

# **REVISED RGUHS M.D.S. SYLLABUS**

## **APPLICABLE TO MAY- 2018 ADMITTED MDS**

### **STUDENTS AND ONWARDS**

#### **SECTION I REGULATIONS**

- 1. Title of the Course:** It shall be called Master of Dental Surgery (MDS).
  
- 2. Branches of Study:** The following are the subjects of specialty for the MDS degree:
  - a. Prosthodontics and Crown & Bridge**
  - b. Periodontology**
  - c. Oral & Maxillofacial Surgery**
  - d. Conservative Dentistry and Endodontics**
  - e. Orthodontics & Dentofacial Orthopedics**
  - f. Oral & Maxillofacial Pathology & Oral Microbiology:**
  - g. Public Health Dentistry**
  - h. Pediatric Dentistry**
  - i. Oral Medicine & Radiology**

#### **3. Eligibility**

A candidate for admission to the MDS course (Master of Dental Surgery) must have a recognized degree of BDS (Bachelor of Dental Surgery) awarded by an Indian University in respect of recognized Dental College under Section 10(2) of the Dentists Act, 1948 or an equivalent qualification recognized by the Dental Council of India and should have obtained permanent registration with any of the State Dental Council.

Candidates who possess PG Diploma recognized by the DCI with the duration of 2 years in particular specialty is eligible for admission in MDS in the same specialty and the duration will be 2 years. The syllabus of the two years programme i.e PG- Diploma will be as per the existing DCI/university guidelines.

#### **4. Criteria for Selection for Admission**

Students for MDS Course shall be admitted based on performance at the competitive examinations held by Central Government and as per the orders issued by the state government from time to time.

There shall be a uniform NEET for admission to the post-graduate dental courses in each academic year conducted in the manner, as prescribed by the Central Government in this behalf.

#### **5. Eligibility Certificate from RGUHS**

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 all the university examinations passed (I to IV BDS year course).
3. Attempt Certificate issued by the Principal.
4. Completion of rotatory internship certificate from a recognized college.
5. Registration by any State Dental Council and
6. 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 University.

#### **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 at least three academic years as full time candidates in an institution affiliated to and approved for Postgraduate studies by Rajiv Gandhi University of Health Sciences, Karnataka, and recognized by the Dental Council India.

Provided that 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 for degree shall be full time with graded responsibilities in the 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, CPC 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 research studies.

## **8. Attendance, Progress and Conduct**

A candidate pursuing degree/diploma course should work in the concerned department of the institution for the full period as a full time student. No candidate is permitted to own a clinic/work in clinic/laboratory/nursing home while studying postgraduate course, no candidate shall join any other course of study or appear for any other examination conducted by this university or any other university in India or abroad during the period of registration.

Each year shall be taken as a unit for the purpose of calculating attendance from the date of commencement of academic session as per the COE of university or from the date of admission.

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

Every candidate shall have not less than 80 percent of attendance in each year of the course. However, candidates should not be absent continuously as the course is a full time one.

## **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. Please see Chapter IV for model checklists and logbook.

Special mention may be made of the presentations 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:**

In case of degree courses of three years duration, the concerned departments may conduct tests, one test three months before the Part I examination, the other in the second year. The third test may be held three months before the final examination. The tests may 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 University, when called for.

### **Records:**

Records and marks obtained in tests will be maintained by the Head of the Department and will be made available to the University, when called for.

## **10. Dissertation**

Every candidate pursuing MDS degree course is required to carry out 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.

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 analysis and comparison of results and drawing conclusions.

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

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

### **The dissertation should be written under the following headings:**

- i. Introduction**
- ii. Aims or Objectives of study**
- iii. Review of literature**
- iv. Results**
- v. Discussions**
- vi. Conclusion**
- vii. Summary**
- viii. Reference**
- ix. Tables**
- x. Annexures**

The written text of dissertation shall be not less than 50 pages and shall not exceed 150 pages excluding references, tables, questionnaires and other annexures. It should be typed in double line spacing on one side of paper (A4 size, 8.27" x 11.69"). Spiral binding should be avoided. The dissertation shall be certified by the guide, head of the department and head of the Institution.

Dissertation thus prepared shall be submitted online to the Registrar (Evaluation), six months before final examination on or before the dates notified by the University.

The dissertation shall be valued by two internal and two external examiners appointed by the University. Of the four examiners, accepted by any three shall be considered as approval. Approval of dissertation work is an essential precondition for a candidate to appear in the University examination.

**Guide:** The academic qualification and teaching experience required for recognition by this University as a guide for dissertation work is as laid down by Dental Council of India / Rajiv Gandhi University of Health Sciences.

**Co-guide:** A co-guide may be included provided the work requires substantial contribution from a sister department or from another institution. If the co-Guide is from a different institution, then it should be intimated to the RGUHS.

**Change of guide:** In the event of a registered guide leaving the college for any reason, in the event of death of guide, guide may be changed with prior permission from the university.

## 11. Scheme of Examination

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

- i) **Attendance:** Every candidate shall have put in minimum of 80% attendance in each academic year in order to be eligible for the university examination.
- ii) **Progress and conduct:** Every candidate shall have participated in seminars, review meetings, symposia, conferences, case presentations, clinics and didactic during each year as designed by the concerned department
- 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.  
(Please see Section IV for Model Checklist and Logbook)

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 Examination:**

M.D.S. Degree examinations in any branch of study shall consist of dissertation, written paper (Theory) Part I at the end of 1<sup>ST</sup> year and Part II at the end of 3 years including Practical/Clinical and Viva voce.

The Part – I examination for M.D.S. courses shall be held at the end of 1st year of the course and Part – II examination shall be held at the end of Three years. The university shall conduct two examinations in a year at an interval of four to six months between the two examinations. Not more than two examinations shall be conducted in an academic year.

The university examination shall consist of theory, practical and clinical examination and viva-voce and Pedagogy.

**(i) Theory:**

Part-I: Basic Sciences Paper shall consist of one paper of 100 marks

There shall be a theory examination in the Basic Sciences at the end of 1st year of course. The question papers shall be set and evaluated by the eligible examiners appointed by the university. The candidates shall have to secure a minimum of 50% in the Basic Sciences and shall have to pass the **Part-I** examination at least six months prior to the final (Part-II) examination.

Part-II: Paper-I, Paper-II & Paper III Shall consist of three papers of 300 marks (100 marks for each paper)

In addition

- (ii) Practical and Clinical Examination;
- (iii) Viva-voce; and
- (iv) Pedagogy.

**12. UNIVERSITY SCHEME OF EXAMINATION**

M.D.S. Degree examinations in any branch of study shall consist of dissertation, written paper (Theory) Part I at the end of 1<sup>ST</sup> year and Part II at the end of 3 years including Practical/Clinical and Viva voce.

**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 (Part-I) 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:** Applied Basic Sciences as specified in the syllabus of each course

Part-II Examination shall consist of Paper-I, Paper-II and 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:

**DISTRIBUTION OF MARKS:**

**Theory: (Total 400 Marks)**

**(1) Part I University Examination (100 Marks):-**

There shall be 10 questions of 10 marks each (Total of 100 Marks)

**(2) Part II (3 papers of 100 Marks):-**

(i) Paper-I: 2 long essay questions of 25 marks each and 5 short essays of 10 marks each. (Total of 100 Marks)

(ii) Paper-II: 2 long essay questions of 25 marks each and 5 short essays of 10 marks each. (Total of 100 Marks)

(iii) Paper III: 2 out of 3 essay questions (50 x 2 = 100 Marks)

**Practical and Clinical Examination : 200 Marks**

**Viva-voce and Pedagogy : 100 Marks**

**EXAMINERS:**

**Part I:** There shall be one internal and one external examiner for evaluating the answer scripts of the same specialty.

**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 affiliating university and one examiner shall be from a university of different State.

**CRITERIA FOR PASS.**

To pass the university examination, a candidate shall secure in both theory examination and in practical/clinical including viva voce independently with an aggregate of 50% of total marks allotted (50 out of 100 marks in Part I examination and 150 marks out of 300 in Part II examination in theory and 150 out of 300, clinical plus viva voce together). A candidate securing marks below 50% as mentioned above shall be declared to have failed in the examination.

Sl no	Year /part	Theory		Practical including viva		
1.	Part - 1	Maximum marks 100	Passing criteria 50	Not applicable		
				Maximum marks	Passing criteria	-
2.	Part-II	300	150	300	150	

A candidate who is declared successful in the examination shall be granted a Degree of Master of Dental Surgery in the respective specialty.

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

**13. Distribution of Topics in theory papers in various branches of study specialties:**

**SYLLABUS DISTRIBUTION AMONG 4 PAPERS IN VARIOUS SPECIALITIES:**

**(i) 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 and Microbiology, virology, applied pharmacology, Research Methodology and bio statistics, Applied Dental anatomy and histology, Oral pathology & oral Microbiology, Adult and geriatric psychology. Applied dental materials.

**Part-II**

Paper-I: Removable Prosthodontics and Implant supported prosthosis(Implantology), Geriatric dentistry and Crania Facial Prosthodontics

Paper-II: Fixed Prosthodontics, occlusion, TMJ and esthetics.

Paper-III: Descriptive and analyzing type question

**(ii) PERIODONTOLOGY**

**Part- I**

**Paper-I: Applied Basic Sciences:** Applied Anatomy, Physiology, and Biochemistry, Pathology, Microbiology, Pharmacology, Research Methodology and Biostatistics.

**Part-II**

Paper I: Normal Periodontal structure, Etiology and Pathogenesis of Periodontal diseases, epidemiology as related to Periodontics

Paper II: Periodontal diagnosis, therapy and Oral implantology

Paper III: Descriptive and analysing type question

**(iii) ORAL & MAXILLOFACIAL SURGERY**

**Part-I**

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

**Part- II:**

Paper-I : Minor Oral Surgery and Trauma

*Paper-II : Maxillo-facial Surgery*

Paper-III : Descriptive and analysing type question

**(iv) CONSERVATIVE DENTISTRY AND ENDODONTICS**

**Part-I**

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

**Part-II**

Paper-I : Conservative Dentistry

Paper-II : Endodontics

Paper-III : Descriptive and analysing type question

**(v) ORTHODONTICS AND DENTOFACIAL ORTHOPEDICS**

**Part-I**

**Paper-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 malocclusion, Dentofacial Anomalies, Diagnostic

procedures and treatment planning in Orthodontics, Practice management in Orthodontic

Paper II: Clinical Orthodontics

Paper III: Descriptive and analyzing type question

**(vi) ORAL AND MAXILLOFACIAL 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), Biostatistics and Research Methodology

**Part-II:**

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

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

Paper-III: Descriptive and analyzing type question

**(vii) PUBLIC HEALTH DENTISTRY**

**Part-I**

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

**Part-II:**

Paper-I: Public Health

Paper-II: Dental Public Health

**Paper-III: Descriptive and analyzing type question**

**(viii) PEDIATRIC DENTISTRY**

**Part-I**

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

**Part-II:**

Paper-I: Clinical Pedodontics

Paper-II: Preventive and Community Dentistry as applied to pediatric dentistry

Paper-III: Descriptive and analyzing type question

**(ix) ORAL MEDICINE AND RADIOLOGY**

**Part-I**

Paper I: **Applied Basic Sciences:** Applied Anatomy, Physiology, and Biochemistry, Pathology, Microbiology, Pharmacology, Research Methodology and Biostatistics

**Part-II:**

Paper-I: Oral and Maxillofacial Radiology

Paper-II: Oral Medicine, therapeutics and laboratory investigations

Paper-III: Descriptive and analyzing type question

**SECTION II**

**GOALS & OBJECTIVES OF MDS COURSE**

**Goals:**

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

- © Practice respective specialty 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 specialty and allied specialties irrespective of whether in teaching or 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 candidate so as to ensure higher competence in both general and special area of interest and prepare him for a career in teaching, research and specialty 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 specialty.
- © Describe etiology, pathophysiology, principles of diagnosis and management of common problems within the specialty in adults and children.
- © Identify social, economic, environmental and emotional determinants in a given case and take them into account for planning treatment.
- © Recognize conditions that may be outside the area of specialty/competence and to refer them to an appropriate specialist.
- © Update knowledge by self-study and by attending courses, conferences, seminars relevant to specialty.
- © Undertake audit, use information technology and carry out research 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 procedure required in the specialty.

**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 and to obtain a true informed consent from the patient
- © Provide leadership and get the best out of his 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 knowledge and skill and to 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.

## **SECTION III**

### **COURSE DESCRIPTION OF VARIOUS SPECIALTIES**

# **1. DEFINITIONS OF VARIOUS SPECIALITIES:**

## **1. Prosthodontics and Crown & Bridge**

Prosthodontics and Crown & Bridge and Oral Implantology i.e. that branch of Dental art and science pertaining to the restoration and maintenance of oral function, health, comfort and appearance by the replacement of missing or lost natural teeth and associated tissues either by fixed or removable artificial substitutes.

## **2. Periodontology**

Periodontology and Oral Implantology is the science dealing with the health and diseases of the investing and supporting structures of the teeth and oral mucous membrane.

## **3. Oral & Maxillofacial Surgery**

Oral and Maxillofacial surgery and Implantology deals with the diagnosis and surgical and adjunctive treatment of diseases, injuries and defects of the human jaws and associated oral and facial structures.

## **4. Conservative Dentistry and Endodontics**

Conservative dentistry deals with prevention and treatment of the diseases and injuries of the hard tissues and the pulp of the tooth and associated periapical lesions.

## **5. Orthodontics and Dentofacial Orthopedics**

Deals with prevention and correction of oral anomalies and malocclusion and the harmonizing of the structures involved, so that the dental mechanisms will function in a normal way.

## **6. Oral Pathology & Microbiology**

Oral Pathology deals with the nature of oral diseases, their causes, processes and effects. It relates the clinical manifestation of oral diseases to the physiologic and anatomic changes associated with these diseases.

## **7. Public Health Dentistry**

Community Dentistry is the science and art of preventing and controlling Dental diseases and promoting Dental health through organized community efforts.

## **8. Pedodontics and Preventive Dentistry**

Deals with prevention and treatment of oral and Dental ailments that may occur during childhood.

## **9. Oral Medicine and Radiology**

Oral Medicine is that specialty of dentistry concerned with the basic diagnostic procedures and techniques useful in recognizing the diseases of the oral tissues of local and constitutional origin and their medical management.

Radiology is a science dealing with x-rays and their uses in diagnosis and treatment of diseases in relation to orofacial diseases.

## **2. Course contents**

### **Prosthodontics**

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.

#### **General Objectives of the Course:**

© Training programme in Prosthodontic dentistry including Crown & Bridge & Implantology is structured to achieve knowledge and skill in theoretical and clinical laboratory, attitude, communicative skills and ability to research with understanding of social, cultural, education and environmental background of the society

© To have acquired adequate knowledge and understanding of applied basic and systematic medical science knowledge in general and particular to head and neck.

