rectangle | 1 |
| 4. | Triangle of 2" side | 1 |
| 5. | Circle of 2" radius | 1 |
| 6. | Bending of 5U's | 1 |
| 7. | Bending of 5V's | 1 |

### 2. Clasps

| Sl. No. | Exercise | No. |
|---|---|---|
| 1. | ¾ clasps | 2 |
| 2. | Full clasps | 2 |
| 3. | Triangular clasps | 2 |
| 4. | Adam's clasp - upper molar | 2 |
| 5. | Adam's clasp – lower molar | 2 |
| 6. | Adam's clasp – pre - molar | 2 |
| 7. | Adam's clasp–incisor | 2 |
| 8. | Modification of Adam's - With Helix | 2 |
| 9. | Modification of Adam's - With distal extension | 2 |
| 10. | Modification of Adam's - With soldered tube | 2 |
| 11. | Duyzing Clasps on Molars | 2 |
| 12. | Southend Clasp | 1 |

### 3. Labial Bows

| Sl. No. | Exercise | No. |
|---|---|---|
| 1. | Short labial bow (upper & lower) | 1 |
| 2. | Long labial bow (upper & lower) | 1 |
| 3. | Robert's retractor | 1 |
| 4. | High labial bow - with apron spring's | 1 |
| 5. | Miller's labial bow | 1 |
| 6. | Reverse loop labial bow | 1 |
| 7. | Retention labial bow soldered to Adam's clasp | 1 |
| 8. | Retention labial bow extending distal to second molar | 1 |
| 9. | Fitted labial bow | 1 |
| 10. | Split high labial bow | 1 |

### 4. Springs

| Sl. No. | Exercise | No. |
|---|---|---|
| 1. | Finger spring-mesial movement | 2 |
| 2. | Finger spring-distal movement | 2 |
| 3. | Double cantilever spring | 2 |
| 4. | Flapper spring | 2 |
| 5. | Coffin spring | 2 |
| 6. | T spring | 2 |

### 5. Canine Retractors

| Sl. No. | Exercise | No. |
|---|---|---|
| 1. | U Loop Canine Retractor | 2 pairs |
| 2. | Helical Canine Retractor | 2 pairs |
| 3. | Palatal Canine Retractor | 2 pairs |
| 4. | Self -Supporting Canine Retractor | 2 pairs |
| 5. | Self -Supporting Canine Retractor | 2 pairs |

**6. Appliances : 1 each**

1. Hawley's retention appliance with anterior bite plane
2. Upper Hawley's appliance with posterior bite plane
3. Upper expansion appliance with coffin spring
4. Upper expansion appliance with expansion screw
5. Habit breaking appliance with tongue crib
6. Oral screen and double oral screen
7. Lip bumper
8. Splint for Bruxism
9. Catalan's appliance
10. Activator
11. Bionator
12. Frankel-FR II, III appliance
13. Twin block
14. Lingual arch
15. Trans Palatal Arch
16. Quad helix
17. Bihelix
18. Utility arches
19. Pendulum appliance

**7. Soldering exercises : 1 each**

1. Star
2. Comb
3. Christmas tree
4. Soldering buccal tube on molar bands

**8. Welding exercises**

1. Pinching and welding of molar, premolar, canine and Incisor bands
2. Welding of buccal tubes and brackets on molar and incisor bands

**9. Impression of upper and lower arches in alginate**

**10. Study model preparation**

**11. Model analysis** : All the mixed dentition & permanent dentition analyses to be done.

**12. Cephalometrics**

1. Lateral cephalogram to be traced in five different colors and super- imposed to see the accuracy of tracing.
2. Steiner's analysis
3. Down's analysis
4. Tweed analysis
5. Rickett's analysis
6. Burstone analysis
7. Rakosi's analysis
8. Mc Namara analysis
9. Bjork analysis
10. COGS's analysis
11. Quadrilateral analysis
12. Soft tissue analysis - Holdaway and Burstone

**13. Basics of Clinical Photography including Digital Photography**

**14. Light wire bending exercises for the Begg's technique**

1. Wire bending technique on 0.016' wire circle "Z" Omega
2. Bonwill-Hawley diagram
3. Making a standard arch wire
4. Inter maxillary hooks- Boot leg and Inter Maxillary type
5. Upper and Lower arch wire
6. Bending a double back arch wire
7. Bayonet bends (vertical and horizontal offsets)
8. Stage-III arch wire
9. Torquing auxiliary (upper)
10. Reverse Torquing (lower)
11. Uprighting spring

**15. Typodont exercises: Begg's or Pre Adjusted Edgewise Appliance method**

1. Teeth setting in Class-II division I malocclusion with maxillary anterior Proclination and mandibular anterior crowding
2. Band pinching, welding brackets and buccal tubes to the bands
3. Stage - I
4. Stage - II

5. Pre Stage - III
6. Stage - III

**16. Different Loop Designs**

**CLINICAL WORK:**

Once the basic pre-clinical work is completed the students takes up clinical cases and the clinical training is for the two and half years.

Each postgraduate student should treat a minimum of 50 new cases and 20 transferred cases.

The type of cases can be as follows:

1. Removable active appliances.
2. Class-I malocclusion with crowding.
3. Class-I malocclusion with bi-maxillary protrusion.
4. Class-II division-1.
5. Class-II division-2.
6. Class-III (Orthopedic, Surgical, Orthodontic cases).
7. Inter - disciplinary cases.
8. Removable functional appliance cases like activator, Bionator, functional regulator, twin block and new developments.
9. Fixed functional appliances - Herbst appliance & jasper jumper etc.
10. Dento-facial orthopedic appliances like head gears, rapid maxillary expansion NiTi expander etc.,
11. Appliance for arch development such as molar distalization.
12. Fixed mechano therapy cases (Begg's, PEA, Tip edge, Edgewise).
13. Retention procedures of above treated cases.
14. Sterilization in orthodontics during pandemic time

**This is basic minimum requirement, however a student is expected to learn and know other than the above mentioned topics also.**

**OTHER ASSIGNMENTS**

**PART - I**

1. A minimum of five seminars & journal clubs should be presented by each student each year.
2. Protocol for dissertation to be submitted on or before the end of 6 months from the date of admission.
3. Under graduate classes: 1-2 classes should be conducted by each post-graduate student.

4. should participate in Inter-departmental case conferences.
5. Case discussions 2 per week.
6. Field visits: To attend dental camps and to educate the community.
7. Basic subjects classes to be attended.
8. Internal assessment or Term paper.

**First 6 months basic preclinical exercises.**
**Finalization of library dissertation topic.**
**Finalization and submission of main dissertation synopsis.**

**PART - II**

The clinical cases taken up should be followed under the guidance. More case discussions and cases to be taken up. Other routine work as follows.

1. A minimum of five seminars & journal clubs should be presented by each student each year
2. Under graduate classes: 1 theory class should be conducted by each post-graduate student.
3. should participate in Inter-departmental case conferences
4. Case discussions 2 per week.
5. Field visits: To attend dental camps and to educate the community.
6. Submission of library dissertation by 18 months after commencement of post graduate programme.
7. On getting the approval from the university dissertation work to be started.

**PART - III**

The clinical cases taken up should be followed under the guidance. More cases discussions and cases to be taken up. Other routine work as follows:

1. A minimum of five seminars & journal clubs should be presented by each student each year.
2. Under graduate classes: 1 theory class should be conducted by each post-graduate student.
3. Should participate in Inter-departmental case conferences
4. Case discussions 2 per week.
5. Field visits: To attend dental camps and to educate the community.
6. The completed dissertation should be submitted six months before the final examination.
7. Finishing and presenting the cases taken up.

8. Preparation of finished cases and presenting the cases (to be presented for the examination).
9. Preliminary examination.

**Dissertations**

a) Synopsis

1. Identifying and selection of topic.
2. Synopsis writing.
3. Presentation of synopsis to the department, institute review board and ethical committee.
4. Submission to university (End of first 6 months after commencement of post graduate programme).

b) Library Dissertation: Submission by 18 months after commencement of post graduate programme.

c) Main Dissertation submission 6 months before university examination.

**Assessment and monitoring**

1. Maintaining log books.
2. Scheme of exams (Institutional level).
   a. First Internal assessment on basic sciences at the end of first year (Theory).
   b. Second internal assessment at the end of second year (Theory and practical / Clinical).
   c. Preliminary exam in the last six months (Theory and practical / clinical and viva voce).

## SCHEME OF UNIVERSITY EXAMINATION

**A. Theory:** Part-I: Basic Sciences Paper - **100 Marks**

Part-II: Paper-I, Paper-II & Paper-III - **300 Marks**

(100 Marks for each Paper)

Written examination shall consist of Basic Sciences Paper (Part-I) of three hours duration and should be conducted at the end of First year of MDS course. Part-II Examination will be conducted at the end of Third year of MDS course. Part-II Examination will consist of Paper-I, Paper-II & Paper-III, each of three hours duration. Paper-I & Paper-II shall consist of two long answer questions carrying 25 marks each and five questions carrying 10 marks each. Paper-III will be on Essays. In Paper-III three Questions will be given and student has to answer any two questions. Each question carries 50 marks.

Questions on recent advances may be asked in any or all the papers. Distribution of topics for each paper will be as follows:

**PART-I:** Applied Basic Sciences: Applied anatomy, Physiology, Dental Materials, Genetics, Pathology, Physical Anthropology, Applied Research methodology, Bio-Statistics and Applied Pharmacology.

**PART-II** : **Paper I:** Orthodontic history, Concepts of occlusion and esthetics, Child and Adult Psychology, Etiology and classification of maloclusion, Dentofacial Anomalies, Diagnostic procedures and treatment planning in Orthodontics, Practice management in Orthodontics

**Paper II : Paper III :** Clinical Orthodontics Essays (descriptive and analyzing type questions)

** The topics assigned to the different papers are generally evaluated under those sections. However a strict division of the subject may not be possible and some overlapping of topics is inevitable. Students should be prepared to answer overlapping topics*.

**B. Practical / Clinical Examination: 200 Marks**

**Exercise No: 1 50 Marks**

**Functional Case:**

Selection of case for functional appliance and recording of construction bite.

Fabrication and delivery of the appliance the next day.

**Exercise No: 2: 50 Marks**

1. III stage with auxiliary springs/Wire bending of any stage of fixed orthodontics

(OR)

2. Bonding of SWA brackets and construction of suitable arch wire.

**Exercise No. 3 75 Marks**

**Display of records of the treated cases**

**(Minimum of 5 cases)**

**Exercise No: 4** **25 Marks**

**Long case discussions**

**Time allotted for each exercise:**

| No | Exercise | Marks allotted | Approximate Time |
|---|---|---|---|
| 1 | Functional appliance | 50 | 1 hour (each day) |
| 2 | III stage mechanics / Bonding and arch wire fabrication | 50 | 1 hr 30 min |
| 3 | Display of case records (a minimum of 5 cases to be presented along with all the patients and records) | 75 | 1 hour |
| 4 | Long cases | 25 | 2 hours |

**Note: The complete records of all the cases should be displayed (including transferred cases)**

**C. VIVA VOCE : 100 MARKS**

**i. Viva-Voce examination: 80 Marks**

All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach, expression, interpretation of data and communication skills. It includes all components of course contents. It includes presentation and discussion on dissertation also.

**ii. Pedagogy Exercise: 20 Marks**

A topic / thesis be given to each candidate in the beginning of clinical examination. He/she is asked to make a presentation on the topic for 8-10 minutes.

**TOTAL MARKS (A + B + C = 700 MARKS)**

# 3.6 ORAL PATHOLOGY AND MICROBIOLOGY

**GOAL**

To make postgraduate training programme effective so as to develop independent capabilities in a student, to learn and apply the knowledge of Oral Pathology and Oral Microbiology in identifying the problems and diagnosis so as to conduct research with sound scientific knowledge and skills.

**OBJECTIVES**

**a) KNOWLEDGE**

1. To train a graduate dental surgeon so as to ensure higher competence in both pathology and microbiology dealing with the nature of oral diseases, their causes, processes and effects.
2. He/she is expected to perform routine histopathological evaluation of specimen relating to oral and peri-oral tissues, to carry out routine diagnostic procedures including hematological, cytological, microbiological, immunological and ultra structural investigations.
3. He/she is expected to have an understanding of current research methodology, collection and interpretation of data, ability to carry out research projects on clinical and or epidemiological aspects, a working knowledge on current database, automate data retrieval systems, referencing and skill in writing scientific papers.
4. He/she is expected to present scientific data pertaining to the field; in conferences both as poster and verbal presentations and to take part in group discussions.
5. He/she is expected to deal with the correct professional handling, examination, interpretation and presentation of dental and oral evidences, which may come before the legal authorities.
6. Since oral cancer continues to occupy a central stage of oral pathology, he/she should be capable of clinically correlating oral pre-cancer with emphasis on early diagnosis using research-based information.

**b) SKILLS**

1. To identify problems and answer the same through in-depth research so as to inculcate the concept of answering any question.
2. To develop confidence in a postgraduate student to handle and to manage academics and research responsibilities in future.
3. To help an individual to develop not only academically but also socially, spiritually and holistically.

**PART - I**

**1. Biostatistics and Research Methodology:**

- Basic principles of biostatistics and study as applied to dentistry and research
- Collection/ organization of data/ measurement of scales / presentation of data and analysis
- Measures of central tendency
- Measures of variability
- Sampling and planning of health survey
- Probability, normal distribution & indicative statistics
- Estimating population values
- Tests of significance (parametric/non-parametric qualitative methods)
- Analysis of variance
- Association, correlation and regression
- Research methodology - Research protocol.

**Approach:** Didactic lectures on Bio-statistics and discussion on research methodology by eminent researchers.

**2. Applied Gross Anatomy of head and neck, histology and genetics :**

- Temporo-mandibular joint and its applied aspect
- Trigeminal nerve and facial nerve and its applied aspect
- Muscles of mastication and its applied aspect

- Tongue and its applied aspect
- Salivary glands and its applied aspect
- Nerve supply, blood supply, lymphatic drainage & venous drainage of oro-dental tissues
- Development of face, palate, mandible, maxilla, tongue and its applied aspects of the same
- Development of teeth & dental tissues and developmental defects of oral and maxilla- facial region & abnormalities of teeth and its applied aspect
- Maxillary sinus and its applied aspect
- Jaw muscles and facial muscles and its applied aspect
- Introduction to genetics
- Modes of inheritance
- Chromosomal anomalies of oral tissues & single gene disorders

**Approach :**

- Topics to be covered as didactic lectures (Seminars).
- Postings in the Department of Anatomy for dissection of Head, Face and Neck

**3. Physiology (General & Oral) :**

- Saliva and its applied aspects
- Pain and its applied aspects
- Mastication and its applied aspects
- Taste and its applied aspects
- Deglutition
- Wound healing and its applied aspects
- Vitamins ( influence on growth, development and structure of oral soft and hard tissues & paraoral tissues)
- Calcium metabolism

- Theories of mineralization
- Tooth eruption and shedding
- Blood and its constituents and its applied aspects
- Hormones (influence on growth, development and structure of oral soft and hard tissues & paraoral tissues)

**Approach:**

- To be covered as didactic Lectures (Seminars)

**4. Cell Biology :**

- Cell structure and function (ultra structural & molecular aspects)
- Intercellular junctions
- Cell cycle and division
- Cell cycle regulators
- Cell–cell & cell-extracellular matrix interactions
- Detailed molecular aspects of DNA,RNA and intracellular organelles, transcription and translation and molecular biology techniques

**Approach:**

- To be covered as didactic Lectures (Seminars)

**5. General Histology :**

- Light & electron microscopy considerations of epithelial tissues and glands, bone.
- Light & electron microscopy considerations of hemopoetic system, lymphatic system, muscle, neural tissue, endocrinal system (thyroid, pituitary, parathyroid)

**Approach:**

- To be covered as didactic Lectures (Seminars)
- Postings in the Department of Anatomy & Histology for slide discussion
- Record book to be maintained

**6. Biochemistry :**

- Chemistry of carbohydrates, lipids and proteins
- Methods of identification and purification
- Metabolism of carbohydrates, lipids and proteins
- Biological oxidation
- Various techniques-cell fractionation and ultra filtration, centrifugation, electrophoresis, spectrophotometry and radioactive techniques

**Approach:**

- To be covered as didactic Lectures (Seminars)
- Postings in the Department of Biochemistry to familiarize with various techniques
- Record book to be maintained

**7. General Pathology :**

- Inflammation and chemical mediator
- Thrombosis
- Embolism
- Necrosis
- Repair
- Degeneration
- Shock
- Hemorrhage
- Pathogenic mechanisms at molecular level
- Blood dyscrasias
- Carcinogenesis and neoplasia

**Approach:**

- To be covered as didactic Lectures (Seminars)
- Posting in Pathology lab to familiarize with relevant laboratory techniques : Grossing of tissue, special staining techniques and cytological staining techniques.

**8. General Microbiology** :

- Definitions of various types of infections
- Routes of infection and spread
- Sterilization ,disinfection and antiseptics
- Bacterial genetics
- Physiology, growth of micro-organisms
- Culture Medias and Techniques

**Approach:**

- Topics to be covered as didactic lectures (seminars).
- Posting in Microbiology Lab: To familiarize with the relevant laboratory techniques (collection and transport and preservation of specimens, culture and sensitivity techniques).

**9. Basic Immunology :**

- Basic principles of immunity, antigen and antibody reaction
- Cell mediated and humoral immunity
- Immunology of hypersensitivity
- Immunological basis of auto immune phenomena
- Immunodeficiency with relevance to opportunistic infections
- Basic principles of transplantation and tumor immunity

**Approach:**

- Topics to be covered as didactic lectures (seminars).
- Posting in Microbiology Lab to familiarize with routine immunological diagnostic methods

**10. Systemic Microbiology / Applied Microbiology :**

Morphology, classification, pathogenicity, mode of transmission, methods of prevention, collection and transport of specimen for laboratory diagnosis, staining methods, common culture media, interpretation of laboratory reports and antibiotic sensitivity tests.

**Bacteria**

- Staphylococci
- Streptococci
- Corynebacterium diphtheria
- Mycobacteria
- Clostridia, bacteroids & fusobacteria
- Actinomycete
- Spirochetes

**Virus**

- General structure, broad classification of viruses, pathogenesis, pathology of viral infections
- Herpes virus
- Hepatitis virus
- Human Immunodeficency Virus

**Fungus**

- General properties of fungi
- Superficial, subcutaneous, deep opportunistic infections

- General principles of fungal infections, method of collection of samples, diagnosis and examination of fungi

**Approach:**

- Topics to be covered as didactic lectures (seminars)
- Postings in the Department of Microbiology to familiarize with relevant diagnostic methods
- Record book to be maintained

**11. Oral biology (Oral and Dental Histology) :**

- Study of morphology of permanent and deciduous teeth
- Structure and function of oral, dental and paraoral tissues including their ultra structure, molecular and biochemical aspects

**Approach:**

- Topics to be covered as didactic lectures (seminars)
- Slide discussion on histological appearance of normal oral tissues
- Record book to be maintained

**12. Basic Histo-Techniques and Microscopy :**

- Routine hematological tests and clinical significance of the same
- Biopsy procedures for oral lesions
- Tissue processing
- Microtome and principles of microtomy
- Various stains used in histopathology and their applications
- Microscope, principles and theories of microscopy
- Light microscopy and various other types including electron microscopy
- Fixation and fixatives
- Ground sections and decalcified sections
- Cytological smears

**Approach:**

- Topics to be covered as didactic lectures (seminars)
- Postings in Clinical Pathology and Microbiology for relevant training
- Preparation of Ground and decalcified sections, tissue processing, sectioning and staining
- Tooth Carving (Permanent Dentition)
- Record book to be maintained

**Note :**

- **Library dissertation is replaced with systematic review**

**At the end of first year completion of systematic review**

**Approach :**

- Basic training to undertake systematic review.
- Selection of research question and registration in PROSPERO.

**At the end of first year selection of dissertation topic and submission of synopsis**

**Approach :**

- Selection of dissertation topic.
- Presentation of synopsis in the department, institutional ethical committee
- Submission of synopsis with recommended modification to KAHER

**This is basic minimum requirement, however a student is expected to learn and know other than the above mentioned topics also**

## PART - II

**Note :**

- Completion & submission of systematic review with the remark of satisfactory at the end of first six months of II year MDS course
- After acceptance of synopsis and IRB ethical approval commencement of dissertation

**1. Oral and Dental Pathology:**

- Developmental disorders of oral and paraoral structures
- Potentially malignant disorders
- Benign and malignant tumors of the oral cavity
- Odontogenic cysts and tumors
- Pathology of salivary glands
- Regressive alterations of teeth
- Bacterial, fungal, viral and protozoal infections of the oral cavity
- Dental caries
- Diseases of pulp and periapical region
- Spread of oral infection
- Healing of oral wounds
- Physical and chemical injuries of oral cavity
- Oral aspects of metabolic diseases
- Diseases of bones and joints
- Diseases of skin and mucous membrane
- Diseases of periodontia
- Diseases of blood and blood forming organs
- Diseases of nerves and muscles

- Oro-facial pain
- Immunological diseases of oral cavity including tumor immunology
- Molecular pathology
- Oral Microbiology

**Approach:**

- Topics to be covered as didactic lectures (seminars)
- Postings in the Department of Dermatology of a Medical College
- Postings in a Cancer Centre

**2. Basic histo-techniques and microscopy:**

- Enzyme histochemistry
- Principles, techniques and applications of immunofluorescence
- Principles, techniques and applications of immunohistochemistry
- Preparation of frozen sections
- Museum set up
- Quality control
- Animal models

**Approach:**

- Topics to be covered as didactic lectures (seminars)
- Training to be imparted in the Department or in other institutions having the facility
- Visit to the centre of animal experimentation to be familiarize with laboratory techniques, upkeep and care of animals
- Record book to be maintained

**3. Recent Molecular Techniques:**

- Basic principles, techniques and applications of –
- PCR
- BLOTS
- Hybridization
- Recombinant DNA technology
- Micro array
- DNA sequencing
- Cell culture and cloning

**Approach:**

- Topics to be covered as didactic lectures (seminars)
- Training to be imparted in the Department or in other institutions having the facility
- Record book to be maintained

**4. Recording of Case History and Clinico-Pathological Discussions: Approach:**

- Postings in the Department of Oral Medicine, Diagnosis & Radiology
- Record of minimum 10 case histories to be maintained
- Presentation of cases at clinic-pathological meet (Oral Medicine, Oral Pathology and Oral Surgery)

**5. Histopathology – Slide discussion:**

- Record book to be maintained

**This is basic minimum requirement, however a student is expected to learn and know other than the above mentioned topics also**