© The postgraduates will be able to provide Prosthodontic therapy for patients with competence and working knowledge with understanding of applied medical, behavioral and clinical science that are beyond the treatment skills of the general BDS graduate and MDS graduate of other specialties to demonstrate evaluative and judgment skills in making appropriate decisions regarding prevention, treatment aftercare and referral to deliver comprehensive care to patients.

### **Knowledge**

The candidate should possess knowledge applied basic and systematic medical sciences.

© On human anatomy, embryology, histology, applied in general and particular to head and neck, Physiology & Biochemistry, Pathology and microbiology, virology, Health and diseases of various systems of the body (systemic) principles in surgery and medicine, Pharmacology, Nutrition,

behavioral Science, Age changes, genetics, Immunology, Congenital defects and syndrome and Anthropology, Bioengineering, Bio-medical and Biological Principle and application Dental material science

© Ability to diagnose and plan treatment for patients requiring a Prosthodontic therapy

© Ability to read and interpret a radiograph and other investigations for the purpose of diagnosis treatment planning.

© Tooth and tooth surface restorations, Complete denture prosthodontics, removable partial dentures Prosthodontics, fixed prosthodontics and maxillofacial and Craniofacial Prosthodontics, implants supported Prosthodontics, T.M.J, and occlusion, craniofacial esthetic, and biomaterials. Craniofacial disorders , problems of psychogenic origin.

© Age changes and Prosthodontic Therapy for aged.

© Ability to diagnose failed restoration and provide Prosthodontic therapy and after care.

© Should have essential knowledge on ethics, laws and Jurisprudence and forensic odontology in Prosthodontics

© General health conditions and emergency as related to prosthodontics treatment,

© Identify social, cultural, economic, environmental, educational and emotional determinants of the patient and consider them in planning the treatment.

© Identify cases, which are outside the area of his specialty/ competence and refer them to appropriate specialists.

© Advice regarding case management involving surgical, interim treatment etc.

© Competent specialization in team management of craniofacial design.

© Should attend continuing education programmes, seminars and conferences related to prosthodontics in thus updating himself/herself.

© Teach and guide his / her team, colleague and other students.

© Should be able to use information technology tools and carry out research basic and clinical, with the aims of publishing his/ her work and presenting his/her work at various scientific forums.

© Should have essential knowledge of personal hygiene, infection control, prevent of cross infection and safe disposal of waste, keeping in view the risks of transfer of Hepatitis & HIV

© Should have an ability to plan to establish Prosthodontic clinic/department in a teaching hospital

© Should have a sound knowledge for the application of pharmacology, effects of drugs on oral tissues and systems of the body and on medically compromised individuals.

## **Skills**

© The candidate should be able to examine the patients requiring Prosthodontic therapy, investigate the patient systemically, analyze the investigation results, radiography, diagnose the ailment, plan a treatment, communicate it with the patient and execute it.

© Understand the prevalence and prevention of diseases of craniomandibular system related to Prosthetic dentistry.

© The candidate should be able to restore the lost functions of the stomatognathic system namely speech, mastication etc to provide a quality health care for craniofacial region

© The candidate should be able to interact with other speciality including a medical speciality for a planned team management of patients for a craniofacial and oral acquired and congenital defects, Temporomandibular joint syndromes, esthetics, Implant supported Prosthetics and problems of Psychogenic origin,

© Should be able to demonstrate the clinical competence necessary to carry out appropriate treatment at higher level of knowledge, training and practice skills currently available in their specialty area.

© Identify target diseases and awareness amongst the population for Prosthodontic therapy.

© Perform clinical and Laboratory procedure with understanding of biomaterials, tissue conditions related to prosthesis and have competent dexterity and skill for performing clinical and laboratory procedures in fixed, removable, implant and maxillofacial TMJ, esthetics Prosthodontics.

© Laboratory technique management based on skills and knowledge of Dental Materials and dental equipment and instruments,

© To understand demographic distribution and target diseases of Cranio mandibular region related to Prosthodontic including crown & bridge and implantology.

## **Attitudes**

© Adopt ethical principles in all Prosthodontic practice. Professional honesty and integrity are to be fostered. Treatment to be delivered irrespective of social status, caste, creed or religion of patient.

© Willing to share the knowledge and clinical experience with professional colleagues.

© Willing to adopt new methods and techniques in prosthodontics from time to time based on scientific research, which is in patient's best interest.

© Respect patient's rights and privileges including patients right to information and right to seek second opinion.

## **Communication Abilities**

© Develop communication skills, in particular, to explain treatment option available in management.

© Provide leadership and get the best out of his group in a congenial working atmosphere.

© Should be able to communicate in simple understandable language with the patient and explain the principles of prosthodontics to the patient. He should be able to guide and counsel the patient with regard to various treatment modalities available.

© Develop the ability to communicate with professional colleagues through various media like Internet, e-mail, videoconference, and etc. to render the best possible treatment.

## **Course Contents**

© The candidates shall undergo training for 3 academic years with satisfactory attendance of 80% for each year.

© The course includes epidemiology and demographic studies, research and teaching skills.

© Ability to prevent, diagnose and treat with after care for all patients for control of diseases and / or treatment related syndromes with patient satisfaction for restoring functions of Stomatognathic system by Prosthodontic therapy

The program outline addresses the knowledge, procedural and operative skills needed in Masters Degree in Prosthodontics. A minimum of 3 years of formal training through a graded system of education as specified will enable the trainee to achieve Masters Degree in Prosthodontics including Crown & Bridge and Implantology, competently and have the necessary skills/ knowledge to update themselves with advancements in the field. The course content has been identified and categorized as Essential knowledge as given below.

## **Essential Knowledge**

The topics to be considered are: Basic Sciences, Biological and mechanical considerations in Prosthodontics including Crown and Bridge Implantology and Material Science.

## **APPLIED BASIC SCIENCES**

© Although knowledge on the applied aspects of Anatomy, Embryology, Histology and applied in general and particular to head and neck, Physiology, Biochemistry, Pathology and Microbiology, Virology.

© Pharmacology, Health and diseases of various systems of Body (systemic) principles in surgery medicine and Anesthesia, Nutrition, Behavioral sciences, age changes, genetics, Dental Material Science, congenital defects and Syndromes and Anthropology, Biomaterial Sciences Bio-engineering and Biomedical and Research Methodology as related to Masters degree prosthodontics including crown & bridge and implantology.

It is desirable to have adequate knowledge in Bio-statistics Research Methodology and use of computers. To develop necessary teaching skills in Prosthodontics including crown and bridge and implantology

## **Applied anatomy of Head and Neck**

**General Human Anatomy** - Gross Anatomy, anatomy of Head & Neck in detail. Cranial and facial bones, TMJ and function, muscles of mastication and facial expression, muscles of neck and chain of back muscles including muscles of deglutition and tongue, arterial supply and venous drainage of the head and neck, anatomy of the Para nasal sinuses with relation\*\* to the Vth cranial nerve. General consideration of the structure and function of the brain, ^considerations of V, VII, XI, XII, cranial nerves and autonomic nervous system of the dand neck. The salivary glands, Pharynx, Larynx Trachea, Esophagus, Functional Anatomy mastication, Deglutition, speech, respiration, and circulation, teeth eruption, morphology, elusion and function. Anatomy of TMJ, its movements and myofacial pain dysfunction syndrome.

**Embryology**- Development of the face, tongue, jaws, TMJ, Paranasal sinuses, pharynx, larynx, trachea, esophagus, Salivary glands, Development of oral and Para oral tissue including detailed aspects of tooth and dental hard tissue formation

**Growth & Development** - Facial form and Facial growth and development overview of Dentofacial growth process and physiology from fetal period to maturity and old age, comprehensive study of craniofacial biology. General physical growth, functional and anatomical aspects of the head, changes in craniofacial skeletal, relationship between . development of the dentition and facial growth.

**Dental Anatomy** - Anatomy of primary and secondary dentition, concept of occlusion, mechanism of articulation, and masticatory function. Detailed structural and functional study of the oral dental and Para oral tissues. Normal occlusion, development of occlusion in deciduous mixed and permanent dentitions, root length, root configuration, tooth-numbering system.

**Histology** - histology of enamel, dentin, Cementum, periodontal ligament and alveolar bone, pulpal anatomy, histology and biological consideration. Salivary glands and Histology of epithelial tissues including glands.

Histology of general and specific connective tissue including bone, hematopoietic system, lymphoid etc.

Muscle and neural tissues Endocrinal system including thyroid Salivary glands Histology of skin, oral mucosa, respiratory mucosa, connective tissue, bone, cartilage, cellular elements of blood vessels, blood, lymphatic, nerves, muscles, tongue, tooth and its surrounding structures.

**Anthropology & Evolution** - Comparative study of tooth, joints, jaws, muscles of mastication and facial expression, tongue, palate, facial profile and facial skeletal system. Comparative anatomy of skull, bone, brain, musculo - skeletal system, neuromuscular coordination, posture and gait - plantigrade and orthograde posture.

**Applied Genetics and Heredity** - Principles of orofacial genetics, molecular basis of genetics, genetic risks, counseling, bioethics and relationship to Orthodontic management. Dentofacial anomalies, Anatomical, psychological and pathological characteristics of major groups of developmental defects of the orofacial structures

**cell biology** - Detailed study of the structure and function of the mammalian cell with special emphasis on ultra structural features and molecular aspects. Detailed consideration of Intercellular junctions. Cell cycle and division, cell-to-cell and cell- extra cellular matrix interactions.

**Applied Physiology and Nutrition** - Introduction, Mastication, deglutition, digestion and assimilation, Homeostasis, fluid and electrolyte balance. Blood composition, volume, function, blood groups and hemorrhage, Blood transfusion, circulation, Heart, Pulse, Blood pressure, capillary and lymphatic circulation, shock, respiration, control, anoxia, hypoxia, asphyxia, artificial respiration. Endocrine glands in particular reference to pituitary, parathyroid and thyroid glands and sex hormones. Role of calcium and Vit D in growth and development of teeth, bone and jaws. Role of Vit. A, C and B complex in oral mucosal and periodontal health. Physiology and function of the masticatory system. Speech mechanism, mastication, swallowing and deglutition mechanism, salivary glands and Saliva

**Endocrines**- General principles of endocrine activity and disorders relating to pituitary, thyroid, pancreas, parathyroid, adrenals, gonads, including pregnancy and lactation. Physiology of saliva, urine formation, normal and abnormal constituents, Physiology of pain, Sympathetic and parasympathetic nervous system. Neuromuscular co-ordination of the stomatognathic system.

**Applied Pharmacology and Therapeutics**- Definition of terminologies used - Dosage and mode of administration of drugs. Action and fate of drugs in the body, Drug addiction, tolerance and hypersensitive reactions, Drugs acting on the central nervous system, general anesthetics hypnotics. Analeptics and tranquilizers, Local anesthetics, Chemotherapeutics and antibiotics, Antitubercular and anti syphilitic drugs, Analgesics and antipyretics, Antiseptics, styptics, Sialogogues and antisialogogues, Haematinics, Cortisone, ACTH, insulin and other antidiabetics

vitamins: A, D, B - complex group C and K etc. Chemotherapy and Radiotherapy

**Applied Pathology** - Inflammation, repair and degeneration, Necrosis and gangrene, Circulatory disturbances, Ischemia, hyperemia, chronic venous congestion, edema, thrombosis, embolism and infarction. Infection and infective granulomas, Allergy and hypersensitive reaction, Neoplasm; Classification of tumors, Carcinogenesis, characteristics of benign and malignant tumors, spread of tumors. Applied histo pathology and clinical pathology.

**Applied Microbiology**- Immunity, knowledge of organisms commonly associated with diseases of the oral cavity (morphology cultural characteristics etc) of strepto, staphylo, pneumo, gono and meningococci, Clostridia group of organisms, Spirochetes, organisms of tuberculosis, leprosy, diphtheria, actinomycosis and moniliasis etc. Virology, Cross infection control, sterilization and hospital waste management

**a) Applied Oral Pathology** -Developmental disturbances of oral and Para oral structures, Regressive changes of teeth, Bacterial, viral and mycotic infections of oral cavity, Dental caries, diseases of pulp and periapical tissues, Physical and chemical injuries of the oral cavity, oral manifestations of metabolic and endocrine disturbances, Diseases of the blood and blood forming organism in relation to the oral cavity, Periodontal diseases, Diseases of the skin, nerves and muscles in relation to the Oral cavity.

**b) Laboratory determinations**- Blood groups, blood matching, R.B.C. and W.B.C. count, Bleeding and clotting time, Smears and cultures - urine analysis and culture

**BioStatistics**- Study of Biostatistics as applied to dentistry and research. Definition, aim characteristics and limitations of statistics, planning of statistical experiments, sampling, collection, classification and presentation of data (Tables, graphs, pictograms etc) Analysis of data

**Introduction to biostatistics**- Scope and need for statistical application to biological data. Definition of selected terms - scale of measurements related to statistics, Methods of collecting data, presentation of the statistical diagrams and graphs.

Frequency curves, mean, mode of median, Standard deviation and co-efficient of variation, Correlation - Co-efficient and its significance, Binominal distributions normal distribution and Poisson distribution, Tests of significance

**Research methodology** - Understanding and evaluating dental research, scientific method and the behavior of scientists, understanding to logic - inductive logic - analogy, models, authority, hypothesis and causation, Quacks, Cranks, Abuses of Logic, Measurement and Errors of measurement, presentation of results, Reliability, Sensitivity and specificity diagnosis test and measurement, Research Strategies, Observation, Correlation, Experimentation and Experimental design. Logic of statistical interference balance judgements, judgement under uncertainty, clinical

vs., scientific judgement, problem with clinical judgement, forming scientific judgements, the problem of contradictory evidence, citation analysis as a Means of literature evaluation, influencing judgement: Lower forms of Rhetorical life, Denigration, Terminal, Inexactitude.

**Applied Radiology-** Introduction, radiation, background of radiation, sources, radiation biology, somatic damage, genetic damage, protection from primary and secondary radiation, Principles of X-ray production, Applied principles of radio therapy and after care.

**Roentgenographs Techniques-** Intra oral: Extra oral roentgenography, Methods of localization digital radiology and ultra sound, Normal anatomical landmarks of teeth and jaws in radiograms, temporomandibular joint radiograms, neck radiograms.

**Applied medicine-** Systemic diseases and its influence on general health and oral and dental health. Medical emergencies in the dental offices - Prevention, preparation, medico legal consideration, unconsciousness, respiratory distress, altered consciousness, seizures, drug related emergencies, chest pain, cardiac arrest, premedication, and management of ambulatory patients, resuscitation, applied.

psychiatry, child, adult and senior citizens. Assessment of case, premedication, inhibition, monitoring, extubation, complication assist in O.T. for anesthesia.