## PART - III

- Forensic odontology
- Giant cell lesions
- Clear cell lesions
- Round cell lesions
- Spindle cell lesions
- Pigmented lesions
- Fibro-osseous lesions
- Mechanism of formation and expansion of cysts of orofacial region
- Mechanism of growth and metastasis of tumors
- Lab diagnosis of bacterial infections
- Lab diagnosis of viral infections
- Lab diagnosis of fungal infections
- Hamartomas
- Phakomatoses
- Vascular tumors of oro-facial region
- Genodermatoses
- Tumor markers
- Histogenesis of salivary gland tumors
- Tumor angiogenesis
- Concept of premalignancy
- Blue cell lesions
- Molecular basics of oral squamous cell carcinoma
- Matrix remodelling in pathological condition

- Etiopathogenesis of developmental defects of teeth
- Viral oncogenesis
- Lesions associated with impacted and missing teeth
- Syndromes affecting oro-facial region
- Hereditary oral defects
- Techniques to assess the prognosis of neoplastic lesions
- Vesiculo-bullous lesions
- Lymphoreticular malignancy
- Haemopoietic malignancy
- Micronutrients
- Oral aspects of metabolic disorders
- Hormones and oro-maxillofacial lesions
- Matrix metalloproteinases
- Current concepts in HIV related oral diseases
- Current concepts in OSMF
- Epithelial –connective tissue interaction
- Stem cell research

**Approach:**

- Topics to be covered as didactic lectures (seminars)
- Postings in the Department of Forensic Medicine / Sciences
- Record book to be maintained

**Note** :

- Submission of main dissertation 6 months before university examination Preparation for final university examination

| S. No. | Activities | Yearly Quota |
|---|---|---|
| 1. | Journal club | 5 in a year |
| 2. | Seminars | 5 in a year |
| 3. | Case presentation | 4 in a year |
| 4. | Lectures taken for undergraduates | 1 in a year |
| 5. | Scientific paper / poster presentation in State / National level conference | 4 papers / posters during three years of training workshop period |
| 6. | Clinico-pathological conferences | 2 presentations during three years of training period |
| 7. | Scientific publications (optional) | 1 publication in any indexed scientific journal |
| 8. | Ground sections | 5 |
| 9. | Decalcified sections | 5 |
| 10. | Tooth carving | 1 set of permanent teeth |
| 11. | Hematology | 50 |
| 12. | Routine staining | 25 |
| 13. | Slide discussion | 200 |
| 14. | Special stain | 10 |
| This is basic minimum quota recommended for completion of MDS course | | |

**This is basic minimum requirement, however a student is expected to learn and know other than the above mentioned topics also**

**Monitoring Learning Progress:**

It is essential to monitor the learning progress of each candidate through continuous appraisal and regular assessment. It not only helps teachers to evaluate students, but also students to evaluate themselves. The monitoring should be done by the staff of the department based on participation of students in various teaching / learning activities. It may be structured and assessment is done using checklists that assess various aspects. Checklists are given in Section IV.

## SCHEME UNIVERSITY EXAMINATION

**A. Theory:** Part-I: Basic Sciences Paper - **100 Marks**

Part-II: aper-I, Paper-II & Paper-III - **300 Marks**

(100 Marks for each Paper)

Written examination shall consist of Basic Sciences Paper (Part-I) of three hours duration and should be conducted at the end of First year of MDS course. Part-II Examination will be conducted at the end of Third year of MDS course. Part-II Examination will consist of Paper-I, Paper-II & Paper-III, each of three hours duration.Paper-I & Paper-II shall consist of two long answer questions carrying 25 marks each and five questions carrying 10 marks each. Paper-III will be on Essays. Three Questions will be given and student has to answer any two questions. Each question carries 50 marks. Questions on recent advances may be asked in any or all the papers. Distribution of topics for each paper will be as follows: *

**PART-I** : Applied Basic Sciences: Applied Anatomy, Physiology (General and oral), Cell Biology, General Histology, Biochemistry, General Pathology, General Pharmacology specially related to drug induced oral mucosal lesions, General and systemic Microbiology, Virology, Mycology, Basic Immunology, Oral Biology (Oral and Dental Histology), Biostatistics and Research Methodology

**PART-II**

**Paper-I** : Oral pathology, Oral Microbiology & Immunology and Forensic Odontology

**Paper-II** : Laboratory techniques & Diagnosis and Oral Oncology

**Paper-III** : Essays (descriptive and analyzing type questions)

* The topics assigned to the different papers are generally evaluated under those sections. However a strict division of the subject may not be possible and some overlapping of topics is inevitable. Students should be prepared to answer overlapping topics.

**B. Practical/Clinical Examination : 200 Marks**

| Sl. No. | Particulars | Marks |
|---|---|---|
| 1 | **Case presentation** | |
| | **a. Long case** | **20 Marks** |
| | **b. Short case** | **10 Marks** |
| 2 | **Clinical Hematology (any two investigations)**<br>Hb%, bleeding time, clotting time, Total WBC count, Differential WBC count and ESR | **20 Marks** |
| 3 | **Smear Presentation**<br>Cytology or microbial smear and staining | **20 Marks** |
| 4 | **Paraffin sectioning and H & E Staining** | **30 Marks** |
| 5 | **Histopathology slide discussion** | **100 marks** |

**C. Viva Voce : 100 Marks**

**i. Viva-Voce examination** – 80 marks

All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach, expression, interpretation of data and communication skills. It includes all components of course contents.

**ii. Pedagogy Exercise** – 20 marks

A topic be given to each candidate in the beginning of clinical examination. He/she is asked to make a presentation on the topic for 8-10 minutes.

All examiners will conduct viva voce conjointly to assess a candidate for comprehension, analytical approach, expression, interpretation of data and communication skills. It includes all components of course contents, presentations and discussion of dissertation.

**Total (A + B + C) = 700 Marks**

# 3.7 PUBLIC HEALTH DENTISTRY (PREVENTIVE AND COMMUNITY DENTISTRY)

**GOALS**

**The goals of Postgraduate training in various specialities is to train B.D.S. graduate who will, after successful completion of the course:**

1. Practice respective speciality efficiently and effectively, backed by scientific knowledge and skill.
2. Exercise empathy and a caring attitude and maintain high ethical standards.
3. Continue to evince keen interest in continuing professional education in the specialty and allied specialties irrespective of whether in teaching or practice.
4. Willing to share the knowledge and skills with any learner, junior or a colleague.
5. Develop the faculty for critical analysis and evaluation of various concepts and views, to adopt the most rational approach.

**OBJECTIVES**

At the end of 3 years of training the candidate should be able to:

A) KNOWLEDGE

1. Apply basic sciences knowledge regarding etiology, diagnosis and management of the prevention, promotion and treatment of all the oral conditions at the individual and community level.
2. Identify social, economic, environmental and emotional determinants in a given individual patient or a community for the purpose of planning and execution of Community Oral Health Program.
3. Ability to conduct Oral Health Surveys in order to identify all the oral health problems affecting the community and find solutions using multi - disciplinary approach.
4. Ability to act as a consultant in community Oral Health, teach, guide and take part in research (both basic and clinical), present and publish the outcome at various scientific conferences and journals, both national and international level.

b) SKILLS

The candidate should be able to

1. Take history, conduct clinical examination including all diagnostic procedures to arrive at diagnosis at the individual level and conduct survey of the community at state and national level of all conditions related to oral health to arrive at community diagnosis.

2. Plan and perform all necessary treatment, prevention and promotion of Oral Health at the individual and community level.
3. Plan appropriate Community Oral Health Program, conduct the program and evaluate, at the community level.
4. Ability to make use of knowledge of epidemiology to identify causes and plan appropriate preventive and control measures.
5. Develop appropriate person power at various levels and their effective utilization.
6. Conduct survey and use appropriate methods to impart Oral Health Education.
7. Develop ways of helping the community towards easy payment plan, followed by evaluation for their oral health care needs.
8. Develop the planning, implementation, evaluation and administrative skills to carry out successful community Oral Health Programs.

c.) VALUES

1. Adopt ethical principles in all aspects of Community Oral Health Activities.
2. To apply ethical and moral standards while carrying out epidemiological researches.
3. Develop communication skills, in particular to explain the causes and prevention of

oral diseases to the patient.

4. Be humble and accept the limitations in his knowledge and skill and to ask for help from colleagues when needed and promote teamwork approach.
5. Respect patient's rights and privileges including patients right to information and right to seek a second opinion.

## COURSE CONTENT

### PART - I

**I. Applied Anatomy**

1. Development of face.
2. Brachial arches.
3. Muscles of facial expression.
4. Muscles of mastication.
5. Temporo Mandibular Joint.
6. Salivary glands.
7. Tongue.
8. Hard and soft palate.
9. Paranasal air sinuses.

10. Cranial nerves - with emphasis on trigeminal, facial, glossopharyngeal & hypoglossal nerve.
11. Blood supply of head and neck.
12. Lymphatic system of head and neck.
13. Structure and relations of alveolar process and edentulous mouth.
14. Genetics-fundamentals.
15. Oral Histology:
    a. Development of dentition, innervation of dentin and pulp.
    b. Periodontium-development, histology, blood supply, nerve supply & lymphatic drainage.
    c. Oral mucous membrane.
    d. Pulp-periodontal complex.

**II. Applied Physiology and Biochemistry**

1. Mastication and deglutition.
2. Food and nutrition.
3. Metabolism of carbohydrates, proteins and fats.
4. Vitamins and minerals.
5. Pain pathway and its mechanism.
6. Blood composition, function, clotting mechanism, erythropoiesis, Blood groups and transfusions.
7. Pulse and blood pressure.
8. Cardiovascular system – homeostasis, heart sounds.
9. Respiratory system- normal physiology and variations in health and diseases, asphyxia and artificial respiration.
10. Endocrinology: thyroid, parathyroid, adrenals, pituitary, pancreas and sex hormones.

**III. Applied Pathology**

1. Inflammation.
2. Oedema, thrombosis and embolism.
3. Hemorrhage and shock.
4. Neoplasia and metastasis.
5. Blood disorders.

**IV. Microbiology**

1. Microbial flora of oral cavity.
2. Bacteriology of dental caries and periodontal disease.
3. Methods of sterilization.
4. Virology of HIV, herpes and hepatitis.

5. Basic immunology - basic concepts of immune system in human body.
6. Autoimmune diseases.

**V. Applied Pharmacology**

1. Chemotherapy of bacterial and viral infections.
2. Local anesthesia.
3. Analgesics and anti-inflammatory drugs.
4. Emergency drugs in dental practice.

**VI. Oral Pathology**

1. Histopathology and pathogenesis of dental caries, periodontal disease and oral mucosal lesions.
2. Facial space infection.

**VII. Research Methodology**

1. Research methodology- definitions, types of research, designing protocol for research, objectivity in methodology, quantification, records and analysis.
2. Bio-statistics: Introduction, applications, uses and limitations of bio-statistics in Public Health Dentistry, collection of data, presentation of data, measures of central tendency, measures of dispersion, methods of summarization, parametric and non parametric tests of significance, correlation and regression, sampling and sampling techniques - types, errors, bias, trial and calibration.

**VIII. Computers**

Basic operative skills in analysis of data and knowledge of multimedia health informatics: basic understanding of computers and its components, operating software (Windows), Microsoft office, preparation of teaching materials like slides, project, multimedia knowledge.