**Applied surgery & Anesthesia-** General principles of surgery, wound healing, incision wound care, hospital care, control of hemorrhage, electrolyte balance. Common bandages, sutures, splints, shifting of critically ill patients, prophylactic therapy, bone surgeries, grafts, etc, surgical techniques, nursing assistance, anesthetic assistance.

Principles in speech therapy, surgical and radiological craniofacial oncology, applied surgical ENT and ophthalmology.

Plastic surgery - Applied understanding and assistance in programmes of plastic surgery for prosthodontics therapy.

### **Applied Dental Material**

© All materials used for treatment of craniofacial disorders - Clinical, treatment, and laboratory materials, Associated materials, Technical consideration, shelf life, storage, manipulations, sterilization, and waste management.

© Students shall be trained and practiced for all clinical procedures with an advanced knowledge of theory of principles, concepts and techniques of various honorably accepted methods and materials for Prosthodontics, treatment modalities including honorably accepted methods of diagnosis, treatment plan, records maintenance, and treatment and laboratory procedures and after care and preventive.

© Understanding all applied aspects for achieving physical, psychological well being of the patients for control of diseases and / or treatment related syndromes with the patient satisfaction and restoring function of Cranio mandibular system for a quality life of a patient

© The theoretical knowledge and clinical practice shall include principles involved for support, retention, stability, esthetics, phonation, mastication, occlusion, behavioral, psychological, preventive and social aspects of science of Prosthodontics including Crown & Bridge and Implantology

© Theoretical knowledge and clinical practice shall include knowledge for laboratory practice and material science. Students shall acquire knowledge and practice of history taking, systemic and oro and Craniofacial region and diagnosis and treatment plan and prognosis record maintaining. A comprehensive rehabilitation concept with pre prosthetic treatment plan including surgical Reevaluation and prosthodontic treatment plan, impressions, jaw relations, utility of face bow and articulators, selection and positioning of teeth for retention, stability, esthetics, phonation and psychological comfort. Fit and insertion and instruction for patients after care and preventive Prosthodontics, management of failed restorations.

© TMJ syndromes, occlusion rehabilitation and craniofacial esthetics. State of the art clinical methods and materials for implants supported extra oral and intra oral prosthesis.

© Student shall acquire knowledge of testing biological, mechanical and other physical property of all materials used for the clinical and laboratory procedures in prosthodontic therapy.

© Students shall acquire full knowledge and practice Equipments, instruments, materials, and laboratory procedures at a higher competence with accepted methods.

© All clinical practice shall involve personal and social obligation of cross infection control, sterilization and waste management.

## **I. REMOVABLE PROSTHODONTICS AND IMPLANTS**

a. Prosthodontic treatment for completely edentulous patients - Complete denture, immediate complete denture, single complete denture, tooth supported complete denture, Implant supported Prosthesis for completely edentulous.

b. Prosthodontic treatment for partially edentulous patients: - Clasp- retained partial dentures, intra coronal and extra coronal precision attachments retained partial dentures, maxillofacial prosthesis.

**Prosthodontic treatment for edentulous patients:** -Complete Dentures and Implant supported Prosthesis for Edentulous in both the arches

**Complete Denture Prosthesis** - Definitions, terminology, G.P.T., Boucher's clinical dental terminology

**Scope of Prosthodontics** - the Cranio Mandibular system and its functions, the reasons for loss of teeth and methods of restorations,

Infection control, cross infection barrier - clinical and laboratory and hospital and lab waste management

a) Edentulous Predicament, Biomechanics of the edentulous state, Support mechanism for the natural dentition and complete dentures, Biological considerations, Functional and Para functional considerations, Esthetic, behavioral and adaptive responses, Temporomandibular joints changes.

b) Effects of aging of edentulous patients - aging population, distribution and edentulism in old age, impact of age on edentulous mouth - Mucosa, Bone, saliva, jaw movements in old age, taste and smell, nutrition, aging, skin and teeth, concern for personal appearance in old age

c) Sequelae caused by wearing complete denture - the denture in the oral environment - Mucosal reactions, altered taste perception, burning mouth syndrome, gagging, residual ridge reduction, denture stomatitis, flabby ridge, denture irritation hyperplasia, traumatic Ulcers, Oral cancer in denture wearers, nutritional deficiencies, masticatory ability and performance, nutritional status and masticatory functions.

d) Temporomandibular disorders in edentulous patients - Epidemiology, etiology and management, Pharmacotherapy, Physical modalities, and Bio-behavioral modalities

e) Nutrition Care for the denture wearing patient - Impact of dental status of food intake, Gastrointestinal functions, nutritional needs and status of older adults, Calcium and bone health, vitamin and herbal supplementation, dietary counseling and risk factor for malnutrition in patients with dentures and when teeth are extracted.

f) Preparing patient for complete denture patients - Diagnosis and treatment planning for edentulous and partially edentulous patients - familiarity with patients, principles of perception, health questionnaires and identification data, problem identification, prognosis and treatment identification data, problem identification, prognosis and treatment planning - contributing history - patient's history, social information, medical status - systemic status with special reference to debilitating diseases, diseases of the joint, cardiovascular, disease of the skin, neurological disorders, oral malignancies, climacteric, use of drugs, mental health - mental attitude, psychological changes, adaptability, geriatric changes - physiologic, pathological, pathological and intra oral changes. Intra oral health - mucosa membrane, alveolar ridges, palate and vestibular sulcus and dental health.

Data collection and recording, visual observation, radiography, palpation, measurement

- sulci or fossae, extra oral measurement is the vertical dimension of occlusion, diagnostic casts.

Specific observations - existing dentures, soft tissue health, hard tissue health - teeth, bone.

Biomechanical considerations - jaw relations, border tissues, saliva, muscular development - muscle tones, neuromuscular co-ordination, tongue, cheek and lips.

Interpreting diagnostic findings and treatment planning

g) Pre prosthetic surgery - Improving the patients denture bearing areas and " relations: - non surgical methods - rest for the denture supporting tissues, 0m! correction of the old prosthesis, good nutrition, conditioning of the patients musculature, surgical methods - Correction of conditions, that preclude optimal prosthetic function - hyperplastic ridge - epulis fissuratum and papillomatosis, frenular attachments and pendulous maxillary tuberosities, ridge augmentation, maxillary and Mandibular oral implants, corrections of congenital deformities, discrepancies in jaw size, relief of pressure on the mental foramen, enlargement of denture bearing areas, vestibuloplasty, ridge augmentation, replacement of tooth roots with Osseo integrated denture implants.

h) Immediate Denture - Advantages, disadvantages, contra indication, diagnosis treatment plan and prognosis, Explanation to the patient, Oral examinations, examination of existing prosthesis, tooth modification, prognosis, referrals / adjunctive care, oral prophylaxis and other treatment needs.

First extraction / surgical visit, preliminary impressions and diagnostic casts, management of loose teeth, custom trays, final impressions and final casts two tray or sectional custom impression tray, location of posterior limit and jaw relation records, setting the denture teeth / verifying jaw relations and the patient try in, laboratory phase, setting of anterior teeth, Wax contouring, flasking and boil out, processing and finishing, surgical templates, surgery and immediate denture insertion, post operative care and patient instructions, subsequent service for the patient on the immediate denture, over denture tooth attachments, implants or implant attachments.

i) Over dentures (tooth supported complete dentures) - indications and treatment planning, advantages and disadvantages, selection of abutment teeth, lose of abutment teeth, tooth supported complete dentures. Non-coping abutments, abutment with copings, abutments with attachments, submerged vital roots, preparations of the retained teeth.

j) Single Dentures: Single Mandibular denture to oppose natural maxillary teeth, single complete maxillary denture to oppose natural Mandibular teeth to oppose a partially edentulous Mandibular arch with fixed prosthesis, partially edentulous Mandibular arch with removable partial dentures. Opposing existing complete dentures, preservation of the residual alveolar ridge,

necessity for retaining maxillary teeth and mental trauma.

k) Art of communication in the management of the edentulous predicament - Communication - scope, a model of communication, why communication . important, what are the elements of effective communications, special significance of doctor / patient communication, doctor behavior, The iatrosedative (doctor & act of making calm) recognizing and acknowledging the problem, exploring and identifying the problem, interpreting and explaining the problem, offering a solution to the problem for mobilize their resources to operate most efficient way, recognizing and acknowledging the problem, interpreting and explaining the problem, offering a solution to the problem.

l) Materials prescribed in the management of edentulous patients - Denture base materials, General requirements of biomaterials for edentulous patients, requirement of an ideal denture base, chemical composition of denture base resins, materials used in the fabrication of prosthetic denture teeth, requirement of prosthetic denture teeth, denture lining materials and tissue conditioners, cast metal alloys as denture, bases - base metal alloys.

m) Articulators - Classification, selection, limitations, precision, accuracy and sensitivity, and Functional activities of the lower member of the articulator and uses,

n) Fabrications of complete dentures - complete denture impressions - muscles of facial expressions and anatomical landmarks, support, retention, stability, aims and objectives - preservation, support, stability, aesthetics, and retention. Impression materials and techniques - need of 2 impressions the preliminary impression and final impression.

Developing an analogue / substitute for the maxillary denture bearing area -anatomy of supporting structures - mucous membrane, hard palate, residual ridge, shape of the supporting structure and factors that influence the form and size of the supporting bones, incisive foramen, maxillary tuberosity, sharp spiny process, torus palatinus, Anatomy of peripheral or limiting structures, labial vestibule, Buccal vestibule, vibrating line, preliminary and final impressions, impression making, custom tray and refining the custom tray, preparing the tray to secure the final impression, making the final impression, boxing impression and making the casts

Developing an analogue / substitute for the Mandibular denture bearing area-Mandible - anatomy of supporting structure, crest of the residual ridge, the Buccal shelf, shape of supporting structure, mylohyoid ridge, mental foramen, genial tubercles, torus mandibularis, Anatomy of peripheral or limiting structure - labial vestibule, Buccal vestibule, lingual border, mylohyoid muscle, retromylohyoid fossa, sublingual gland region, alveolingual sulcus, Mandibular impressions - preliminary impressions, custom tray, refining, preparing the tray\, final impressions.

m) Mandibular movements, Maxillo mandibular relation and concepts of occlusion - Gnathology, identification of shape and location of arch form - Mandibular and maxillary, occlusion rim, level of occlusal plane and recording of trail denture base, tests to determine vertical dimension of occlusion, interocclusal, centric relation records, Biological and clinical considerations in making jaw relation records and transferring

records from the patients to the articulator, Recording of Mandibular movements - influence of opposing tooth contacts, Temporomandibular joint, muscular involvements, neuromuscular regulation of Mandibular motion, the envelope of motion, rest position, Maxillo - Mandibular relations - the centric, eccentric, physiologic rest position, vertical dimension, occlusion, recording methods - mechanical, physiological, Determining the horizontal jaw relation - Functional graphics, tactile or interocclusal check record method, Orientation / sagittal relation records, Arbitrary / Hinge axis and face bow record, significance and requirement, principles and biological considerations and securing on articulators.

n) Selecting and arranging artificial teeth and occlusion for the edentulous patient - anterior tooth selection, posterior tooth selection, and principles in arrangement of teeth, and factors governing position of teeth - horizontal, vertical. The inclinations and arrangement of teeth for aesthetics, phonetics and mechanics -to concept of occlusion.

o) The Try in - verifying vertical dimension, centric relation, establishment of posterior palatal seal, creating a facial and functional harmony with anterior teeth, harmony of spaces of individual teeth position, harmony with sex, personality and age of the patient, co-relating aesthetics and incisal guidance.

p) Speech considerations with complete dentures - speech production - structural and functional demands, neuropsychological background, speech production and the roll of teeth and other oral structures - bilabial sounds, labiodentals sounds, linguodental sounds, linguoalveolar sound, articulatoric characteristics, acoustic characteristics, auditory characteristics, linguopalatal and linguoalveolar sounds, speech analysis and prosthetic considerations.

q) Waxing contouring and processing the dentures their fit and insertion and after care - laboratory procedure - wax contouring, flasking and processing, laboratory remount procedures and selective, finishing and polishing. Critiquing the finished prosthesis - doctors evaluation, patients evaluation, friends evaluation, elimination of basal surface errors, errors in occlusion, interocclusal records for remounting procedures - verifying centric relation, eliminating occlusal errors, special instructions to the patient - appearance with new denture, mastication with new dentures, speaking with new dentures, speaking with new dentures, oral hygiene with dentures, preserving of residual ridges and educational material for patients, maintaining the comfort and health of the oral cavity in the rehabilitated edentulous patients. Twenty-four hours oral examination and treatment and preventive Prosthodontic - periodontic recall for oral examination 3 to 4 months intervals and yearly intervals.

m) Implant supported Prosthesis for partially edentulous patients - Science of Osseo integration, clinical protocol for treatment with implant supported over dentures, managing problems and complications, implant Prosthodontics for edentulous patients: current and future directions.

n) Implant supported prosthesis for partially edentulous patients - Clinical and laboratory protocol: Implant supported prosthesis, managing problems and implications.

- © Introduction and Historical Review
- © Biological, clinical and surgical aspects of oral implants
- © Diagnosis and treatment planning
- © Radiological interpretation for selection of fixtures
- © Splints for guidance for surgical placement of fixtures
- © Intra oral plastic surgery © Guided bone and Tissue generation consideration for implants fixture. © © Implants supported prosthesis for complete edentulism and partial edentulism
- © Occlusion for implants support prosthesis.
- © Peri-implant tissue and Management
- © Peri-implant and management
- © Maintenance and after care
- © Management of failed restoration.
- © Work authorization for implant supported prosthesis - definitive instructions, legal aspects, delineation of responsibility.

**Prosthodontic treatment for partially edentulous patients - Removable partial Prosthodontics -**

a. Scope, definition and terminology, Classification of partially edentulous arches - requirements of an acceptable methods of classification, Kennedy's classification, Applegate's rules for applying the Kennedy classification.

b. Components of RPD - major connector - mandibular and maxillary, minor connectors, design, functions, form and location of major and minor connectors, tissue stops, finishing lines, reaction of tissue to metallic coverage

Rest and rest seats - from 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, incisal rest and rest seat.

Direct retainer- Internal attachment, extracoronary direct retainer, relative uniformity of retention, flexibility of clasp arms, stabilizing - reciprocal clasp are, criteria for selecting a given clasp design, the basic principles of clasp design, circumferential clasp, bar clasp, combination clasp and other type of retainers.