**IX. Public Health**

1. Introduction to Public Health
   a. Definition, concepts and philosophy of dental health.
   b. History of Public Health in India and at international level.
   c. Terminologies used in Public Health.
2. Health
   a. Definition, concepts and philosophy of health.
   b. Health indicators.
   c. Community and its characteristics and relation to health.
3. Disease
   a. Definition, concepts.
   b. Multifactorial causation, natural history, risk factors.

c. Disease control, eradication, evaluation and causation, infection of specific diseases.
d. Vaccines and immunization.

4. General Epidemiology
   a. Definition, aims and general principles.
   b. Methods in epidemiology, descriptive, analytical, experimental and classic epidemiology of specific diseases.
   c. Uses of epidemiology.
   d. Duties of epidemiologist.
   e. General idea of method of investigating chronic diseases mostly non-infectious in nature, epidemic, endemic, and pandemic.
   f. Ethical conversation in any study requirement.
   g. New knowledge regarding ethical subjects.
   h. Screening of diseases and standard procedures.

5. Health Education
   a. Definition, aims, principles of health education.
   b. Health education, methods, models, contents, planning health education programs.

**This is basic minimum requirement, however a student is expected to learn and know other than the above mentioned topics also.**

## TRAINING SCHEDULE

### I. Academic Training

1. Basic Seminars.
2. Journal clubs.
3. Commencement of library assignment.
4. Submission of synopsis for dissertation-within 6 months.
5. Periodic review of dissertation at two monthly intervals.
6. Pedagogy for P.G. orientation.
7. Commencement of short term research.

### II. Clinical Training

1. Clinical assessment of patient.
2. Learning different criteria and instruments used in various oral indices.
   a. Oral Hygiene Index-Greene and Vermillion.
   b. Simplified - Oral Hygiene Index.
   c. DMF-DMF(T), DMF(S). deft/s.

d. Fluorosis Indices - Dean's Fluorosis Index, Tooth Surface Index for Fluorosis, Thylstrup and Fejerskov Index.
e. Community Periodontal Index of Treatment Needs (CPITN).
f. Plaque Index-Silness and Loe.

3. WHO Oral Health Assessment Form -1997.
4. Carrying out treatment (under comprehensive oral health care).

**III. Field Programme**

1. Carrying out preventive programs and health education for school children of the adopted school.
2. Organizing and carrying out dental camps in both urban and rural areas.
3. Visit to slum, water treatment plant, sewage treatment plant, and Milk dairy, Public Health Institute, Anti-Tobacco Cell, Primary Health Center and submitting reports.
4. In addition the postgraduate student shall assist and guide the under graduate students in their clinical and field programs.
5. Posting in satellite clinic.

**IV. Maintaining Records**

1. Daily work done.
2. Log book.

**PART - II**

**I. Bio-statistics**

**Advanced statistical analysis.**

**II. Environment and Health**

1. Impact of important components of the environment on health.
2. Principles and methods of identification, evaluation and control of such health hazards.
3. Pollution of air, water, soil, noise and food.
4. Water purification and international standards of water.
5. Domestic industrial toxins and ionizing radiation.
6. Occupational hazards.
7. Waste disposal- various methods and sanitation.

**III. Public Health Practice and Administration System in India**

**IV. Ethics And Jurisprudence:**

1. Basic principles of law.
2. Contract laws- dentist - patient relationships and Legal forms of practice.
3. Dental malpractice.

4. Person identification through dentistry.
5. Legal protection for practicing dentist.
6. Consumer Protection Act.

**V. Nutrition in Public Health**

1. Study of science of nutrition and its application.
2. Nutritional surveys and their evaluation.
3. Influence of nutrition and diet on general and oral health (dental caries, periodontal disease and oral cancer).
4. Dietary constituents and cariogenecity.
5. Guidelines for nutrition.

**VI. Behavioral Sciences**

1. Definition and introduction.
2. Sociology: social class, social group, family types, communities, social relationships and culture.

**VII. Physical and Social Anthropology**

1. Introduction and definition.
2. Evolution of human race, various studies of different races by anthropological methods.

**VIII. Health Care Delivery System**

1. International oral health care delivery systems – Review.
2. Central and state system in general and oral health care delivery system.
3. National oral health policy.
4. National health programmes.
5. Primary health care - concepts, oral health in Primary Health Center and its implications.
6. National and international health organizations.
7. Dentists Act 1948, Dental council of India, Ethics, Indian Dental Association.
8. Role of W.H.O. and Voluntary organizations in Health Care for the Community.

**IX. Epidemiology of Oral Diseases and Conditions**

1. Dental caries, gingival and periodontal diseases, malocclusion, dental fluorosis, oral cancer and other oral health related problems.

**X. Oral Survey Procedures**

1. Planning.
2. Implementation.

3. WHO Basic Oral Health Methods 1997.
4. Indices for dental diseases and conditions.
5. Evaluation.

**XI. Delivery of Dental Care**

1. Dental Manpower - dental auxiliaries.
2. Dentist- population ratio.
3. Public dental care programs.
4. School dental health programs- Incremental and comprehensive dental care.
5. Private and group practice.
6. Oral health policy- National and international policy.

**XII. Payment for Dental Care**

1. Prepayment.
2. Post-payment.
3. Reimbursement plans.
4. Voluntary agencies.
5. Health insurance.

**XIII. Evaluation of Quality of Dental care**

1. Problems in public and private oral health care system program.
2. Evaluation of quality of services and governmental control.

**XIV. Preventive Dentistry**

1. Levels of prevention.
2. Preventive oral health programs screening, health education and motivation.
3. Prevention of dental diseases-dental caries, periodontal diseases, oral cancer, malocclusion and dentofacial anomalies.
4. Role of dentist in prevention of oral diseases at individual and community level.
5. Fluoride.
    a. History.
    b. Mechanism of action.
    c. Metabolism.
    d. Fluoride toxicity.
    e. Fluorosis.
    f. Systemic and topical Fluorides.
    g. Update regarding Fluorides.

h. Epidemiological studies.
i. Defluoridation techniques.

6. Plaque control measures
   a. Health Education.
   b. Personal oral hygiene.
   c. Mechanical plaque control.
   d. Chemical plaque control.
   e. Dentifrices, mouth rinses.
7. Pit and fissure sealant, Atraumatic Restorative Treatment (ART).
8. Preventive oral health care for medically compromised individual.
9. Update on recent preventive modalities.
10. Caries vaccine.
11. Diet counseling.
12. Minimal Invasive dentistry (MID).

**This is basic minimum requirement, however a student is expected to learn and know other than the above mentioned topics also.**

## TRAINING SCHEDULE

### I. Academic Training

1. Seminars in Public Health and Dental Public Health topics.
2. Conducting journal clubs.
3. Completion of second short-term research project.
4. Periodic review of dissertation at monthly reviews.
5. Pedagogy for P.G. orientation.

### II. Clinical Training

1. Clinical assessment of patient.
2. Learning different criteria and instruments used in various oral indices.
   a. Oral Hygiene Index-Greene and Vermillion.
   b. Simplified - Oral Hygiene Index.
   c. DMF-DMF (T), DMF (S). def t/s.
   d. Fluorosis Indices - Dean's Fluorosis Index, Tooth Surface Index for Fluorosis, Thylstrup and Fejerskov Index.
   e. Community Periodontal Index of Treatment Needs (CPITN).
   f. Plaque Index-Silness and Loe.
   g. WHO Oral Health Assessment Form-1997.
3. Carrying out treatment (under comprehensive oral health care)

4. Application of the following preventive measures in clinic.
    a. Topical Fluoride application - Sodium Fluoride, Stannous Fluoride, Acidulated Phosphate Fluoride preparations and Fluoride varnishes.
    b. Pit and Fissure Sealants

**III. Field Program**

1. Organizing and carrying out dental camps in both urban and rural areas.
2. Assessing oral health status of various target groups like School children, expectant mothers, Handicapped, Underprivileged, and geriatric populations. Planning dental manpower and financing dental health care for the above group.
3. Planning complete health care for school children in an adopted school:
    a. Periodic surveying of school children.
    b. Incremental dental care.
    c. Comprehensive dental care.
4. Organizing and conducting community oral health surveys for all oral conditions.
5. In addition the postgraduate student shall assist and guide the under graduate students in their clinical and field programmes.
6. Posting in satellite clinic.
7. In addition the post graduate student shall assist and guide the under graduate students in their clinical and field programs.

**IV. Maintaining Records**

1. Daily work done.
2. Log book.

## PART - III

**I. Practice Management**

1. Definition.
2. Principles of management of dental practice and types.
3. Organization and administration of dental practice.
4. Ethical and legal issues in dental practice.
5. Critical review of current practice.
6. Recent advances in practice management.

**II. Hospital Administration**

1. Departmental maintenance and organizational structures.
2. Types of practices.
3. Biomedical waste management.

**III. Oral Biology and Genetics**

1. Introduction to genetics, DNA, RNA.
2. Genetic counseling, gene typing.
3. Genetics in oral disorders.
4. Genetic Engineering - Answer to current health problems.

**IV. Recent Advances**

1. Recent advances in Public Health Dentistry.
2. Evidence Based Dentistry.
3. Tele Dentistry.
4. Oral Health Related Quality of Life.

**V. Application of behavioral and social sciences to dental public health**

1. Culture and oral health.
2. Sociology and oral health.
3. Psychology and oral health.

**VI. Programme Planning and Problem Solving**

1. Planning a programme for prevention of oral diseases for various groups including special groups such as chronically ill, handicapped and institutionalized people.

**This is basic minimum requirement, however a student is expected to learn and know other than the above mentioned topics also.**

## TRAINING SCHEDULE

**I. Academic Training**

1. Seminars on recent advances in Preventive Dentistry and Dental Public Health.
2. Critical evaluation of scientific articles.
3. Completion and submission of dissertation.
4. To take lecture classes for Undergraduate students in order to learn teaching methods (pedagogy) on assigned topic.
5. Exercise on solving community health problems.

**II. Clinical Training**

1. Clinical assessment of patient.
2. Learning different criteria and instruments used in various oral indices.
   a. Oral Hygiene Index - Greene and Vermillion.
   b. Simplified - Oral Hygiene Index.
   c. DMF(T), DMF (S).

d. def t/s.
e. Fluorosis Indices - Dean's Fluorosis Index, Tooth Surface Index for Fluorosis, Thylstrup and Fejerskov Index.
f. Community Periodontal Index of Treatment Needs (CPITN).
g. Plaque Index-Silness and Loe.

3. WHO Oral Health Assessment Form –1997.
4. Carrying out treatment (under comprehensive oral health care) in clinic.
5. Application of the following preventive measures in clinic.
   a. Topical Fluoride application - Sodium Fluoride, Stannous Fluoride, Acidulated Phosphate Fluoride preparations and Fluoride varnishes.
   b. Pit and Fissure Sealants.

**III. Field Program**

1. Organizing and carrying out dental camps in both urban and rural areas.
2. Planning complete oral health care for school children in an adopted school:
   a. Periodic surveying of school children.
   b. Incremental dental care.
   c. Comprehensive dental care.
3. Posting in satellite clinic.

**IV. Maintaining Records**

1. Daily work done.
2. Log book.

Before completing the third year M.D.S., a student must have attended two national conferences and one state level conference. Attempts should be made to present two scientific papers, Poster presentation, publication of a scientific article in a journal.