Indirect Retainer - denture rotation about an axis, factors influencing effectiveness of indirect retainers, forms of indirect retainers, auxiliary Occlusal rest, canine extensions from Occlusal

an opposing cast or template, types of anterior teeth, waxing and investing tinW partial denture before processing acrylic resin bases, processing the denture, remounting and occlusal correction to

an occlusal template, polishing the denture.

m. Initial placement, adjustment and servicing of the removable partial denture - adjustments to bearing surfaces of denture framework, adjustment of occlusion in harmony with natural and artificial dentition, instructions to the patient, follow - up services

n. Relining and Rebasings the removable partial denture - Relining tooth supported dentures bases, relining distal extension denture bases, methods of reestablishing occlusion on a relined partial denture.

o. Repairs and additions to removable partial dentures - Broken clasp arms, fractured occlusal rests, distortion or breakage of other components - major and minor connectors, loss of a tooth or teeth not involved in the support or retention of the restoration, loss of an abutment tooth necessitating its replacement and making a new direct retainer, Other types of repairs, Repair by soldering.

p. Removable partial denture considerations in maxillofacial prosthetics - Maxillofacial prosthetics, intra oral prosthesis, design considerations, maxillary prosthesis. Obturators, speech aids, palatal lifts, palatal augmentations, mandibular prosthesis, treatment planning, framework design, class I resection, Class II resection, mandibular flange prosthesis, jaw relation record

q. Management of failed restorations, work authorization.

## **I. MAXILLOFACIAL REHABILITATION:**

Scope, terminology, definitions, cross infection control and hospital waste management, work authorization.

Behavioral and psychological issues in Head and neck cancer, Psychodynamic interactions - clinician and patient - Cancer Chemotherapy: Oral Manifestations, Complications, and management, Radiation therapy of head and neck tumors: Oral effects, Dental manifestations and dental treatment: Etiology, treatment and rehabilitation (restoration)- Acquired defect of the mandible, acquired defects of hard palate, soft palate, clinical management of edentulous and partially edentulous maxillectomy patients, Facial defects, Restoration of speech, Velopharyngeal function, cleft lip and palate, cranial implants, maxillofacial trauma, Lip and cheek support prosthesis, Laryngectomy aids, Obstructive sleep apnoea, Tongue prosthesis, Esophageal prosthesis, Vaginal radiation carrier, Burn stents, Nasal stents, Auditory inserts, trismus appliances, mouth controlled devices for assisting the handicapped, custom prosthesis for lagophthalmos of the eye. Osseo integrated supported facial and maxillofacial prosthesis. Resin bonding for maxillofacial prosthesis, Implant rehabilitation of the mandible compromise by radiotherapy, Craniofacial Osseo integration, Prosthodontic treatment, Material and laboratory procedures for maxillofacial prosthesis.

## II. OCCLUSION

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

Scope, definition, terminology, optimum oral health, anatomic harmony, functional harmony, occlusal stability, causes of deterioration of dental and oral health, Anatomical, physiological, neuro - muscular, psychological, considerations of teeth, muscles of mastication, temporomandibular joint, intra oral and extra oral and facial musculatures, the functions of Cranio mandibular system.

Occlusal therapy, the stomatognathic system, centric relation, vertical dimension, the neutral zone, the occlusal plane, differential diagnosis of temporomandibular disorders, understanding and diagnosing intra articular problems, relating treatment to diagnosis of internal derangements of TMJ, Occlusal splints, Selecting instruments for occlusal diagnosis and treatment, mounting casts, Pankey-mann-schuyler philosophy of complete occlusal rehabilitation, long centric, anterior guidance, restoring lower anterior teeth, restoring upper anterior teeth, determining the type of posterior occlusal contours, methods for determining the plane of occlusion, restoring lower posterior teeth, restoring upper posterior teeth, functionally generated path techniques for recording border movements intra orally, occlusal equilibration, Bruxism, Procedural steps in restoring occlusions, requirements for occlusal stability, solving occlusal problems through programmed treatment planning, splinting, solving - occlusal wear problems, deep overbite problems, anterior overjet problems, anterior open bite problems. Treating - end to end occlusion, splayed anterior teeth, cross bite patient, Crowded, irregular, or interlocking anterior bite, using Cephalometric for occlusal analysis, solving severe arch malrelationship problems, transcranial radiography, postoperative care of occlusal therapy.

## III. FIXED PROSTHODONTICS

Scope, definitions and terminology, classification and principles, design, mechanical and biological considerations of components - Retainers, connectors, pontics, work authorization.

© **Diagnosis and treatment planning** - patients history and interview, patients desires and expectations and needs, systemic and emotional health, clinical examinations - head and neck, oral - teeth, occlusal and periodontal, Preparation of diagnostic cast, radiographic interpretation, Aesthetics, endodontics considerations, abutment selection - bone support, root proximities and inclinations, selections of abutments, for cantilever, pier abutments, splinting, available tooth structures and crown morphology, TMJ and muscles mastication and comprehensive planning and prognosis.

© **Management of carious teeth** - caries in aged, caries control, removing infected carious materials, protection of pulp, reconstruction measure for compromising teeth - retentive pins, horizontal slots, retention grooves, prevention of caries, diet, prevention of root caries and vaccine for caries.

© **Periodontal considerations** - attachment units, ligaments, gingivitis, periodontitis Microbiological aspect of periodontal diseases, marginal lesion, occlusal trauma, periodontal pockets attached gingiva, interdental papilla, gingival embrasures, radiographic interpretations of Periodontia, intraoral plastics, periodontal splinting -Fixed prosthodontics with periodontially compromised dentitions, placement of margin restorations.

© **Biomechanical principle of tooth preparations** - individual tooth preparations - Complete metal Crowns - P.F.C., All porcelain - Cerestore crowns, dicor crowns, incerem etc. porcelain jacket crowns partial 3/4, half and half, rickler, telescopic, telescopic, pin - hole, pin - ledge, laminates, inlays, onlays and preparations for restoration of teeth - amalgam, glass ionomer and composite resins, Resin Bond retainer, Gingival marginal preparations - Design, material selection, and biological and mechanical considerations - intracoronal retainer and precision attachments -custom made and ready made

© **Isolation and fluid control** - Rubber dam applications, tissue dilation - soft tissue management for cast restoration, impression materials and techniques, provisional restoration, interocclusal records, laboratory support for fixed Prosthodontics' Occlusion, Occlusal equilibration, articulators, recording and transferring of occlusal relations, cementing of restoration.

© **Resins, Gold and gold alloys, glass ionomer, restorations.**

© **Restorations of endodontically treated teeth, Stomatognathic Dysfunction and managements**

© **Management of failed restorations**

© **Osseo integrated supported fixed Prosthodontics** - Osseo integrated supported and tooth supported fixed Prosthodontics

#### **IV. TMJ - Temporomandibular joint dysfunction - Scope, definitions, and terminology**

Temporomandibular joint and its function, Orofacial pain, and pain from the temporomandibular joint region, temporomandibular joint dysfunction, temporomandibular joint sounds, temporomandibular joint disorders

Anatomy related, trauma, disc displacement, Osteoarthritis/Osteoarthritis, Hyper mobility and dislocation, infectious arthritis, inflammatory diseases, Eagle's syndrome (Styloid -stylohyoid syndrome), Synovial chondromatosis, Osteochondritis disease, Osteonecrosis, Nerve entrapment process, Growth changes, Tumors, Radiographic imaging

© Etiology, diagnosis and cranio mandibular pain, differential diagnosis and management, orofacial pain - pain from teeth, pulp, dentin, muscle pain, TMJ pain - psychologic, physiologic - endogenous control, acupuncture analgesia, Placebo effects on analgesia, Trigeminal neuralgia, Temporal arteritis

© Occlusal splint therapy - construction and fitting of occlusal splints, management of occlusal splints, therapeutic effects of occlusal splints, occlusal splints and general muscles performance, TMJ joint uploading and anterior repositioning appliances, use and care of occlusal splints.

© Occlusal adjustment procedures - Reversible - occlusal stabilization splints and physical therapies, jaw exercises, jaw manipulation and other physiotherapy or irreversible therapy - occlusal repositioning appliances, orthodontic treatment, Orthognathic surgery, fixed and removable prosthodontic treatment and occlusal adjustment, removable prosthodontic treatment and occlusal adjustment, Indication for occlusal adjustment, special nature of orofacial pain, Indication for occlusal adjustment, special nature of orofacial pain, Psychopathological considerations, occlusal adjustment philosophies, mandibular position, excursive guidance,, occlusal contact scheme, goals of occlusal adjustment, significance of a slide in centric, Preclinical procedures, clinical procedures for occlusal adjustment.

## V. AESTHETIC

### **Scope, definitions -**

Morpho psychology and esthetics, structural esthetic rules - facial components, dental components, gingival components physical components. Esthetics and its relationship to function - Crown morphology, physiology of occlusion, mastication, occlusal loading and clinical aspect in bio esthetic aspects, Physical and physiologic characteristic and muscular activities of facial muscle, perioral anatomy and muscle retaining exercises Smile - classification and smile components, smile design, esthetic restoration of smile, Esthetic management of the dentogingival unit, intraoral plastic for management of gingival contours, and ridge contours, Periodontal esthetics, Restorations - Tooth colored restorative materials, the clinical and laboratory aspects, marginal fit anatomy, inclinations, form, size, shape, color, embrasures, contact point.

### **Teaching and learning activities:**

All the candidates registered for MDS course shall pursue the course for a period of three years as full - time students. During this period each student shall take part actively in learning and teaching activities designed by the Institution/ University. The following are the teaching and learning activities in each speciality.

1. **Lectures:** There shall be didactic lectures both in the speciality and in the allied fields. The postgraduate departments should encourage the guest lectures in the required areas to strengthen the training programmes. It is also desirable to have certain integrated lectures by multidisciplinary teams on selected topics

2. **Journal club:** The journal review meetings shall be held at least once a week. All trainees are expected to participate actively and enter relevant details in logbook. The trainee should make

presentations from the allotted journal of selected articles at least 5 times in a year.

3. **Seminars:** The seminars shall be held at least twice a week in the department, all trainees associated with postgraduate teachers are expected to participate actively and enter relevant details in logbook. Each trainee shall make at least 5-seminar presentation in each year.

4. **Symposium:** It is recommended to hold symposium on topics covering multiple disciplines one in each academic year.

5. **Workshops:** It is recommended to hold workshops on topics covering multiple disciplines one in each academic year.

6. **Clinical Postings:** Each trainee shall work in the clinics on regular basis to acquire adequate professional skills and competency in managing various cases to be treated by a specialist

7. **Clinico Pathological Conference:** The Clinico pathological conferences should be held once in a month involving the faculties of oral biology, oral medicine and radiology, oral pathology, oral surgery, period ontology, endodontia and concerned clinical department. The trainees should be encouraged to present the clinical details, ft radiological and histo-pathological interpretations and participation in the discussions, j

8. **Interdepartmental Meetings:** To bring in more integration among various specialities there shall be interdepartmental meeting chaired by the dean with all heads of postgraduate departments at least once a month.

9. **Rural oriented prosthodontic health care** - To carry out a prosthodontic therapy interacting with rural centers and the institution.

10. **Teaching skills:** All the trainees shall be encouraged to take part in undergraduate teaching programmes either in the form of lectures or group discussions

11. **Evaluation skills:** All the trainees shall be encouraged to take part evaluating the skills and knowledge in clinical laboratory practice including theory by formulating question banks and model answers.

12. **Continuing dental education programmes:** Each Postgraduate department shall organize these programmes on regular basis involving the other institutions. The trainees shall also be encouraged to attend such programmes conducted elsewhere.

13. **Conferences/Workshops/Advanced courses:** The trainees shall be encouraged not only to attend conference/workshops/advance courses but also to present at least two papers at state/national speciality meeting during their training period.

14. **Rotation and posting in other departments:** To bring in more integration between the speciality and allied fields each post graduate department shall workout a programme to rotate the

trainees in related disciplines and Craniofacial and maxillofacial ward.

15. **Dissertation:** Trainees shall prepare a dissertation based on the clinical or laboratory experimental work or any other study conducted by them under the supervision of the post graduate guide.

### **I YEAR M.D.S.**

- © Theoretical exposure of all applied sciences of study
- © Clinical and non-clinical exercises involved in Prosthodontic therapy for assessment and acquiring higher competence.
- © Commencement of Library Assignment within six months.
- © Short epidemiological study relevant to Prosthodontics.
- © Acquaintance with books, journals and referrals To acquire knowledge of list of published books, journal and website for the purpose of gaining knowledge and reference - in the fields of Prosthodontics including Crown & bridge and implantology
- © Acquire knowledge of instruments, equipment, and research tools in Prosthodontics.
- © To acquire knowledge of Dental Material Science - Biological and biomechanical, bio- esthetics knowledge of using in laboratory and clinics including testing methods
- . © Participation and presentation in seminars, didactics lecture
- © Evaluation - Internal Assessment examinations on Applied subjects

## **II YEAR M.D.S.**

- © Acquired confidence in obtaining various phases and techniques for providing Prosthodontic therapy.
- © Acquiring confidence by clinical practice with sufficient numbers of patient requiring tooth and tooth surface restorations.
- © Adequate number of complete denture prosthesis and techniques with higher clinical approach by utilizing in semi-adjustable articulators, face bow and graphic tracing.
- © Understanding the use of the dental surveyor and its application in diagnosis and treatment plan in R.P.D.
- © Adequate numbers of R.P.D. covering all clinical partially edentulous situation
- © Adequate number of Crowns, Inlays, laminates F.P.D. covering all clinically, partial edentulous situation.
- © Selection of cases and principles in treatment of edentulous patients, partial or complete by implant supported prosthesis.
- © Treating single edentulous situation by implant support.
- © Diagnosis and treatment planning.
- © 1st stage and 2nd stage implant surgery
- © Understanding the maxillofacial Prosthodontics
- © Treating craniofacial defects
- © Management of orofacial esthetics
- © Prosthetic management of TMJ syndrome
- © Occlusal rehabilitation
- © Maintenance and management of filled restoration
- © Prosthodontic Management of patient with psychogenic origin.
- © Practice of child and geriatric prosthodontics
- © Participation and presentation in seminars, didactics lectures
- © Evaluation - Internal Assessment examinations

### **III YEAR M.D.S**

- © Clinical and laboratory practice continued from IIInd year
- © Occlusal equilibration procedures - Fabrication of stabilizing splint for parafunctional disorders, occlusal disorders and TMJ functions.
- © Practice of dental, oral and facial esthetics
- © The clinical practice of all aspects of Prosthodontic therapy for elderly patients.
- © Implants Prosthodontics - Rehabilitation of Partial Edentulous, Complete edentulism and for craniofacial rehabilitation
- © Failures in all aspects of Prosthodontics and its management and after care
- © Team management for esthetics, TMJ syndrome and Maxillofacial and Craniofacial Prosthodontics
- © Management of Prosthodontics emergencies, resuscitation.
- © Candidate should complete the course by attending by large number and variety of patients to master the prosthodontic therapy. This includes the practice management, examinations, treatment planning, communication with patients, clinical and laboratory techniques materials and instrumentation requiring different aspects of prosthodontic therapy, Tooth and Tooth surface restoration, Restoration of root treated teeth, splints for periodontal rehabilitations and fractured jaws, complete dentures, R.P.D. FPD. Immediate dentures over dentures implant supported prosthesis, maxillofacial and body prosthesis, occlusal rehabilitation.
- © Prosthetic management of TMJ syndrome
- © Management of failed restorations
- © Complete and submit Library Assignment 6 months prior to examination.
- © Candidates should acquire complete theoretical and clinical knowledge through seminars, symposium, workshops and reading.
- © Participation and presentation in seminars, didactic lectures.
- © Evaluation - Internal Assessment examinations three months before University examinations.

### **PROSTHODONTIC TREATMENT MODALITIES**

1. Diagnosis and treatment plan in prosthodontics
2. Tooth and tooth surface restorations
  - Fillings
  - Veneers - composites and ceramics
  - Inlays- composite, ceramic and alloys

- Onlay - composite, ceramic and alloys

### Management of failed restoration

- Partial crowns -  $\frac{3}{4}$  m,  $\frac{4}{5}$  h,  $\frac{7}{8}$  h, Vz crowns
- Pin-ledge
- Radicular crowns
- Full crowns

### Management of failed restorations

	<b>PARTIAL</b>	<b>COMPLETE</b>
© Tooth supported	Fixed partial denture	Overdenture
©Tissue Supported	Interim partial denture	Complete denture
	Intermediate partial denture	Immediate denture
		Immediate complete Denture
©Tooth and tissue supported	Cast partial denture	Overdenture
	Precision attachment	
©Implant supported	Cement retained	Bar attachment Screw retained Ball attachment Clip attachment
©Tooth and implant supported	Screw retained	
	Cement retained	
©Root supported	Dowel and core	Overdenture

Pin retained

### **Management of failed restorations**

> Distal extension prosthesis

- © Tooth borne prosthesis
- © Combination distal extension and tooth borne prosthesis
- © Retainers for partial dentures - intra coronal, extra coronal or Para coronal intraproximal with cantilevered pontics

> Attached to cantilevered pontics

- © Pontics between bridge retainers
- © Attached to root coping
- © Spring loaded bolts or plungers
- © Ring springs
- © Bolts
- © Rubber device
- © Slide cap attachments
- © Cones crown
- © Hybrid telescope
- © Ring telescope
- © Prefabricated cap-post system

> Precision attachments

- © Intra coronal attachments
- © Extra coronal attachments
- © Bar - slide attachments
- © Joints and hinge joint attachments

### **Management of failed restorations**

4. Tooth and tissue defects (Maxillo- facial and Cranio-facial prosthesis)

#### **A. Congenital Defects**

a. Cleft lip and palate

## **Obturator**

> Feeding

> Surgical

© Immediate

© Delayed

> Interim

> Definitive

> implant supported prosthesis

b. Pierre Robin Syndrome

c. Ectodermal dysplasia

d. Hemifacial microsomia

e. Anodontia

f. Oligodontia

g. Malformed teeth

> cast partial denture implant supported  
dentures complete dentures

## **B. Acquired defects**

- a. Head and neck cancer patients - prosthodontic splints and stents
- b. Restoration of facial defects
  - Auricular prosthesis
  - Nasal prosthesis
  - Orbital prosthesis
  - Craniofacial implants
- c. Midfacial defects
- d. Restoration of maxillofacial trauma
- e. Hemimandibulectomy
- f. Maxillectomy
- g. Lip and cheek support prosthesis
- h. Ocular prosthesis
- i. Speech and Velopharyngeal prosthesis
- j. Laryngectomy aids
- k. Esophageal prosthesis
- l. Nasal stents
- m. Tongue prosthesis
- n. Burn stents
- o. Auditory inserts
- p. Trismus appliances
- q. Prosthesis for lagophthalmos of the eye

## **Management of failed restorations.**

### **5. T.M.J and Occlusal disturbances**

- a. Occlusal equilibration

b.Splints

-Diagnostic

-Repositioners / Deprogrammers

- c. Anterior bite plate
- d. Posterior bite plate
- e. Bite raising appliances
- f. Occlusal rehabilitation
- g. Behavioral and psychological care for the cancer patient Management of failed restorations
- 6. Esthetic/Smile designing
  - a. Laminates / Veneers
  - b. Tooth contouring (peg laterals, malformed teeth)
  - c. Tooth replacements
  - d. Team management

#### Management of failed restorations

#### 7. Psychological therapy

- a. Questionnaires
- b. Charts, papers, photographs
- c. Models
- d. Case reports
- e. Patient counseling
- f. Behavioral modifications
- g. Referrals

-

#### 8. Geriatric Prosthodontics

- a. Prosthodontics for the elderly
- b. Behavioral and psychological counseling
- c. Removable Prosthodontics
- d. Fixed Prosthodontics
- e. Implant supported Prosthodontics
- f. Maxillofacial Prosthodontics
- g. Psychological and physiological considerations

## Management of failed restorations

9. Preventive measures
  - a. Diet and nutrition modulation and counseling
    - a. Referrals

THE BENCH WORK SHOULD BE COMPLETED BEFORE THE CLINICAL WORK STARTS DURING THE FIRST YEAR OF THE M.D.S COURSE

### **I. Complete dentures**

#### 1. Arrangements in adjustable articulator for

- © Class I
- © Class II
- © Class III
- © Cross bite

#### **2. Various face bow transfer to adjustable articulators**

#### **3. Processing of characterized anatomical denture**

### **II. Removable partial denture**

#### 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

Class I

Class III with modification

### III. Fixed Partial Denture

- © Preparation of ivory teeth/natural teeth
  - © Fvc for metal
  - © FVC for ceramic
  - © *Porcelain jacket crown*
  - © Acrylic jacket crown
  - © PFM crown
  - © 3/4th (canine, premolar and central)
  - © 7/8th posterior
  - © Proximal half crown
  - © Inlay - Class I, II, V
  - © Onlay-Pin ledged, pinhole
  - © Laminates
2. Preparation of different die system
3. Fabrication of wax pattern by drop wax build up technique
- © Wax in increments to produce wax coping over dies of tooth preparations on substructures.
  - © 3-unit wax pattern (maxillary and Mandibular)
  - © Full mouth
  - © Wax additive technique
4. Pontic design in wax pattern
- © Ridge lap Sanitary
  - © Modified ridge lap
  - © Modified sanitary
  - © Spheroidal or conical
5. Fabrication of metal framework
- © Full metal bridge for posterior (3 units)
  - © Coping for anterior (3 unit)
  - © Full metal with acrylic facing
  - © Full metal with ceramic facing

- © Adhesive bridge for anterior
- © Coping for metal margin ceramic crown
- © Pin ledge crown

#### 6. Fabrication of crowns

- © Post and core
- © All ceramic crowns with characterized
- © Metal ceramic crowns with characterized
- © Full metal crown
- © Precious metal crown

#### 7. Laminates

- © Composites with characterized
- © Ceramic with characterized
- © Acrylic

#### 8. Preparation for composites

- © Laminates
- © Crown
- © Inlay
- © Onlay
- © Class 1
- © Class II
- © Class III
- © Class IV
- © Fractured anterior tooth

### **IV. Maxillofacial prosthesis**

1. Eye
2. Ear
3. Nose
4. Face
5. Body
6. Cranial

7. Hemimaxillectomy
8. Hemimandibulectomy
9. Finger prosthesis
10. Guiding flange
11. Obturator

## V. Implant supported prosthesis

1. Step by step procedures - laboratory phase

## VI. Other exercises

1. TMJ splints - stabilization appliances, maxillary and Mandibular repositioning appliances
2. Anterior disclusion appliances
3. Chrome cobalt and acrylic resin stabilization appliances
4. Modification in accommodation in irregularities in dentures
5. Occlusal splint
6. Periodontal splint
7. Precision attachments - custom made
8. Over denture coping
9. Full mouth rehabilitation (by drop wax technique, ceramic build up)
10. TMJ appliances - stabilization appliances Essential Skills

\* Key

0 -Washes up and observes. A-Assists a senior

PA- performs procedure under the direct supervision of a senior specialist PI- Performs independently

<b>PROCEDURE</b>	<b>CATEGORY</b>			
	<i>0</i>	<i>A</i>	<i>PA</i>	<i>PI</i>
<i>"Tooth and tooth surface restorationa)</i>	2	2	2	10
<i>Composites - fillings, laminates, inlay, onlayb) Ceramics - laminates, inlays, onlaysc) Glass ionomer</i>	2	2	2	10
	1	1	1	10
<b>CROWNS</b>				
<i>FVC for metal</i>	1	2	2	10
<i>FVC for ceramic</i>	1	2	2	10
<i>Precious metal crown</i>	1	-	1	5

<i>Galvanoformed crown</i>	-	-	1	1
<i>3/4th crowns (premolars, canines and centrals)</i>	1	-	-	5
<i>7/8th posterior crown</i>	1	-	-	5
<i>Proximal half crown</i>	1	-	-	5
<i>Pinledge and pinhole crowns</i>	1	-	-	5
<i>Telescopic crowns</i>	1	-	-	5

<i>Intraradicular crowns (central, lateral, canine, premolar, and molar)</i>	1	-	-	5
<i>Crown as implant supported prosthesis</i>	1		1	5

### **FIXED PARTIAL DENTURES**

Cast porcelain(3 unit)	1	-	-	5
Cast metal-precious and non precious (3 unit posterior)	1	-	-	5
Porcelain fused metal (anterior and posterior)	1	1	1	10
Multiple abutment- maxillary and mandibular full arch	1	1	1	5
Incorporation of custom made and readymade precision joint or Attachment	1	1	1	4
Adhesive bridge for anterior/ posterior	1	-	1	10
Metal fused to resin anterior FPD	-	-	1	5

<i>Interim provisional restorations (crowns and FPDs)</i>	1	1	1	10
<i>Immediate fixed partial dentures (interim)</i>	1	-	-	5
<i>Fixed prosthesis as a retention and rehabilitation</i>	1	1	-	5
<i>for acquired and congenital defects – maxillofacial</i>	-	-	-	-

<i>Prosthetics</i>	-	-	-	-
<i>Implant supported prosthesis</i>	1	-	1	1
<i>Implant - tooth supported prosthesis</i>	1	-	1	1
<i>REMOVABLE PARTIAL DENTURE</i>	-	-	-	-
<i>Provisional partial denture prosthesis</i>	1	1	1	10
<i>Cast removable partial denture (for Kennedy's Applegate classification with modification)</i>	1	1	1	6
<i>Removable bridge with precision attachments and telescopic crowns for anterior and posterior</i>	1	1	2	4
<i>Immediate RPD</i>	1	1	1	5
<i>Partial denture for medically compromised and handicapped patients</i>	1	1	1	5
<i>COMPLETE DENTURES</i>	-	-	-	-
<i>Neurocentric occlusion &amp; characterized prosthesis</i>	-	-	1	5
<i>Anatomic characterized prosthesis (by using semi adjustable articulator)</i>	-	-	1	25
<i>Single dentures</i>	-	-	1	5
<i>Overlay dentures</i>	-	-	1	5
<i>Interim complete dentures as a treatment prosthesis for abused denture supporting tissues</i>	-	-	1	5
<i>Complete denture prosthesis (for abnormal ridge relation, ridge form and ridge size)</i>	-	-	1	5
<i>Complete dentures for patients with TMJ syndromes</i>	-	-	1	5
<i>Complete dentures for medically compromised and handicapped patients</i>	-	-	1	5
<i>GERIATRIC PATIENTS</i>	-	-	-	-
<i>Tooth and tooth surface restorations, crowns, fixed prosthesis, removable prosthesis</i>	-	-	1	5
<i>IMPLANT SUPPORTED COMPLETE PROSTHESIS</i>	-	-	-	-
<i>Implant supported complete prosthesis (maxillary and Mandibular)</i>	-	-	1	1

<b>MAXILLOFACIAL PROSTHESIS</b>				
Guiding flange and obturators	-	-	1	4
Speech and palatal lift prosthesis	-	-	1	2
Eye prosthesis	-	-	1	2
Ear prosthesis	-	-	1	2
Nose prosthesis	-	-	1	2
Face prosthesis	-	-	-	1
Hemimaxillectomy	-	-	1	2
Hemimandibulectomy	-	-	1	2
Cranioplasty	-	-	1	1
Finger/ hand, foot	-	-	1	2
Body prosthesis	-	-	1	1
Management of burns, scars	-	-	-	1
<b>TMJ SYNDROME MANAGEMENT</b>				
Splints - periodontal, teeth, jaws	-	-	1	4
TMJ supportive and treatment prosthesis	-	-	1	1
Stabilization appliances for maxilla and mandible with freedom to move from IP to CRCP	-	-	-	1
In IP without the freedom to move to CRCP	-	-	-	1

Repositioning appliances, anterior disclusion	-	-	-	1
Chrome cobalt and acrylic resin stabilization appliances for modification to accommodate for the irregularities in the dentition				2
Occlusal adjustment and occlusal equilibrium	-	-	1	4
<b>FULL MOUTH REHABILITATION</b>				
Full mouth rehabilitation – occlusion	-	-	1	4
Full mouth rehabilitation - restoration of esthetics and function of stomatognathic system	-		1	4
<b>INTER-DISCIPLINARY TREATMENT MODALITIES</b>				
Inter-disciplinary management - restoration of Oro craniofacial defects for esthetics, phonation, mastication and psychological comforts			1	2
<b>MANAGEMENT OF FAILED RESTORATION</b>				
Tooth and tooth surface restorations	-	-	-	5
Removable prosthesis	-	-	-	10
Crowns and fixed prosthesis				5

Maxillofacial prosthesis	-	-	-	2
Implant supported prosthesis	-	-	-	1
Occlusal rehabilitation and TMJ syndrome	-	-	-	2
Restoration failure of psychogenic origin	-	-	-	5
Restoration failure to age changes	-		-	2

#### **UNIVERSITY SCHEME OF EXAMINATION**

M.D.S. Degree examinations in any branch of study shall consist of dissertation, written paper (Theory) Part I at the end of 1st year and Part II at the end of 3 years Practical/Clinical and Viva voce.

**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 (Part-I) 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 :** Applied Basic Sciences: Applied Anatomy, embryology, growth and development Genetics, Immunology, anthropology, Physiology, nutrition & Biochemistry, Pathology & Microbiology, virology, Applied pharmacology, Research Methodology and bio statistics,. Applied Dental anatomy & histology, Oral pathology & oral Microbiology, Adult and geriatric psychology. Applied dental materials.