**IV. Monitoring Learning Process**

It is essential to monitor the learning progress of each candidate through continuous appraisal and regular assessment. It not only helps teachers to evaluate students, but also students to evaluate themselves. The monitoring will be done by the staff of the department based on participation of students in various teaching / learning activities. It may be structured and assessment be done using checklists that assess various aspects.

## TRAINING SCHEDULE

**Academic Training**

| S. No | Type of Work | First Year | Second Year | Third Year | Total |
|---|---|---|---|---|---|
| 1. | Submission of synopsis for dissertation | Within six months | -- | -- | |
| 2. | Basic Seminars | 5 | -- | -- | 5 |
| 3. | Subject Seminars | -- | 5 | 5 | 10 |
| 4. | Journal clubs | | 10 | 10 | 20 |
| 5. | Periodic review of dissertation at two monthly interval | | | | |
| 6. | Library dissertation | To be complete at the end of 18 months | -- | -- | 1 |
| 7. | Short term research project | 1 | 1 | -- | 2 |
| 8. | Critical evaluation | -- | -- | 10 | 10 |
| 9. | Completion and submission of dissertation | -- | -- | 6 months before the university examination | |
| 10. | Pedagogy for P. G. Orientation | | 5 | 5 | 10 |
| 11. | To take lecture classes (2) for Undergraduate students in order to learn teaching methods (pedagogy) on assigned topic. | 1 | 1 | 1 | 3 |

## Clinical Training

| S. No | Type of Work | First Year | Second Year | Third Year | Total |
|---|---|---|---|---|---|
| 1. | Clinical assessment of patient | 15 | 15 | 15 | 45 |
| 2. | Learning different criteria and instruments used in various oral indices: | | | | |
| | a) Oral Hygiene Index-Greene and Vermillion | 10 | 10 | 10 | 30 |
| | b) Simplified-Oral Hygiene Index | 10 | 10 | 10 | 30 |
| | c) DMF(T), DMF (S) def t /s | 10 Each | 10 Each | 10 Each | 30 Each |
| | d) Fluorosis Indices– Dean's Fluorosis Index, Tooth Surface Index for Fluorosis, Thylstrup and Fejerskov Index | 10 Each | 10 Each | 10 Each | 30 Each |
| | e) Community Periodontal Index of treatments needs (CPITN) | 10 | 10 | 10 | 30 |
| | f) Plaque Index-Silness and Loe | 10 | 10 | 10 | 30 |
| 3. | WHO Oral Health Assessment Form -1997 | 30 | 30 | 40 | 100 |
| 4. | Carrying out treatment (under comprehensive oral health care) in the clinic | 20 | 10 | 10 | 40 |

## Field Programme

| Sl. No | Type ofWork | First Year | Second Year | Third Year | Total |
|---|---|---|---|---|---|
| 1. | Organizing and carrying out dental camps in both urban and rural areas. | 10 | 10 | 10 | 30 |
| 2. | Visit to slum, water treatment plant, sewage treatment plant and Milk dairy, Public Health Institute, Anti-Tobacco Cell, Primary Health Center and submitting reports. | Any two visits | Any two visits | -- | 4 visits |
| 3. | Posting in satellite clinic | On rotation basis | On rotation basis | On rotation basis | |
| 4. | a) Assessing oral health status of various target groups like School children, Expectant mothers, Handicapped, Underprivileged, and geriatric populations.<br>b) Planningdental manpower and financing dental health care for the above group. | -- | Anyone group | Anyone group | 2 |

| | | | | | |
|---|---|---|---|---|---|
| 5. | Planning total health care for school children in an adopted school: | | | | |
| | a) Periodic surveying of school children<br>b) Incremental dental care | For 1 School | Continuation | Continuation | For 1 school |
| | c) Preventive dental care<br>• Pit and fissure sealants<br>• ART<br>• Fluoride applications<br>• GC tooth mousse application | 10 each | 10 each | 10 each | 30 each |
| | d) Comprehensive dental care | 10 | 10 | 10 | 30 |
| 6. | In addition the postgraduate student shall assist and guide the under graduate students in their clinical and field programmes | For one batch of Under graduate students | For one batch of Under graduate students | -- | |

**Dissertations**

1. Synopsis
   a. Identifying and Selection of topic.
   b. Synopsis writing.
   c. Presentation of synopsis to the department, institute review board and ethical committee.
   d. Submission to university (End of first 6 months) .
2. Library Dissertation: Completion and submission by 18 Months of commencement of post graduate programme.
3. Main Dissertation submission 6 Months before university examination.

**Assessment and monitoring**

a) Daily work done record and log books.
b) Scheme of Exams (Institutional level).

1. First Internal assessments on basic sciences at the end of first year (Theory).
2. Second Internal assessments at the end of Second year (Theory and Practical / Clinical).
3. Preliminary examination in the last 6 months (Theory and practical / Clinical and viva voce).

## SCHEME OF UNIVERSITY EXAMINATION

**A. Theory :**

**Part I : One paper of 100 marks of 3 hours duration at the end of 1st year of MDS Course.**

**Part II : Three papers (I, II, III) of 100 marks each of 3 hours duration at the end of 3rd year MDS Course (300 Marks)**

Written examination for Part I shall consist of 10 questions of 10 marks each (100 Marks). Part II shall consist of Paper I, II of 2 long essay questions of 25 marks each and 5 short essay questions of 10 marks each (Total 100 marks each) and Paper III shall consist 3 essay questions of 50 marks each out of which of any two questions have to be answered (Total 100 marks ).

Distribution of topics for each paper will be follows:*

**Part I Paper I:** Applied Basic Sciences: Applied Anatomy and Histology, Applied Physiology and Biochemistry, Applied Pathology, Microbiology, Oral Pathology, Physiology and Social Anthropology, Applied Pharmacology and Research Methodology and Bio-statistics.

**Part II Paper I:** Public Health.

**Part II Paper II:** Dental Public Health.

**Part II Paper III**: Essay

*The topics assigned to the different papers are generally evaluated under those sections. However a strict division of the subject may not be possible and some overlapping of topics is inevitable. Students should be prepared to answer overlapping topics.

**B. PRACTICAL / CLINICAL** : **200 Marks**

1. Clinical examination of at least 2 patients representing the community – includes history, chief complaints, examination and recording of the findings, using indices for the assessment of oral health and presentation of the observation including diagnosis, comprehensive treatment planning. **(75 Marks -21/2 Hrs)**

2. Performing One of the procedures specified in the curriculum ( Pit and fissure sealant, fluoride application or atraumatic restorative treatment GC tooth mousse application).

**(25 Marks - 1/2 Hrs)**

3. Critical evaluation of a given research article published in an international journal.

**(50 Marks – 11/2 Hour)**

4. Problem solving - a hypothetical oral health situation existing in a community is given with sufficient data. The student as a specialist in community dentistry is expected to suggest practical solutions to the existing oral health situation of the given community. **(50 Marks - 1 1/2 Hours)**

**C. VIVA VOCE EXAMINATION** : **100 Marks**

a. Viva voce. : 80 Marks

All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach, expression, interpretation of data and communication skills. It includes all components of course contents.

b. Pedagogy : 20 Marks

A topic be given to each candidate in the beginning of clinical examination. He/she is asked to make a presentation on the topic for 20-30 minutes.

**Total (A + B + C) = 700 Marks**

# 3.8 PEDODONTICS AND PREVENTIVE DENTISTRY (PEADIATRICS)

**GOAL**

To train the graduates so that at the end of three years they should be able to understand and apply the knowledge of growth and development including psychological development of child. They should be competent to diagnose, prevent and treat dental diseases effectively and efficiently respecting the child's rights and privileges with professional honesty and integrity.

**OBJECTIVES**

At the end of 3 years of training the candidate should be able to

**a. KNOWLEDGE :**

1. Create not only a good oral health in the child but also a good citizen tomorrow.
2. Instill a positive attitude and behavior in children
3. Understand the principles of prevention and preventive dentistry right from birth to adolescence
4. Guide and counsel the parents in regards to various treatment modalities including different facets of preventive dentistry
5. Prevent and intercept developing malocclusion

**b. SKILLS :**

1. Obtain proper clinical history, methodological examination of the child patient, perform essential diagnostic procedures and interpret them. and arrive at a reasonable diagnosis and treat appropriately
2. Be competent to treat dental diseases which are occurring in child patient.
3. Manage to repair and restore the lost / tooth structure to maintain harmony between both hard and soft tissues of the oral cavity.
4. Manage the disabled children effectively and efficiently, tailored to the needs of individual requirement and conditions.
5. To acquire skills in managing efficiently life threatening conditions with emphasis on basic life support measures.

**c. ATTITUDES:**

1. Develop an attitude to adopt ethical principles in all aspects of Pedodontic practice.
2. Professional honesty and integrity are to be fostered
3. Treatment care is to be delivered irrespective of the social status, cast, creed, and religion of the patients.
4. Willingness to share the knowledge and clinical experience with professional colleagues.
5. Willingness to adopt, after a critical assessment, new methods and techniques of Pedodontic management developed from time to time, based on scientific research, which are in the best interest of the child patient.
6. Respect child patient's rights and privileges, including child patients right to information and right to seek a second opinion.
7. Develop an attitude to seek opinion from allied medical and dental specialities, as and when required

## COURSE CONTENTS

### PART - I (First Year)

**I. Applied Anatomy**

1. Development of tooth
   a. Eruption and shedding
   b. Chronology
   c. Teething disorders.
   d. Differences between deciduous and permanent teeth.
   e. Young permanent tooth.
   f. Anomalies- Congenital and Developmental.
2. Macro and micro structure of enamel, dentine, cementum, pulp, periodontal ligament and oral mucous membrane.
3. Growth and development of Face- maxilla, mandible and hard palate
4. Temporo – Mandibular Joint
5. Tongue –Development, histology, blood and Nerve supply.
6. General concepts, principles and theories of growth and development with applied approach
7. Blood vessels of facial region.
8. Muscles of orofacial region.

9. Muscles of mastication.
10. Lymphatic drainage of head and neck.
11. Cranial nerves associated with head and neck region.
12. Facial spaces of head and neck.
13. Osteology of skull.

**II. Applied Physiology**

1. Saliva and salivary glands.
2. Deglutition.
3. Calcium metabolism.
4. Shock.

**A. CVS**

1. Cardiac cycle with special emphasis on cardiac problems with management.
2. Blood and its elements.
   a. Blood dyscrasias with applied aspect.
   b. Clotting factors and mechanism.
3. Homeostasis.

**B. CNS**

1. Pain pathway and management.
2. Body temperature regulations.
3. Taste pathway.

**C. Respiratory System**

Chemical and neural regulations of respiratory cycle and applied aspect to Pedodontics.

**D. Renal**

Anatomy and Physiology of glomerular apparatus and its applied aspect.

**E. Endocrinology**

Functions and applied aspect.

**III. Applied General Pathology and Microbiology**

1. Inflammation
2. Healing and repair
3. Necrosis
4. Syncope.
5. Basic laboratory investigations with normal values.

6. Development of oral micro flora.
7. Microbiology of dental caries including microbes at specific locations.
8. Immunology
   a. Basic immunology
   b. Immunology of caries and periodontal diseases
   c. Hypersensitivity reactions.

**IV. Pharmacology**

1. Analgesics, anti inflammatory, antibiotics and supplements.
2. Drug abuse in dentistry.

**V. Genetics : as related to**

1. Dental caries
2. Periodontal diseases
3. Malocclusion
4. Congenital and developmental disturbances as applied to Pediatric dentistry.