Part-II Examination shall consist of Paper-I, Paper-II and 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:

#### **DISTRIBUTION OF MARKS:**

##### **Theory:**

##### **(1) Part I University Examination (100 Marks):-**

There shall be 10 questions of 10 marks each (Total of 100 Marks)

##### **(2) Part II (3 papers of 100 Marks):-**

(i) Paper-I: 2 long essay questions of 25 marks each and 5 short essays of 10 marks each. (Total of 100 Marks)

(ii) Paper-II: 2 long essay questions of 25 marks each and 5 short essays of 10 marks each. (Total of 100 Marks)

(iii) Paper III: 2 out of 3 essay questions (50 x 2 = 100 Marks)

**Practical and Clinical Examination : 200 Marks**

**Viva-voce and Pedagogy : 100 Marks**

**A. 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 three year training period.**

**- 25 Marks**

**2. Present actual treated patients CD. Prosthesis and Insertion - 90 Marks**

1. Discussion on treatment plan and patient review -10 marks

2. Tentative jaw relation records - 5 marks

3. Face Bow - transfer - 5 marks

4. Transferring it on articulators - 5 marks

5. Extra oral tracing and securing centric and protrusive/lateral. - 25 marks

6. Transfer in on articulator. - 5 marks

7. Selection of teeth - 5 marks

8. Arrangement of teeth -15 marks

9. Waxedup denture trial -10 marks

10. Fit, insertion and instruction of previously processed

characterized, anatomic complete denture prosthesis - 5 marks All steps will include

chair side, lab and viva voce

**3. Fixed Partial Denture - 50Marks**

a. Case discussion and selection of patients for F.P.D. - 5 marks

b. Abutment preparation isolation and fluid control - 25 marks

c. Gingival retraction and impressions -10 marks

d. Cementation of provisional restoration -10 marks

**4. Removable Partial Denture - 35Marks**

**B. 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.

## **PERIODONTOLOGY**

### **Objectives**

The following objectives are laid out to achieve the goals of the course

### **Knowledge**

- © Discuss historical perspective to advancement in the subject proper and related topics
- © Describe etiology, pathogenesis, diagnosis and management of common periodontal diseases with emphasis on Indian population
- © Familiarize with the biochemical, microbiologic and immunologic genetic aspects of periodontal pathology
- © Describe various preventive periodontal measures
- © Describe various treatment modalities of periodontal disease from historical aspect to currently available ones
- © Describe interrelationship between periodontal disease and various systemic conditions
- © Describe periodontal hazards due to iatrogenic causes and deleterious habits and prevention of it
- © Identify rarities in periodontal disease and environmental/ Emotional determinates  
in a given case
- © Recognize conditions that may be outside the area of his Speciality/competence and refer them to an appropriate Specialist
- © Decide regarding non-surgical or surgical management of the case
- © Update him by attending course, conferences and seminars relevant to periodontics or by self-learning process.
- © Plan out/ carry out research activity both basic and clinical aspects with the aim of publishing his/her work in scientific journals
- © Reach to the public to motivate and educate regarding periodontal disease, its prevention and consequences if not treated
- © Plan out epidemiological survey to assess prevalence and incidence of early onset periodontitis

and adult periodontitis in Indian population (Region wise)

- © Shall develop knowledge, skill in the science and practice of Oral Implantology
- © Shall develop teaching skill in the field of Periodontology and Oral Implantology

### **SKILL**

© *Take a* proper clinical history, thorough examination intra orally, extra orally, medical history evaluation, advice essential diagnostic procedures and interpret them to come to a reasonable diagnosis

© Effective motivation and education regarding periodontal disease and maintenance after the treatment

© Perform both non-surgical & education regarding periodontal disease, maintenance after the treatment

© Perform both non-surgical and surgical procedures independently

© Provide Basic Life Support Service (BLS)

### **Human values, ethical practice & communication abilities**

© Adopt ethical principles in all aspects of treatment modalities, Professional honesty & 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 his/her knowledge and skill, and ask for help from colleagues when needed, Respect patients rights and privileges, including patients right to information and right to seek a second opinion.

### **Course Contents**

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
  - © Macroscopic and microscopic anatomy
  - © Blood supply of the Periodontium
  - © Lymphatic system of the Periodontium
  - © Nerves of the Periodontium
5. Temporomandibular joint, Maxillae and Mandible

6. Cranial nerves (5,7,9,11,12)

7. Tongue, oropharynx

8. Muscles of mastication

### **Physiology**

1. Blood

2. Respiratory system - Acknowledge of the respiratory diseases which are a cause of periodontal diseases (periodontal Medicine)

3. Cardiovascular system

h. Blood pressure

i. Normal ECG

j. Shock

4. Endocrinology - hormonal influences on Periodontium

5. Gastrointestinal system

a. Salivary secretion - composition, function & regulation

b. Reproductive physiology

i. Hormones - Actions and regulations, role in periodontal disease

ii. Family planning methods

6. Nervous system

a. Pain pathways

b. Taste - Taste buds, primary taste sensation & pathways for sensation

### **Biochemistry**

1. Basics of carbohydrates, lipids, proteins, vitamins, proteins, enzymes and minerals

2. Diet and nutrition and periodontium

3. Biochemical tests and their significance

4. Calcium and phosphorus

### **Pathology**

1. Cell structure and metabolism

2. Inflammation and repair, necrosis and degeneration

3. Immunity and hypersensitivity

4. Circulatory disturbances - edema, hemorrhage, shock, thrombosis, embolism, infarction and hypertension

5. Disturbances of nutrition

6. Diabetes mellitus

7. Cellular growth and differentiation, regulation

8. Lab investigations

9. Blood

**Microbiology:**

1. General bacteriology

- a. Identification of bacteria
- b. Culture media and methods
- c. Sterilization and disinfection

2. Immunology and Infection

3. Systemic bacteriology with special emphasis on oral microbiology - staphylococci, genus actinomyces and other filamentous bacteria and actinobacillus actinomycetumcomitans

4. Virology

- a. General properties of viruses
- b. Candidiasis

6. Applied microbiology

7. Diagnostic microbiology and immunology, hospital infections and management

**Pharmacology:**

1. General pharmacology

a. Definitions - Pharmacokinetics with clinical applications, routes of administration including local drug delivery in Periodontics

b. Adverse drug reactions and drug interactions

2. Detailed pharmacology of

- a. Analgesics - opioid and nonopioid
- b. Local anesthetics
- c. Haematinics and coagulants, Anticoagulants
- d. Vit D and Calcium preparations
- e. Antidiabetics drugs
- f. Steroids
- g. Antibiotics
- h. Antihypertensive
- i. Immunosuppressive drugs and their effects on oral tissues
- j. Antiepileptic drugs

3. 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
4. Drugs used in Bronchial asthma cough

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

6. Dental Pharmacology
- a. Antiseptics
  - b. Astringents
  - c. Sialogogues
  - d. Disclosing agents
  - e. Antiplatelet agents

7. Fluoride pharmacology

**Biostatistics:**

- © Introduction, definition and branches of biostatistics
- © Collection of data, sampling, types, bias and errors

- © Compiling data-graphs and charts
- © Measures of central tendency (mean, median and mode), standard deviation variability
- © Tests of significance (chi square test't'test and Z-test)
- © Null hypothesis

### **Etiopathogenesis**

1. Classification of periodontal diseases and conditions
2. Epidemiology of gingival and periodontal diseases
3. Defense mechanisms of gingiva
4. Periodontal microbiology
5. Basic concepts of inflammation and immunity
6. Microbial interactions with the host in periodontal diseases
7. Pathogenesis of plaque associated periodontal diseases
8. Dental calculus
9. Role of iatrogenic and other local factors
10. Genetic factors associated with periodontal diseases
11. Influence of systemic diseases and disorders of the periodontium
12. Role of environmental factors in the etiology of periodontal disease
13. Stress and periodontal diseases
14. Occlusion and periodontal diseases
15. Smoking and tobacco in the etiology of periodontal diseases
16. AIDS and periodontium
17. Periodontal medicine
18. Dentinal hypersensitivity

### **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

9. Periodontic considerations

## **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. Instrumentation

2. Principles of periodontal instrumentation
3. Instruments used in different parts of the mouth

### **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

E. 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. Special emphasis on plaque control measures implant patients
8. Maintenance phase

#### **V. MANAGEMENT OF MEDICAL EMERGENCIES IN PERIODONTAL PRACTICE Teaching / learning Activities**

© Seminars: - A minimum of 15 seminars to be presented by each student during the P.G. course (At least 5 Seminars per year)

© Journal clubs: - a minimum of 25 Journal articles to be reviewed by each student during the P.G. course

© Interdepartmental Seminars: - Each P.G. student should present at least t seminar in an Interdepartmental meeting during the P.G course. Such meetings maybe held at least once every month

© Library Assignment: - one to be presented at the end of 18 months of the course.

#### **Academic Activities:**

##### **I Year**

Submission of synopsis for Dissertation - within 6 months from the start of the course

##### **II Year**

Scientific Paper presentation at the conferences by the end of the 2<sup>nd</sup> year

##### **III Year**

Scientific Paper/ Poster presentation at conferences

-  
Submission of Dissertation - 6 months before completion of III year

### **Skills First year**

#### **Pre - Clinical work**

##### **Dental**

1. Practice of incisions and suturing techniques on the typhodont models
2. Fabrication of bite guards and splints
3. Occlusal adjustments on the casts mounted on the articulator
4. X- Ray techniques and interpretation
5. Local anesthetic techniques

##### **Medical**

1. Basic diagnostic microbiology and immunology, collection and handling sample, culture techniques.
2. Basic understanding of immunological diseases
3. Interpretation of various biochemical investigations
4. Practical training and handling medical emergencies and basic life support devices
5. Basic Biostatistics - Surveying and data analysis Clinical work

- |                                    |          |
|------------------------------------|----------|
| 1. Applied periodontal indices     | 10 CASES |
| 2. Scaling and root planning (SRP) |          |
| a. Hand                            | 15 CASES |
| b. Ultrasonic                      | 15 CASES |
| 3. Curettage                       | 10 CASES |
| 4. Gingivectomy                    | 20 CASES |
| 5. Ginqivoplasty                   | 10 CASES |

##### **Clinical Work**

2. Case history and treatment planning
  3. Local Drug Delivery techniques
  4. Periodontal surgical procedures
    - Pocket therapy
    - Muco-gingival surgeries
    - Implants (2 implants)
- Management of perio endo problems

10 CASES

5. Occlusal adjustments

6. Perio splints

Third Year

### **Clinical work**

1. Regenerative techniques

- Using various graft and barrier membranes

2. Record, maintenance and follow up of all treated cases including implants **Assessment**

**examinations:** - In addition to the regular evaluation, log book etc., assessment examination should be conducted once every six months & progress of the student monitored

**Note:** The number of cases mentioned are minimum number to be performed by each candidate.

Submission of Synopsis for Dissertation should be done within 6 months of the commencement of the course.

Submission of two copies of Library Assignments at the end of 1 and 2nd year Submission of pre-clinical work as scheduled. Submission of Dissertation - 6 months before completion of III year.

Maintenance of Work Diary/Log book as prescribed by RGUHS.

### **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. Checklists are given in Section IV

### **UNIVERSITY SCHEME OF EXAMINATION**

M.D.S. Degree examinations in any branch of study shall consist of dissertation, written paper (Theory) Part I at the end of 1st year and Part II at the end of 3 years Practical/Clinical and Viva voce.

**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 (Part-I) 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 :** Applied Basic Sciences: Applied Anatomy, embryology, growth and development Genetics, Immunology, anthropology, Physiology, nutrition & Biochemistry, Pathology & Microbiology, virology, Applied pharmacology, Research Methodology and bio statistics, Applied Dental anatomy & histology, Oral pathology & oral Microbiology, Adult and geriatric psychology. Applied dental materials.

Part-II Examination shall consist of Paper-I, Paper-II and 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:

#### **DISTRIBUTION OF MARKS:**

##### **Theory :**

##### **(1) Part I University Examination (100 Marks):-**

There shall be 10 questions of 10 marks each (Total of 100 Marks)

##### **(2) Part II (3 papers of 100 Marks):-**

(i) Paper-I: 2 long essay questions of 25 marks each and 5 short essays of 10 marks each. (Total of 100 Marks)

(ii) Paper-II: 2 long essay questions of 25 marks each and 5 short essays of 10 marks each. (Total of 100 Marks)

(iii) Paper III: 2 out of 3 essay questions (50 x 2 = 100 Marks)

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

The clinical examination shall be of two days duration

##### **1<sup>st</sup> day**

Case discussion

- Long case- One
- Short case - One

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

## 2<sup>nd</sup> day

Post-surgical review and discussion of the case treated on the 1<sup>st</sup> day Presentation of dissertation & 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	50
b) 2 short cases	50
c) Periodontal surgery	75
d) Post — operative review	25
Total	200

### 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: 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

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

## ORAL AND MAXILLOFACIAL SURGERY

### Objective :

The training program in Oral and Maxillofacial Surgery is structured to achieve the following four objectives-

- © Knowledge
- © Skills
- © Attitude
- © Communicative skills and ability

Knowledge:

- © 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.

© To have understood the general surgical principles like pre and post surgical management, particularly evaluation, post surgical care, fluid and electrolyte management, blood transfusion and post surgical pain management.

© Understanding of basic sciences relevant to practice or oral and maxillofacial surgery.

© Able to identify social, cultural, economic, genetic and environmental factors and their relevance to disease process management in the oral and Maxillofacial region.

© 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.

#### Skill

© To obtain proper clinical history, methodical examination of the patient, perform essential diagnostic procedures and order relevant laboratory tests and interpret them and to arrive at a reasonable diagnosis about the surgical condition.

© To perform with competence minor oral surgical procedures and common maxillofacial surgery. To treat both surgically and medically (or by other means of the oral and Maxillofacial and the related area).

© Capable of providing care for maxillofacial surgery patients.

#### Attitude:

© Develop attitude to adopt ethical principles in all aspect of surgical practice, professional honesty and integrity are to be fostered. Surgical care is to be delivered irrespective of the social status, caste, creed or religion of the patient.

© Willing to share the knowledge and clinical experience with professional colleagues.

© Willing to adopt new techniques of surgical management developed from time to time based on scientific research which are in the best interest of the patient

© Respect patient's right and privileges, including patients right to information and right to seek a second opinion.

© Develop attitude to seek opinion from an allied medical and dental specialists as and when required.

#### Communication skills:

© Develop adequate communication skills particularly with the patients giving them the various options available to manage a particular surgical problem and obtain a true informed consent from them for the most appropriate treatment available at that point of time

© Develop the ability to communicate with professional colleagues.

© Develop ability to teach undergraduates.

#### Course content:

The program outline addresses both the knowledge needed in Oral and Maxillofacial Surgery and allied medical specialties in its scope. A minimum of three years of formal training through a graded system of education as specified will equip the trainee with skill and knowledge at its completion to be able to practice basic oral and Maxillofacial surgeon competently and have the ability to intelligently pursue

further apprenticeship towards advance Maxillofacial surgery.