**VI. Diet and Nutrition**

1. Carbohydrates, Proteins, Fats, Vitamins and Trace elements.
   a. Role on general health.
   b. Function.
   c. Deficiency and Management.
2. Balanced diet and counseling.

**VII. Bio-statistics and Research Methodology**

1. Statistical principles, Data Collection, Method of presentation, Method of summarizing.
2. Methods of analysis - Sampling and Sampling techniques, tests of significance. Experimental models, design and interpretation. Development of skills for preparing clear, concise and cogent scientific abstracts and publication.

**Applied research methodology**

1. Study designs, Animal and human interventional protocol, interpretation of methodologies applied to Pedodontics. Critical Scientific appraisal of literature.

**<u>Pedodontics including applied aspects</u>**

**VIII.** Aim, objectives, scope and future of Pediatric dentistry.

**IX. Case History Recording, Outline of principles of examination, diagnosis and treatment planning including Radiology**

**X. Cariology**

1. Historical background
2. Definition, Etiology and Pathogenesis
3. Caries pattern in primary, young permanent and permanent teeth in children.
4. Rampant caries, Nursing caries, Early childhood caries and extensive caries. Definition, etiology, Pathogenesis, Clinical features, Complications and Management.
5. Diet and dental Caries
6. Diet recording, analysis, modifications and counseling.

**XI. Dental Plaque:** Definition, Initiation, Morphology, Metabolism, Biochemistry and Pathogenesis.

**XII. Gingiva and Periodontium.**

1. Normal Gingiva and Periodontium in children.
2. Differences between child and adult gingiva.
3. Gingival and Periodontal diseases - Etiology, Pathogenesis, Prevention and Management in children and adolescent

**XIII. Preventive Pedodontics**

1. Concepts, chair side preventive measures for dental diseases, high-risk caries including rampant and extensive caries - Recognition, Features and Preventive Management.
2. Fluorides - Topical and Systemic fluorides.
   Toxicity and its management.
3. Pit and Fissures Sealants, Preventive Resin Restorations
4. Atraumatic Restorative Treatment (ART) and Minimal Invasive Dentistry (MID).
5. Oral Hygiene measures.
6. Correlation of brushing with dental caries and periodontal diseases.
7. Caries Activity tests, Caries prediction, Caries susceptibility and their clinical applications.
8. Caries Vaccine.

**XIV. Dental Materials with recent advances**

1. Amalgam.
2. Composite.
3. Glass ionomer and other cements.
4. Impression materials.
5. Stainless steel wires and bands.

6. dental cements.
7. Other materials used in the Pediatric dentistry.
8. Stainless steel crowns.

**XV. Importance of consent in Pediatric dentistry**

**PART - II (Second Year)**

**I. Pediatric Operative Dentistry**

1. Principles of Operative Dentistry in primary and young permanent teeth along with modifications for materials.
2. Various Isolation Techniques
3. Restorations of decayed primary, young permanent and permanent teeth in children using various restorative materials like Glass lonomer, Composites, Silver, Amalgam and latest materials.

**II. Pediatric Endodontics.**

1. Pulp and Pulpodentinal complex.
2. Differences in pulp of deciduous and permanent teeth.
3. Primary Dentition: - Diagnosis and management of pulpal diseases - Pulp capping, Pulpotomy, Pulpectomy (Materials and Methods), Controversies and changing concepts.
4. Young permanent teeth and permanent teeth, Pulp capping, Pulpotomy, Apexogenesis, Apexification, Concepts, Techniques and Materials used.
5. Endodontic Surgery
6. Various crowns used in children and adolescents like stainless steel crown, polycarbonate crown, strip crown, zirconium crown, Pedo esthetic crowns & others.
7. Veneers and Laminates.

**III. Child Psychology with applied aspect**

1. Developmental milestones
2. Psychological development from birth to adolescence.
3. Comparison of theories of psychological development.
4. Definition, Classification, Measurements / Scale, factors influencing and Management of
   a. Fear
   b. Anxiety

c. Apprehension
d. Emotion

**IV. Behavior and its Management**

1. Behavioral Development
2. Classification of Behavior
3. Factors influencing behavior
4. Management
   a. Principles of Behavior Management
   b. Non pharmacological management
   c. Pharmacological management
      - ❖ Conscious sedation
      - ❖ General anesthesia

**V. Comprehensive Infant Oral Health Care**

**VI. Occlusion**

1. Development from Birth to Adolescence with clinical and preventive aspect of each stage.
2. Recognition and management of normal and abnormal developmental occlusion in primary, mixed and permanent dentitions in children (Occlusal Guidance).

**VII. Preventive and Community Dentistry as related to Pediatric Dentistry**

1. Prevention – levels of prevention.
2. Survey procedures including Planning and implementation.
3. Epidemiology
   a. General principles.
   b. Epidemiology of dental caries, periodontal diseases.
   c. Changing trends in dental caries and periodontal diseases.
4. Indices for oral hygiene status, dental caries, gingival and periodontal diseases, fluorosis and malocclusion.
5. Dental health education.
6. School dental health programmes.
7. Dental auxillaries.
8. Basic concepts of health – Iceberg phenomenon.

## PART - III (Third Year)

### I. Oral Habits in Children

1. Definition, etiology and classification.
2. Clinical features, management and prevention of deleterious oral habits.

### II. Orthodontics

1. Preventive orthodontics
   a. Malocclusion- classification, etiology, features, management and prevention.
   b. Space management
      - Space analysis
      - Space maintainers
      - Space regainers
2. Interceptive orthodontics
   a. Removable appliances: basic principles, contemporary appliances: design and fabrication.
   b. Correction of cross bite, diastema etc.
   c. Cephalometrics - tracing and analysis.
   d. Serial extraction.
   e. Habit interception.
   f. Myofunctional appliances: Basic principles, contemporary appliances: Design and Fabrication.

### III. Traumatic Injuries in Children

1. Prevalence, etiology, classifications and clinical features.
2. Reaction and sequelae of tooth to trauma- primary and permanent.
3. Management of traumatized hard and soft tissues.
4. Prevention and sports dentistry

### IV. Dental care for Children with special health care needs

1. Definition, Etiology, Classifications, Clinical features and management of Physically, mentally and medically challenging conditions.
2. Genetic counseling

### V. Child Abuse and Neglect.

### VI. Oral manifestations of Systemic Conditions in Children and their Management.

### VII. Bacterial, fungal and viral infections in children and their management.

**VIII. Surgical procedures in Pedodontics with lasers.**

**IX. Medical emergencies and management in dental clinic.**

**X. Setting up of Pedodontic clinic.**

**This is basic minimum requirement, however a student is expected to learn and know other than the above mentioned topics also.**

## Preclinical Work

Should be submitted with brief description about each exercise during first 6 Months of First Year MDS

**I. Basic Wire Bending And Soldering Exercise**

1. Straight line - 3 and 6 inches
2. Square - 1 and 1 inch
3. Rectangle - 3 and 1 inches
4. 5 U-V - ½ inch
5. Circle - 1 inch diameter

**II. Clasps**

C - Clasps
Jackson's Full
Triangle
Adams
Modified Adam's: Distal extension.
Eyelet
Single arrow head
Anterior Adams.

**III. Springs**

- "Z" Spring – Single and Double with Guard
- Finger spring with Guard
- Closed loop spring
- Canine retractors: i) "U" loop
  ii) Reverse loop
  iii) Helical loop

iv) Buccal canine retractor
v) Palatal canine retractor.

- Coffins spring

**IV. Labial Bow**

- Short
- Long
- Reverse
- Split

**V. Wax Carving :** Any one quadrant of mandibular and maxillary primary and permanent teeth.

| | | | | | |
|---|---|---|---|---|---|
| E | - | A | A | - | E |
| E | - | A | A | - | E |

| | | | | | |
|---|---|---|---|---|---|
| 7 | - | 1 | 1 | - | 7 |
| 7 | - | 1 | 1 | - | 7 |

**VI. Endodontic Exercises**

Access cavity preparation and Root canal treatment on extracted tooth :

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| E | D | C | B | A | A | B | C | D | E |
| E | D | C | B | A | A | B | C | D | E |

| | | | | |
|---|---|---|---|---|
| | 1 | 3 | 4 | 6 |
| | 1 | 3 | 4 | 6 |

Either right or left

**VII. Restorative Exercises**

- Class – I & II Cavity Preparation on teeth Both Conservative and Conventional type

| | | |
|---|---|---|
| D | E | 6 |
| D | E | 6 |

Either right or left

- Class - I and II with palatal and Lingual extension on :

| | |
|---|---|
| E | 6 |
| E | 6 |

- MOD on :

| | |
|---|---|
| E | 6 |
| E | 6 |

Inlay Preparation :

- Tooth preparation for stainless and adaptation of S.S. Crown on :

| | |
|---|---|
| | 6 |

steel crown

| | |
|---|---|
| D | E |
| D | E |

- Full cast crown preparation :

| | |
|---|---|
| | 6 |
| | 6 |

- Anterior Jacket Crown prep. and
- Fabrication of acrylic crown

- Cuspal restorations/Pin amalgam restoration :

| | |
|---|---|
| | |
| | 6 |

- Post and Core – Anterior

**VIII. Study Models**

1. Upper and lower Deciduous Dentition
2. Upper and lower Mixed Dentition - 1 2 C D E 6
3. Upper and lower Permanent Dentition – Angles class I, II and III
4. Flush / mesial and distal step study model

**IX. Fabrication Of Special Trays**

1. Primary dentition
2. Mixed dentition

**X. I. Fixed Appliance**

1. Band adaptation on :

| |
|---|
| 1 3 4 6 D E |
| 1 3 4 6 D E |

2. Band adaptation for Class II Anterior tooth fracture.
3. Space maintainers
   a. Band and loop and with occlusal stop
   b. Band and Bar
   c. Crown and loop
   d. Long span band and loop

e. Lingual arch with canine stopper.
f. Nance palatal arch
g. Trans palatal arch
h. Mayne's space maintainer
i. Distal shoe and modified distal shoe.
j. Gerber regainer.
k. Fixed habit breaking appliance with Cribs and Rakes
l. Fixed functional.
m. Bonded type of space maintainer.

**XI. Removable Appliances**

1. Space maintainers
   a. Removable unilateral functional
   b. Removable unilateral non functional
   c. Removable bilateral functional
   d. Removable bilateral non functional
   e. Dumbell (split – Saddle) space regainer
   f. Sling shot space regainer
   g. Helical coil space regainer
2. Appliances with "Z" spring.
3. Finger spring
4. Bilateral symmetrical expansion screw appliance.
5. Anterior and posterior bite plane
6. Oral screen
7. Inclined plane
8. Hawley's retention appliance.
9. Removable Habit breaking appliance with Cribs, Rakes, Bead.
10. Myofunctional appliance.
11. Lip bumper
12. Obturator / Feeding appliance.
13. Fabrication of splints
14. Suturing

**XII. Cephalomatric Tracing And Analysis**

a. Taking of periapical, occlusal, bitewing radiographs of children

b. Developing and processing of films, thus obtained

c. Tracing of soft tissue dental and skeletal landmarks as observed on Cephalometric radiographs and drawing of various planes and angles, further interpretation of Cephalometric radiographs.

**XIII. Space Analysis For Mixed Dentition**

**XIV. Performing of behavior rating in children**

**XV. Library dissertation / systematic review**

**XVI. Synopsis for main dissertation**

**Minimum Academic Requirements from 4months to 3 years**

| No. | Work | Quota |
|---|---|---|
| 1 | Seminars | 15 |
| 2 | Journal clubs | 15 |
| 3 | Scientific poster presentation | 1 |
| 4 | Scientific paper presentations | Min 1 |
| 5 | Scientific paper to be ready for publication | 1 |
| 6 | Log book submission (one each year) | 3 |
| 7 | Display of academically oriented 'Case of the month' | 5 |
| 8 | Conducting theory class for UG students | 2 |

**Clinical work Requirements from 4 months to 3 years**

The following is the minimum requirement to be completed before the candidate can be considered eligible to appear in the final M.D.S Examinations: -

| No | Clinical Work | Total | 4 To 12 Months | 13 To 24 Months | 25 To 36 Months |
|---|---|---|---|---|---|
| 1 | Behavior Management of different age groups children with complete records. | 17 | 2 | 10 | 5 |
| 2 | Detailed Case evaluation with complete records, treatment planning and presentation of cases with chair side and discussion | 17 | 2 | 10 | 5 |
| 3 | Step-by-step chair side preventive dentistry scheduled for high risk children with gingival and periodontal diseases and Dental Caries | 11 | 1 | 5 | 5 |
| 4 | Practical application of preventive dentistry concepts in a class of 35-50 children and Dental Health Education and Motivation. | 7 | 1 | 4 | 2 |
| 5 | Pediatric Operative Dentistry with application of recent concepts. (a) Management of Dental Caries | | | | |
| | (1) Class 1 | 50 | 30 | 10 | 10 |
| | (II) Class II | 100 | 40 | 50 | 10 |
| | (III) Other Restorations | 100 | 20 | 50 | 30 |
| | (b) Management of traumatized anterior teeth | 15 | 04 | 06 | 05 |
| | (c) Aesthetic Restorations | 25 | 05 | 10 | 10 |
| | (d) Pediatric Endodontic Procedures | | | | |
| | Deciduous teeth | | | | |
| | Pulpotomy /Pulpectomy | 150 | 30 | 50 | 70 |
| | Permanent Molars | 20 | 3 | 7 | 10 |
| | Permanent Incisor. | 15 | 2 | 3 | 10 |
| | Apexification and Apexogenesis | 20 | 02 | 08 | 10 |
| 6 | Stainless Steel Crowns | 50 | 10 | 20 | 20 |
| 7 | Other Crowns | 05 | 01 | 02 | 02 |
| 8 | Fixed Space Mainta iners | 30 | 08 | 12 | 10 |
| 9 | Removable Space Maintainers | 20 | 05 | 07 | 08 |

| | | | | | |
|---|---|---|---|---|---|
| 10 | Preventive measures like fluoride applications and Pit and Fissure Sealants applications with complete followup and diet counseling | 20 | 08 | 08 | 04 |
| 11 | Special Assignment s<br>(i) School Dental Health survey program<br>(ii) School Dental Health talk<br>(iii) Camps and CDE programmes | 03<br>01<br>02 | 01<br>01<br>01 | 01<br>01 | 01 |
| 12 | Complete oral rehabilitation cases with all relevant records | 15 | | 07 | 08 |

(The figures given against Sr. No. 4 to 12 are the minimum number of recommended procedures to be performed)

**Dissertations**

1. Synopsis
   a. Identifying and selection of topic.
   b. Synopsis writing.
   c. Presentation of synopsis to the department, institute review board and ethical committee.
   d. Submission to university (End of first 6 months after commencement of post graduate programme).
2. Library Dissertation: Submission by 18 months after commencement of post graduate programme.
3. Main Dissertation submission 6 months before university examination.

**Assessment and monitoring**

1. Maintaining log books.
2. Scheme of exams (Institutional level).
   a. First Internal assessment on basic sciences at the end of first year (Theory and practical / clinical).
   b. Second internal assessment at the end of second year (Theory and practical / clinical).
   c. Preliminary examination in the last six months (Theory and practical / clinical and viva voce).

## SCHEME OF UNIVERSITY EXAMINATION

**A. Theory:**

Part-I : Basic Sciences Paper - **100 Marks**

Part-II : Paper-I, Paper-II & Paper-III - **300 Marks**

(100 Marks for each Paper)

Written examination shall consist of Basic Sciences Paper (Part-I) of three hours duration and should be conducted at the end of First year of MDS course. Part-II Examination will be conducted at the end of Third year of MDS course. Part-II Examination will consist of Paper-I, Paper-II & Paper-III, each of three hours duration. Paper-I & Paper-II shall consist of two long answer questions carrying 25 marks each and five questions carrying 10 marks each. Paper-III will be on Essays. In Paper-III three Questions will be given and student has to answer any two questions. Each question carries 50 marks. Questions on recent advances may be asked in any or all the papers. Distribution of topics for each paper will be as follows: *

**Part-I: Applied Basic Sciences –** Applied Basic Sciences : Applied Anatomy, Physiology, & Biochemistry, Pathology, Microbiology, Pharmacology, Research Methodology and Biostatistics Growth & Development and Dental plaque, Genetics.

**Part-II:**

**Paper-I** :**Clinical Paedodontics**

1. Conscious sedation, Deep Sedation & General Anesthesia in Pediatric Dentistry

2. Gingival & Periodontal Diseases in Children

3. Pediatric Operative Dentistry

4. Pediatric Endodontics

5. Traumatic Injuries in Children

6. Interceptive Orthodontics

7. Oral Habits in children

8. Dental Care of Children with special needs

9. Oral Manifestations of Systemic Conditions in Children & their Management

10. Management of Minor Oral Surgical Procedures in Children

11. Dental Radiology as Related to Pediatric Dentistry

12. Pediatric Oral Medicine & Clinical Pathology

13. Congenital Abnormalities in Children

14. Dental Emergencies in Children & Their Management

15. Dental Materials Used in Pediatric Dentistry

16. Case History Recording

17. Setting up of Pedodontic & Preventive Dentistry Clinic

**Paper-II: Preventive and Community Dentistry as applied to Pediatric Dentistry**

1. Child Psychology

2. Behavior Management

3. Child Abuse & Dental Neglect

4. Preventive Pedodontics

5. Cariology

6. Preventive Dentistry

7. Dental Health Education & School Dental Health Programmes:

8. Fluorides

9. Epidemiology

10. Comprehensive Infant Oral Health Care/Comprehensive cleft care

11. Principles of Bio-Statistics & Research Methodology & Understanding of Computers and Photography

**Paper-III:** Essays (descriptive and analyzing type questions)

** The topics assigned to the different papers are generally evaluated under those sections. However a strict division of the subject may not be possible and some overlapping of topics is inevitable. Students should be prepared to answer overlapping topics.*

**B. Practical / Clinical Examination : 200 Marks**

The Clinical / Practical and Viva-Voce Examinations are conducted for a minimum of two days.

**First Day:**

**1. Case Discussion, Pulp Therapy i.e. Pulpectomy on a Primary Molar.**

| | |
|---|---|
| Case Discussion | : 20 marks |
| Rubber Dam application | : 10 marks |
| Working length X-ray | : 20 marks |
| Obturation | : 20 marks |

**Total 70 marks**

**2. Case Discussion, Crown preparation on a Primary Molar for Stainless steel crown and cementation of the same.**

| | |
|---|---|
| Case discussion | : 10 marks |
| Crown Preparation | : 20 marks |
| Crown selection and Cementation | : 20 marks |

**Total 50 marks**

**3. Case Discussion, band adaptation for fixed type of space maintainer and impression making**.

| | |
|---|---|
| Case discussion | : 20 marks |
| Band adaptation | : 20 marks |
| Impression | : 20 marks |

**Total 60 marks**

**Second Day:**

1. **Evaluation of Fixed Space Maintainer and Cementation** : 20 marks

**C. Viva Voce : 100 Marks**

***i. Viva-Voce examination*** *: 80 marks*

All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach, expression, interpretation of data and communication skills. It includes all components of course contents. It includes presentation and discussion on dissertation also.

***ii. Pedagogy Exercise*** *: 20 marks*

A topic be given to each candidate in the beginning of clinical examination. He/she is asked to make a presentation on the topic for 8-10 minutes.

**(A + B + C = 700 MARKS)**

# 3.9 ORAL MEDICINE AND RADIOLOGY

**GOAL**

To train the dental graduates, to acquire adequate knowledge, necessary skills attitudes required for appropriate diagnosis, investigation and management of patients.

**OBJECTIVES**

At the end of three years of training the candidate should be thorough in:

a) KNOWLEDGE

Theoretical, clinical and practical knowledge of all mucosal lesions, diagnostic procedures pertaining to them and latest information of imaging modalities.

b) SKILLS

1. Diagnosing oral lesions and their management.
2. Making, interpreting radiographs and giving appropriate radiographic diagnosis.
3. Research and scientific skills in handling problems pertaining to oral treatment.
4. Human values, ethical, practice and communication abilities.

## COURSE CONTENT

### PART - I

**I. Applied Anatomy**

1. Development of
    a. Temporomandibular joint.
    b. Salivary glands.
    c. Tongue.
    d. Maxilla.
    e. Mandible.
    f. Maxillary sinus.
2. Osteology and histology of bone.
3. Muscles of mastication.
4. Lymphatic drainage of head and neck.
5. Trigeminal, Glossopharyngeal and Facial nerve.

**II. Applied Physiology**

1. Saliva.
2. Blood and clotting mechanism.
3. Endocrine system.

**III. Applied Microbiology**

1. Oral microbial flora.
2. Sterilization and disinfection.

**IV. Applied Pathology**

1. Inflammation.
2. Repair.
3. Basic immunology.

**V. Applied Biochemistry**

1. Calcium metabolism.
2. Nutritional and metabolic disorders.

**VI. Applied Pharmacology**

1. Analgesics.
2. Antibiotics.
3. Corticosteroids.
4. Anti fungal and anti viral agents.
5. Chemotherapeutic agents.
6. Immunomodulators

**VII. Oral Biology**

1. Odontogenesis and developmental anomalies.
2. Oral mucous membrane & Orofacial structures.
3. Gingiva and Periodontium.

**VIII. Oral Medicine**

1. Case history recording with investigations.
2. Gingival diseases.
3. Periodontal diseases.
4. Pulpal and periapical pathologies.
5. Osteomyelitis.
6. Space infections.

**VIII. Basic Radiology**

1. History of radiation.
2. Radiation physics.
3. Radiation biology.
4. Health physics.
5. X-ray film and accessories.
6. Projection geometry.
7. Processing of X-ray film.
8. Radiation quality assurance and infection control.
9. Intra oral radiographic technique.
10. Normal anatomical landmarks.

**This is basic minimum requirement, however a student is expected to learn and know other than the above mentioned topics also.**

**Approach**

- Attending lecture classes.
- Attending and presenting seminars.
- Discussions (participation)

Demonstration, making and interpretation of radiographs.