**The topics are considered as under:-**

© Basic sciences

© Oral and Maxillofacial surgery

© Allied specialties

**Applied Basic Sciences:**

A thorough knowledge both on theory and principles in general and in particular the basic medical subjects as relevant to the practice of maxillofacial surgery. It is desirable to have adequate knowledge in bio-statistics, Epidemiology, research methodology, nutrition and computers.

**© Anatomy**

Development of face, paranasal sinuses and associated structures and their anomalies; surgical anatomy of scalp temple and face, anatomy and its applied aspects of triangles of neck, deep structures of neck, cranial facial bones and its surrounding soft tissues, cranial nerves tongue, stemporal and infratemporal region, orbits and its contents, muscles of face and neck, paranasal sinuses, eyelids and nasal septum teeth gums and palate, salivary glands, pharynx, thyroid and parathyroid glands, larynx, trachea and esophagus, congenital abnormality of orofacial regions, General consideration of the structure and

**© Physiology**

Nervous system-physiology of nerve conduction, pain pathway, sympathetic and parasympathetic nervous system, hypothalamus and mechanism of controlling body temperature; Blood-its composition hemostasis, blood dyscrasias and its management, hemorrhage and its control, blood grouping, cross matching, blood component therapy, complications of blood transfusion, blood substitutes, auto transfusion, cell savers; digestive system composition and functions of saliva mastication deglutition, digestion, assimilation, urine formation, normal and abnormal constituents; Respiration control of ventilation anoxia, asphyxia, artificial respiration, hypoxia - types and management; CVS - cardiac cycle, shock, heart sounds, blood pressure, hypertension; Endocrinology- metabolism of calcium; endocrinal activity and disorder relating to thyroid gland, parathyroid gland, adrenal gland, pituitary gland, pancreas and gonads; Nutrition- general principles balanced diet. Effect of dietary deficiency, protein energy malnutrition, Kwashiorkor, Marasmus, Nutritional assessment, metabolic responses to stress, need for nutritional support, entrials nutrition, roots of access to GI tract, Parenteral nutrition, Access to central veins, Nutritional support; Fluid and Electrolytic balance/Acid Base metabolism- the body fluid compartment, metabolism of water and electrolytes, factors maintaining hemostasis, causes for treatment of acidosis and alkalosis.

**©Biochemistry**

General principles governing the various biological principles of the body, such as osmotic pressure,

electrolytes, dissociation, oxidation, reduction etc; general composition of body, intermediary metabolism, carbohydrate, proteins, lipids, enzymes, vitamins, minerals and antimetabolites.

### © **General Pathology**

Inflammation - Acute and chronic inflammation, repair and regeneration, necrosis and gangrene, role of component system in acute inflammation, role of arachidonic acid and its metabolites in acute inflammation, growth factors in acute inflammation role of NSAIDs in inflammation, cellular changes in radiation injury and its manifestation; wound management - Wound healing factors influencing healing; properties of suture materials, appropriate uses of sutures; hemostasis - role of endothelium in thrombogenesis; arterial and venous thrombi, disseminated intravascular coagulation; Hypersensitivity; Shock and pulmonary failure: types of shock, diagnosis, resuscitation, pharmacological support, ARDS and its causes and prevention, ventilation and support, Neoplasm I | of tumors, Carcinogens and Carcinogenesis, grading and staging of tumors, various laboratory investigation.

### © **General microbiology**

Immunity, Hepatitis B and its prophylaxis, Knowledge of organisms, commonly associated with diseases of oral cavity, culture and sensitivity tests, various staining techniques-Smears and cultures, urine analysis and culture.

#### © **Oral pathology and microbiology:**

Developmental disturbances of oral and para oral structures, regressive changes of teeth, bacterial, viral, mycotic infection of oral cavity, dental caries, diseases of pulp and Periapical tissues, physical and chemical injuries of oral cavity, wide range of pathological lesions of hard and soft tissues of the orofacial regions like the cysts odontogenic infection, benign, malignant neoplasms, salivary gland diseases, maxillary sinus diseases, mucosal diseases, oral aspects of various systemic diseases, role of laboratory investigation in oral surgery.

#### © **Pharmacology and therapeutics:**

Definition of terminology used, pharmacokinetics and pharmacodynamic dosage and mode of administration of drugs, action and fate in the body, drug addiction, tolerance and hypersensitive reactions, drugs acting on CNS, general and local anesthetics, antibiotics and analgesics, antiseptics, antitubercular, sialagogues, hematinics, anti diabetic, Vitamins A, B-complex, C,D,E,K

### © **Computer science**

Use of computers in surgery, components of computer and its use in practice-principles of word processing, spreadsheet function database and presentations; the internet and its use. The value of computer based systems in biomedical equipment.

## **ORAL AND MAXILLOFACIAL SURGERY:**

- © Evolution of Maxillofacial surgery.
- © Diagnosis, history taking, clinical examination, investigations.
- © Informed consent/medico-legal issues.
- © Concept of essential drugs and rational use of drugs.
- © Communication skills with patients- understanding clarity in communication, compassionate explanations and giving emotional support at the time of suffering and bereavement
- © Principles of surgical audit - understanding the audit of process and outcome. Methods adopted for the same Basic statistics.
- © Principles of evidence based surgery- understanding journal based literature study; the value of textbook, reference book articles, value of review articles; original articles and their critical assessment, understanding the value of retrospective, prospective, randomized control and blinded studies, understanding the principles and the meaning of various Bio-statistical tests applied in these studies.
- © Principles of surgery- developing a surgical diagnosis, basic necessities for surgery, aseptic techniques, incisions, flap designs, tissue handling, homeostasis, dead space management, decontamination and debridement, suturing, edema control, patient general health and nutrition.
- © Medical emergencies - Prevention and management of altered consciousness, sensitivity reaction, chest discomfort, respiratory difficulty.
- © Pre operative workup - Concept of fitness for surgery; basic medical work up; work up in special situation like diabetes renal failure, cardiac and respiratory illness; risk stratification
- © Surgical sutures, drains
- © Post operative care- concept of recovery room care, Airway management, Assessment of Wakefulness, management of cardio vascular instability in this period, Criteria for shifting to the ward, pain management
- © Wound management- Wound healing, factors influencing healing, basic surgical techniques, Properties of suture materials, appropriate use of sutures.
- © Surgical Infections - Asepsis and antisepsis, Microbiological principles, Rational use of antibiotics, special infections like Synergistic Gangrene and Diabetic foot infection, Hepatitis and HIV infection and cross infection.
- © Airway obstruction/management - Anatomy of the airway, principles of keeping the airway patent, mouth to mouth resuscitation, Oropharyngeal airway, endotracheal intubation, Cricothyroidectomy, Tracheostomy.
- © Anesthesia - stages of Anesthesia, pharmacology of inhalation, intravenous and regional anesthetics, muscle relaxants.
- © Facial pain; Facial palsy and nerve injuries.

- © Pain control - acute and chronic pain, cancer and non-cancer pain, patient controlled analgesia
- © General patient management - competence in physical assessment of patients of surgery, competence in evaluation of patients presenting with acute injury, particularly to maxillofacial region. Competence in the evaluation of management of patients for anesthesia
- © Clinical oral surgery - all aspects of dento alveolar surgery
- © Pre-prosthetic surgery - A wide range of surgical reconstructive procedures inv their hard and soft tissues of the edentulous jaws.
- © Temporomandibular joint disorders - TMJ disorders and their sequelae need e> evaluation, assessment and management. It is preferable to be familiar with diagr and therapeutic arthroscopic surgery procedures.
- © Tissue grafting - Understanding of the biological mechanisms involved in auto and heterogeneous tissue grafting.
- © Reconstructive oral and maxillofacial surgery - hard tissue and so reconstruction.
- © Anesthesia - Stages of anesthesia, pharmacology of inhalation, intravenous and regional anesthesia, muscle relaxants.
- © Cyst and tumors of head and neck region and their management - including principles of tumor surgery, giant cell lesion of jaw bones, fibro osseous lesion of jaw lesions. © Neurological disorders of maxillofacial region-diagnosis and management of Trigeminal Neuralgia, MPDS, Bells palsy, Frey's Syndrome, Nerve injuries
- © Maxillofacial trauma - basic principles of treatment, primary care, diagnosis and management of hard and soft tissue injuries, Comprehensive, management including polytrauma patients
- © Assessment of trauma-multiple injuries patients/closed abdominal and chest injuries/penetrating injuries, pelvic fractures, urological injuries, vascular injuries.
- © Orthognathic surgery - The trainee must be familiar with the assessment and correcting of jaw deformities
- © Laser surgery - The application of laser technology in the surgical treatment of lesions amenable to such therapy
- © Distraction osteogenesis in maxillofacial region.
- © Cryosurgeries - Principles, the application of cryosurgery in the surgical management of lesions amenable to such surgeries.
- © Cleft lip and palate surgery- detailed knowledge of the development of the face, head and neck, diagnosis and treatment planning, Current concepts in the management of cleft lip and palate deformity, knowledge of nasal endoscopy and other diagnostic techniques In the evaluation of speech and hearing, concept of multi disciplinary team management.
- © Aesthetic facial surgery - detailed knowledge of structures of facial neck including skin and

underlying soft tissues, diagnosis and treatment planning of deformities and conditions affecting facial kin, underlying facial muscles, bone, eyelids, external ear etc. surgical management of post acne scarring, face lift, blepharoplasty, otoplasty, facial bone recountouring etc.

© Craniofacial surgery - basic knowledge of developmental anomalies of face, head and neck, basics concept in the diagnosis and planning of various head and neck anomalies including facial cleft, craniosynostosis, syndromes, etc., Current concepts in the management of craniofacial anomalies

© Head and neck oncology - understanding of the principles of management of head and neck oncology including various pre cancerous lesions, Experience in the surgical techniques of reconstruction following ablative surgery.

© Micro vascular surgery.

© Implantology - principles, surgical procedures for insertion of various types of implants.

© Maxillofacial radiology/radio diagnosis

© Other diagnostic methods and imaging techniques

#### **Allied specialties:**

© General medicine: General assessment of the patient including children with special iphasis on cardiovascular diseases endocrinal and metabolic respiratory and renal eases, Blood dyscrasias

© General surgery: Principles of general surgery, exposure to common general surgical procedures.

© Neuro - surgery: Evaluation of a patient with head injury, examination of various Neuro-surgical procedures

© ENT/Ophthalmology: Examination of ear, nose throat, exposure to ENT surgical procedures, ophthalmic examination and evaluation, exposure to ophthalmic surgical procedures.

© Orthopedic: basic principles of orthopedic surgery, bone diseases and trauma as relevant to Maxillofacial surgery, interpretation of radiographs, CT, MRI and ultrasoi

© Anesthesia: Evaluation of patients for GA techniques and management of emergencies, various IV sedation techniques

#### **Academic Clinical programme (applicable for all three years):**

© Seminars to be presented attended once in a week.

© Journal clubs (departmental and interdepartmental) to be conducted once in fifteen days.

© Departmental and interdepartmental discussions to be held once in a month.

© Minimum 2 scientific papers should be presented.

© Every candidate shall maintain a logbook to record his/hers wok or participate all activities such as journal clubs, seminars, CDE programs etc. this wove| scrutinized and certified by the head of the departmental and head of the institute and presented to the university every year

**Year by year programme: I Year First 6 Months:**

Dissection, basic sciences, basic computer sciences, exodontias, seminars on basic selection of dissertation topic, library assignment topic, attending O.T and ward preparation of synopses and its submission within the six months after admission to the university as per calendar of events.

**Second six Months (rotation and postings in other department):**

Oncology	- 2 months
Emergency	- 1 month
General medicine-	- 15 days
General surgery/anesthesia	- 15 days
Ophthalmology	-15 days
Neurology	-15 days
ENT	-15 days

**II Year**

Minor oral surgery and higher surgical training Submission of library assignment by the end of first term

Examination on minor oral surgical procedures - one paper of three hours duration to be conducted by the college.

**III Year**

Maxillofacial surgery, submission of dissertation in the first term, i.e. six months before the final examination to the university.

Examination of three hours duration three months before the final examination to be conducted by the college. It is desirable to enter general surgical skills and operative procedure that are observed, assisted or performed in the log book in the format as given by RGUHS in the revised ordinance governing MDS degree course.

**Final examination at the end of the third**

SL	Procedure	Category	Year	Number
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No				
	Injection I.M. and I.V.	PI	I,II	50,20
2	Minor suturing and removal of sutures	Pi	I	N,A
3	Incision & drainage of an abscess	PI	I	10
	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	I,II	3
	c) ridge reconstruction	A	II,III	3
7	OAF closure	PI, PA	I, II	3,2
	Cyst enucleation	PI,PA	I, H	5,5
	Mandibular fractures	PI,PA	I,II	10,10
10	Peri-apical surgery	PI,PA	I	5
11	Infection management	PI,PA	I, II	N,A
12	Biopsy procedures	PI	I, H	N,A
13	Removal of salivary calculi	PA	I, H	3,5
14	Benign tumors	PA, A	II, III	3,3
15	mid face fractures	PA, A	II, III	3,5
16	Implants	PA.A	II, III	5,5
17	Tracheotomy	PA.A	II, III	2,2
<b>18</b>	<b>Skin grafts</b>	<b>PA</b>	<b>III</b>	<b>3,5</b>
<b>19</b>	<b>Orthognathic surgery</b>	<b>PA,A</b>	<b>II, III</b>	<b>3</b>
20	Harvesting bone & cartilage grafts	PA A A A,0		3 2 2
	a) Iliac crest			
	b) Rib			
	c) Calvarial			
	d) Fibula			
21	T.M. Joint surgery	PA, A	II, I,	1
22	Jaw resections	PA, A	III, II	3,3

23	Onco surgery	A,0	III, III	3,3
24	Micro vascular anastomosis	A,0	III	5,10
25	Cleft lip & palate	PA,A	II, III	10,15
26	Distraction osteogenesis	A,0	II, III	2,3
27	Rhinoplasty	A,0	III	3,5
28	Access osteotomies and base of skull surgeries	A,0	III	1,3

### **ORAL AND MAXILLOFACIAL SURGERY**

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

1. Surgical anatomy of the scalp, temple 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

**Physiology: 1. Nervous system**

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

## **2. Blood**

© Composition

© Haemostasis, various blood dyscrasias and its management of patients with the same

© Hemorrhage and its control

© Capillary and lymphatic circulation.

© Blood grouping, transfusing procedures.