## ACADEMIC ACTIVITIES OF FIRST YEAR

| SL NO | PARTICULARS OF ACTIVITIES | QUOTA |
|---|---|---|
| 1 | Attending lectures. | |
| 2 | Attending theory classes for basic sciences. | |
| 3 | Attending and Presenting seminars/discussions. | 5 each |
| 4 | Observing and assisting case history recording. | 10 |
| 5 | Selection of topic for library dissertation | |
| 6 | Selection and submission of synopsis of main dissertation to the university | |
| 7 | Case history recording. | 100 |
| 8 | Observing and Assisting :-<br>- Fine Needle Aspiration Cytology (FNAC).<br>- Toluidine blue Staining.<br>- Biopsy procedures. | 25 each |
| 9 | Making and interpreting radiographs :-<br>- Bitewing.<br>- Occlusal. | 200<br>20<br>20 |
| 10 | Clinical duty-As per time table : -<br>- Observe.<br>- History taking. | |

| | | |
|---|---|---|
| 11 | Attending the dental education, check up and treatment camps. | |
| 12 | Participating and Presenting Paper / Poster in conferences. | 01 |
| 13 | Observe and assist in diagnosis and management : -<br>- Leukoplakia.<br>- Lichen Planus.<br>- Oral submucous fibrosis (OSMF).<br>- Apthous ulcer.<br>- MPDS - TENS therapy.<br>- Trigeminal Neuralgia. | 5 each |
| 14 | Sialography assisting. | 01 |
| 15 | Interdepartmental activities - Attending<br>- Attending seminar of other department.<br>- Discussing cases with other department – Clinico pathological meet(OS, OD, OP) | |
| 16 | Exam for basic sciences (theory) | |
| 17 | Radiographic trainings of all intra oral and extra oral radiographs including TMJ | 2 each |
| 18 | Age assessment by radiographic method | 10 cases |

## PART - II

### Oral Medicine

1. Laboratory investigations and recent diagnostic techniques.
2. Premalignant lesions.
3. Premalignant conditions.
4. Red and white lesions.
5. Oral ulcers.
6. Vesiculobullous lesions.
7. Oral pigmentation.
8. Infections
    a. Bacterial.
    b. Viral.
    c. Fungal.
    d. Protozoal.
9. Cysts of orofacial region.
10. Tumors of orofacial region.
11. Sexually transmitted diseases.
12. HIV and AIDS.
13. Management of medically compromised patients and medical emergencies.

**Radiology**

1. Extraoral radiographic examination.
2. Principles of radiographic interpretation.
3. Panoramic radiography.

**This is basic minimum requirement, however a student is expected to learn and know other than the above mentioned topics also.**

**Approach**

- Attending lecture classes.
- Attending and presenting seminars.
- Discussions (Participation).
- Demonstration, making and interpretation of radiographs.

## ACADEMIC ACTIVITIES OF SECOND YEAR

| SL NO | PARTICULARS OF ACTIVITIES | QUOTA |
|---|---|---|
| 1 | Continue of the dissertation work | |
| 2 | Seminars and Journal Club presentation | 5 each |
| 3 | Dental treatment ot medically compromised patients<br>-Observe, assist and perform under supervision | |
| 4 | Attend the Postings : -<br>- General Medicine.<br>- General Surgery.<br>- ENT.<br>- Dermatology.<br>- General Radiology.<br>- Cancer hospital.<br>-Physiotherapy;<br>**Operative Skills:**<br>1.Giving intra – muscular and intravenous injections<br>2. Administration of oxygen and life saving drugs to the patients<br>3. Performing basic CPR and certification by Red Cross | 15 days each |

| | | |
|---|---|---|
| 5 | Submission of library dissertation by 18 months after commencement of post graduate programme. | |
| 6 | Conducting lectures for undergraduates. | 02 |
| 7 | Making and interpreting extra oral radiographs.<br>▪ Poster Anterior view [modified].<br>▪ Cephalogram.<br>▪ TMJ [each view].<br>- Transcranial.<br>- Trans-pharyngeal.<br>- Infra orbital view.<br>▪ Paranasal sinus view.<br>▪ Orthopantomograph.<br>▪ Lateral oblique body / ramus mandible.<br>▪ Submentovertex view.<br>▪ Reverse Towne's view. | 05 each |
| 8 | Making and interpreting radiographs – IOPA<br>-Bitewing<br>-Occlusal<br>-Digital Radiographs | 200<br>20<br>20<br>20 |
| 9 | Recording case history – Routine & special cases | 50 |
| 10 | Carry out the investigative procedures : -<br>- Biopsy.<br>- Fine Needle Aspiration Cytology (FNAC)<br>- Vital staining - Lugols Iodine and Toluidine Blue. | <br>15<br>15<br>15 |
| 11 | Small Research Project, Paper/Poster | 01 |
| 12 | Presenting Research Project, Paper / Poster. | 01 |
| 13. | Interdepartmental activities – Presenting cases<br>-Attending seminar of other department<br>-Discussing cases with other department – Clinico pathological meet(OS, OD, OP) | |

| | | |
|---|---|---|
| 14 | Treatment Cases<br>-Leukoplakia<br>-Lichen Planus<br>-Oral submucous fibrosis (OSMF)<br>-Apthous ulcer<br>-MPDS-TENS<br>-Trigeminal Neuralgia | 5 each |

## PART - III

### Oral Medicine

1. Orofacial pain.
2. Forensic odontology.
3. Oral cancer.
4. Disorders of salivary glands and imaging.
5. Disorders of temporomandibular joint and views.
6. Psychosomatic aspects of oral diseases.
7. Immunological disorders.
8. Neuromuscular diseases affecting Orofacial region.
9. Geriatric dentistry.
10. Genetics.
11. Lasers in dentistry.

### Radiology

1. Specialized Radiology
    a) Computerized tomography.
    b) Magnetic resonance imaging.
    c) Ultrasonography.
    d) Scintigraphy.
    e) Sialography.
    f) Arthrography.
    g) Radio visiography.
    h) Xeroradiography.
    i) CBCT

2. Radiographic appearances of
    a) Cysts.
    b) Benign tumors.
    c) Malignant tumors.
    d) Fibro osseous diseases of jaws.
    e) Systemic diseases.
    f) Developmental anomalies.
3. Orofacial Implants.

**This is basic minimum requirement, however a student is expected to learn and know other than the above mentioned topics also.**

**Approach**

- Attending lecture classes.
- Attending and presenting seminars.
- Discussions (Participation).
- Demonstration, making and interpretation of radiographs.

## ACADEMIC ACTIVITIES OF THIRD YEAR

| SL NO | PARTICULARS OF ACTIVITIES | QUOTA |
|---|---|---|
| 1. | Continuation of seminars, journal club and case presentations. | |
| 2. | Making and interpreting extra oral radiographic<br>- Poster Anterior view [modified]<br>-Cephalogram<br>-TMJ [each view]<br>- Transcranial<br>- Trans-pharyngeal<br>- Trans orbital view<br>- Paranasal Sinus View<br>- Orthopantomograph<br>- Lateral oblique body / ramus mandible<br>- Submentovertex view<br>C,T, MRI, scintigraphy, U.S.G, interpretation submission of interpreted log book | <br><br><br><br><br><br><br><br><br><br><br>2 each |
| 3. | Submission of Main Dissertation : 6 months before university examination. | |
| 4. | Making and interpreting radiographs – IOPA<br>-Bitewing<br>-Occlusal | 200<br>10<br>10 |
| 5. | Submission of records of special cases (with photographs, radiographs, biopsy reports, treatment and follow-up details<br>4 months before university examination. | 40 |
| 6. | Submission of cases treated as per quota:-<br>- Leuko Plakia.<br>- Lichen planus.<br>- Oral submucous fibrosis (OSMF).<br>- Myofacial pain dysfunction syndrome (MPDS) - [TENS].<br>- Apthous ulcer.<br>- Herpes infection.<br>- Mucocutaneous lesions; Bony lesions/diseases | 5 each |
| 7. | Paper / poster presentations | 01 |
| 8. | Submission of seminars to the department | 05 |
| 9. | Preliminary Exam (Theory and practical and viva voce) | 01 |
| 10. | CBCT cases discussion | 1 week |
| 11. | Carry out the investigative procedures<br>-Biopsy<br>-Fine Needle Aspiration Cytology (FNAC)<br>-Vital staining – Lugols Iodine and Toluidine blue | <br>10<br>10<br>10 |
| 12. | Interdepartmental activities – Presenting cases<br>-Attending seminar of other department<br>- Discussing cases with other department – Clinico pathological meet(OS, OD, OP) | |
| 13. | Treatment of mucosal lesions with laser | |

**Note:** However there can be a overlap of activities in all the 3 years of the course.

**Dissertations**

1. Synopsis
    a. Selection of topic.
    b. Synopsis writing.
    c. Presentation of synopsis to the department, institute review board and ethical committee.
    d. Submission to university (End of first 6 months after commencement of post graduate programme).
2. Library Dissertation/Systematic review: Submission by 18 months after commencement of post graduate programme.
3. Main Dissertation submission 6 months prior university examination.

**Assessment and monitoring**

1. Maintaining log books.
2. Scheme of exams (Institutional level).
    a. First Internal assessment on basic sciences, 2 months before exams.
    b. Second internal assessment at the end of second year (Theory and Practical / Clinical).
    c. Preliminary exam in the last six months (Theory and practical / clinical and viva voce).

## SCHEME OF UNIVERSITY EXAMINATION

**A. Theory :**

**Part I : One paper of 100 marks of 3 hours duration at the end of 1st year of MDS Course.**

**Part II : Three papers (I, II, III) of 100 marks each of 3 hours duration at the end of 3rd year MDS Course (300 Marks)**

Written examination for Part I shall consist of 10 questions of 10 marks each (100 Marks). Part II shall consist of Paper I, II of 2 long essay questions of 25 marks each and 5 short essay questions of 10 marks each (Total 100 marks each) and Paper III shall consist 3 essay questions of 50 marks each out of which of any two questions have to be answered (Total 100 marks ).

## Oral Medicine and Radiology

**Part I Paper I:** Applied Basic Sciences: Applied Anatomy, Physiology, Biochemistry, Pathology and Pharmacology.

**Part II Paper I**: Oral and Maxillofacial Radiology.

**Part II Paper II**: Oral Medicine, Therapeutics and Laboratory Investigations.

**Part II Paper III:** Essay.

*The topics assigned to the different papers are generally evaluated under those sections. However a strict division of the subject may not be possible and some overlapping of topics is inevitable. Students should be prepared to answer overlapping topics.

**B. PRACTICAL / CLINICAL EXAMINATION: 200 MARKS**

**1st Day**

**Clinical Case Presentation:**

| | | |
|---|---|---|
| 2 Spotters | 2 × 10 = | 20 Marks |
| 2 Short Case | 2 × 15 = | 30 Marks |
| 1 Long Case | 1 × 50 = | 50 Marks |
| **TOTAL:** | | **100 MARKS** |

**2nd Day**

**Radiology Exercise:** Including technique and interpretation

I. A) One Intra Oral Radiograph : 10 Marks

B) One Occlusal Radiograph : 30 Marks

II. Two Extra Oral Radiographs : 2 × 30 = 60 Marks

**TOTAL:** **100 MARKS**

**C. VIVA VOCE EXAMINATION : 100 MARKS**

| | |
|---|---|
| a. Viva voce | 80 Marks |
| b. Pedagogy | 20 Marks |

- All examiners will conduct viva voce conjointly to assess a candidate for comprehension, analytical approach, expression, interpretation of data and communication skills. It includes all components of course contents, presentations and discussion of dissertation also.
- A topic be given to each candidate, he/she is asked to make a presentation on the topic for 8-10 minutes.

| | |
|---|---|
| **A. Theory** | 300 Marks |
| **B. Practical and Clinical Examination** | 200 Marks |
| **C. Viva voce** | 100 Marks |
| **Total (A + B + C)** | **700 Marks** |