## **3. Digestive system**

© Saliva - composition and functions of saliva

© Mastication deglutition, digestion, assimilation

© Urine formation, normal and abnormal constituents

## **4. Respiration**

© Control of ventilation anoxia, asphyxia, artificial respiration

© Hypoxia - types and management

## **5. Cardiovascular System**

© Cardiac cycle,

© Shock

© Heart sounds,

© Blood pressure,

© Hypertension:

## **6. Endocrinology**

© General endocrinal activity and disorder relating to thyroid gland,

© Parathyroid gland, adrenal gland, pituitary gland, pancreas and gonads:

© Metabolism of calcium

## **7. Nutrition**

© General principles balanced diet, effect of dietary deficiency, protein malnutrition, Kwashiorkor,

Marasmus:

© Fluid and Electrolytic balance in maintaining haemostasis and significance in minor and major surgical procedures

### **Biochemistry**

General principles governing the various biological activities of the body, such as osmotic pressure, electrolytes, dissociation, oxidation, reduction etc. General composition of the body

Intermediary metabolism

Carbohydrates, proteins, lipids, and their metabolism Nucleoproteins, nucleic acid and nucleotides and their metabolism Enzymes, vitamins and minerals Hormones

Body and other fluids. Metabolism of inorganic elements. Detoxification in the body. Antimetabolites.

### **Pathology:**

#### **1. Inflammation-**

- © Repair and regeneration, necrosis and gangrene
- © Role of component system in acute inflammation,
- © Role of arachidonic acid and its metabolites in acute inflammation,
- © Growth factors in acute inflammation
- © Role of molecular events in cell growth and intercellular signaling cell surface receptors
- © Role of NSAIDs in inflammation,
- © Cellular changes in radiation injury and its manifestation:

#### **2. Haemostasis**

- © Role of endothelium in thrombogenesis,
- © Arterial and venous thrombi,
- © Disseminated Intravascular coagulation

#### **3. Shock:**

- © Pathogenesis of hemorrhagic, neurogenic, septic, cardiogenic shock
- © Circulatory disturbances, ischemia hyperemia, venous congestion, eden infarction

#### **4. Chromosomal abnormalities:**

- © Marfans Syndrome, Ehler's Danlos Syndrome, Fragile X- Syndrome

#### **5. Hypersensitivity:**

- © Anaphylaxis, type 2 hypersensitivity, type 3 sensitivity and cell mediated reaction. And its clinical importance, systemic lupus erythematosus.
- © Infection and infective granulomas.

#### **6. Neoplasia:**

- © Classification of tumors.

- © Carcinogenesis and carcinogen- chemical, viral and microbial
- © Grading and staging of cancers, tumor Angiogenesis, Paraneoplastic syndrome, spread of tumors.
- © Characteristics of benign and malignant tumors

**7. Others:**

- © Sex linked a gamma globulinemia.
- © AIDS
- © Management of immune deficiency patients requiring surgical procedures
- © De George Syndrome
- C Ghons complex, post primary pulmonary tuberculosis - pathology and pathogenesis.

**8. Oral Pathology:**

- © Developmental disturbances of oral and Para oral structures
- © Regressive changes of teeth.
- © Bacterial, viral and mycotic infections of oral cavity
- © Dental caries,, diseases of pulp and periapical tissues
- © Physical and chemical injuries of the oral cavity
- © Oral manifestations of metabolic and endocrinal disturbances
- © Diseases of jawbones and TMJ
- © Diseases of blood and blood forming organs in relation ot oral cavity
- © Cysts of the oral cavity © Salivary gland diseases © Role of laboratory investigations in oral surgery

**9. Microbiology:**

- © Immunity
  - © Knowledge of organisms commonly associated with disease of oral cavity.
  - © Morphology cultural characteristics of strepto, staphylo, pneumo, gono, meningo, Clostridium group of organism, spirochetes, organisms of TB, leprosy, diphtheria, actinomycosis and moniliasis
  - © Hepatitis B and its prophylaxis
  - © Culture and sensitivity test
  - © Laboratory determinations
  - © Blood groups, blood matching, RBC and WBC count
  - © Bleeding and clotting time etc, smears and cultures,
  - © Urine analysis and cultures. 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 hypersensitive 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

### **MINOR ORAL SURGERY AND TRAUMA**

© Principles of Surgery: Developing a surgical diagnosis, basic necessities!

Surgery, Aseptic Technique, Incisions, Flap Design Tissue handling, Haemostasis dead space management, decontamination and debridement, Suturing, Oedema control, patient general health and nutrition.

© Medical Emergencies: prevention and management of altered consciousness (syncope, orthostatic hypotension, seizures, diabetes mellitus, adrenal insufficiency hypersensitivity reactions, chest discomfort, and respiratory difficulty.

1. Examination and Diagnosis: clinical history, physical and radiographic, clinical and laboratory diagnosis, oral manifestations of systemic diseases, implications systemic diseases in surgical patients.
2. Haemorrhage and Shock : applied physiology, clinical abnormalities coagulation, extra vascular hemorrhage, and hemorrhagic lesions, management secondary hemorrhage, shock.
3. Exodontia: principles of extraction, indications and contraindications, types of extraction, complications and their management, principles of elevators and elevators used in oral surgery.
4. Impaction: surgical anatomy, classification, indications and contraindications, diagnosis, procedures, complications and their management.
5. Surgical Aids to Eruption Of Teeth: surgical exposure of unerupted teeth, surgical repositioning of partially erupted teeth.
6. Transplantation of Teeth
7. Surgical Endodontics : indications and contraindications, diagnosis, procedures of periradicular surgery
8. Procedures To Improve Alveolar soft tissues: requirements, types (alveoplasty, tuberosity reduction, mylohyoid ridge reduction, genial reduction, removal of exostosis, vestibuloplasty)
9. Procedures to Improve Alveolar soft Tissues: hypermobile tissues- operative / sclerosing method, epulis fissuratum, frenectomy and frenotomy

10. Infection of Head and Neck: Odontogenic and non Odontogenic infections, factors affecting spread of infection, diagnosis ad differential diagnosis, management of facial space infections, Ludwig angina, cavernous sinus thrombosis.
11. Chronic Infections of the Jaws : Osteomyelitis (types, etiology, pathogenesis, management) osteoradionecrosis
12. Maxillary Sinus: maxillary sinusitis - types, pathology, treatment, closure of Oro - antral fistula. Caldwell- luc operation
13. Cysts of the Orofacial region: classification, diagnosis, management of OKC, dentigerous, radicular non Odontogenic, ranula
14. Neurological Disorders of the maxillofacial region: diagnosis and management of trigeminal neuralgia, MPDS, bell's palsy, Frey's syndrome, nerve injuries.
15. Implantology: definition, classification, indications and contraindications, advantages and disadvantages, surgical procedure.
16. Anesthesia  
 Local Anesthesia: classification of local anesthetic drugs, modes of action indications and contra indications, advantages and disadvantages, techniques, complications and their management.  
 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
17. Trauma
18. Surgical Anatomy of head and Neck
19. Etiology of Injury
20. Basic Principles of Treatment
21. Primary Care: resuscitation, establishment of airway, management of hemorrhage, management of head injuries and admission to hospital.
22. Diagnosis: clinical, radiological
23. Soft Tissue Injury of Face and Scalp: classification and management of soft tissue wounds, injuries to structure requiring special treatment.
24. Dento Alveolar Fractures: examination and diagnosis, classification, treatment, prevention.
25. Mandibular Fractures: classification, examination and diagnosis, general principles of treatment, complications and their management
26. Fracture of Zygomatic Complex: classification, examination and diagnosis, general principles of treatment, complications and their management.

27. Orbital Fractures: blow out fractures
28. Nasal Fractures
29. Fractures of Middle third of the Facial Skeleton: emergency care, fractured maxilla, and treatment of the Le Fort I, II, III, fractures of Naso orbito ethmoidal region.
30. Ophthalmic Injuries: minor injuries, non-perforating injuries, perforating injuries, retinobulbar hemorrhage, and traumatic optic neuropathy.
31. Traumatic Injuries to Frontal sinus: diagnosis, classification, treatment
32. Maxillofacial injuries in Geriatric and pediatric Patients
33. Gun shot wounds and War Injuries
34. Osseointegration in Maxillofacial Reconstruction
35. Metabolic response to Trauma: neuro endocrine responses, inflammatory mediators clinical implications
36. Healing of Traumatic Injuries: soft tissues, bone, cartilage, response of peripheral nerve to injury
37. Nutritional Consideration following Trauma
38. Tracheostomy: indications and contraindications, procedure, complications and their management.

## **MAXILLOFACIAL SURGERY**

- **Salivary gland**

- © Sialography
- © Salivary fistula and management
- © Diseases of salivary gland - developmental disturbances, cysts, inflammation and sialolithiasis
- © Mucocele and Ranula
- © Tumors of salivary gland and their management
- © Staging of salivary gland tumors
- © Parotidectomy

## **Temporomandibular Joint**

- © Etiology, history signs, symptoms, examination and diagnosis of temporomandibular joint disorders
- © Ankylosis and management of the same with different treatment modalities
- © MPDS and management
- © Condylectomy - different procedures
- © various approaches to TMJ
- © Recurrent dislocations - Etiology and Management

## **Oncology**

- © Biopsy
- © Management of pre-malignant tumors of head and neck region

- © Benign and Malignant tumors of Head and Neck region
- © Staging of oral cancer and tumor markers
- © Management of oral cancer
- © Radial Neck dissection
- © Modes of spread of tumors
- © Diagnosis and management of tumors of nasal, paranasal, neck, tongue, cheek, maxilla and mandible
- © Radiation therapy in maxillofacial regions.
- © Lateral neck swellings

### **Orthognathic surgery**

- © Diagnosis and treatment planning
- © Cephalometric analysis
- © Model surgery
- © Maxillary and mandibular repositioning procedures
- © Segmental osteotomies
- © Management of apertognathia
- © Genioplasty
- © Distraction osteogenesis

### **Cysts and tumor of oro facial region**

- © Odontogenic and non-Odontogenic tumors and their management
- © Giant lesions of jawbone
- © Fibro osseous lesions of jawbone
- © Cysts of jaw

### **Laser surgery**

- © The application of laser technology in surgical treatment of lesions Cryosurgery
- © Principles, applications of cryosurgery in surgical management of Cleft lip and palate surgery
- © Detailed knowledge of the development of the face, head and neck
- © Diagnosis and treatment planning
- © Current concepts in the management of cleft lip and palate deformity
- © Knowledge of Naso endoscopy and other diagnostic techniques in the evaluation of speech and hearing
- © Concept of multidisciplinary team management

### **Aesthetic facial surgery**

- © Detailed knowledge of the structures of the face and neck including skin a underlying soft tissue

- © Diagnosis and treatment planning of deformities and conditions affecting facial skin
- © Underlying facial muscles, bone. Eyelids external ear
- © Surgical management of post acne scarring, facelift, blepharoplasty, otoplasty, facial bone recontouring, etc

### **Craniofacial surgery**

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

### **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. Checklists are given in Section IV

## **UNIVERSITY SCHEME OF EXAMINATION**

M.D.S. Degree examinations in any branch of study shall consist of dissertation, written paper (Theory) Part I at the end of 1st year and Part II at the end of 3 years Practical/Clinical and Viva voce.

**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 (Part-I) 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 :** Applied Basic Sciences: Applied Anatomy, embryology, growth and development Genetics, Immunology, anthropology, Physiology, nutrition & Biochemistry, Pathology & Microbiology, virology, Applied pharmacology, Research Methodology and bio statistics, Applied Dental anatomy & histology, Oral pathology & oral Microbiology, Adult and geriatric psychology. Applied dental materials.

Part-II Examination shall consist of Paper-I, Paper-II and 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:

**DISTRIBUTION OF MARKS:**

**Theory :**

**(1) Part I University Examination (100 Marks):-**

There shall be 10 questions of 10 marks each (Total of 100 Marks)

**(2) Part II (3 papers of 100 Marks):-**

(i) Paper-I: 2 long essay questions of 25 marks each and 5 short essays of 10 marks each. (Total of 100 Marks)

(ii) Paper-II: 2 long essay questions of 25 marks each and 5 short essays of 10 marks each. (Total of 100 Marks)

(iii) Paper III: 2 out of 3 essay questions (50 x 2 = 100 Marks)

**Practical and Clinical Examination : 200 Marks**

**Viva-voce and Pedagogy : 100 Marks**

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

**a. Minor Oral Surgery -100 Marks**

Each candidate is required to perform the minor oral surgical procedures under local anaesthesia. The minor surgical cases may include removal of impacted lower third molar, cyst enucleation, any similar procedure where students can exhibit their professional skills in raising the flap, removing the bone and suturing the wound.

b. One long case - 60 marks

c. Two short cases – 20 marks each

**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 make a presentation on the topic for 8-10 minutes.

### **CONSERVATIVE DENTISTRY and ENDODONTICS**

The following objectives are laid out to achieve the goals of the course. These are to be achieved by the time the candidate completes the course. These objectives may be considered under the following subtitles.

#### **Knowledge**

At the end of 36 months of training, the candidates should be able to:

© 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.

© Demonstrate understanding of basic sciences as relevant to conservative / restorative dentistry and Endodontics.

© Identify social, economic, environmental and emotional determinants in a given case or community and take them into account for planning and execution at individual and community level.

© Ability to master differential diagnosis and recognize conditions that may require multi disciplinary approach or a clinical situation outside the realm of the specialty, which he or she should be able to recognize and refer to appropriate specialist.

© Update himself by self-study and by attending basic and advanced courses, conferences, seminars, and workshops in the specialty of Conservative Dentistry- Endodontics-Dental Materials and Restorative Dentistry.

© Ability to teach, guide, colleagues and other students. Use information technology tools and carry out research both basic and clinical with the aim of publishing his/her work and presenting the same at scientific platforms

#### **Skills**

© Take proper chair side history, examine the patient and perform medical and dental diagnostic procedures and order as well as perform relevant tests and interpret to them to come to a reasonable diagnosis about the dental condition in general and Conservative Dentistry - Endodontics in particular. And undertake complete patient monitoring including preoperative as well as post operative care of the patient.

© Perform all levels of restorative work and surgical and non-surgical Endodontics including endodontic endosseous implants, as well as endodontic-periodontal surgical procedures as part of multidisciplinary approach to clinical condition.

© Provide basic life saving support in emergency situations.

© Manage acute pulpal and pulpo periodontal situations.

© Have a thorough knowledge of infection control measures in the dental clinical environment and laboratories.

#### Human Values, Ethical Practice and Communication Abilities

© Adopt ethical principles in all aspects of restorative and contemporaries Endodontics" including non-surgical and surgical Endodontics. © Professional honesty and integrity should be the top priority.

© Dental care has to be provided regardless of social status, caste, creed or religion of the patient.

© Develop communication skills- in particular to explain various options available management and to obtain a true informed consent from the patient.

© Apply high moral and ethical standards while carrying on human or animal research .He / She shall not carry out any heroic procedures and must know his limitations in performing all aspects of restorative dentistry including Endodontics. Ask for help from colfeagues or seniors when required without hesitation O Respect patient's rights and privileges including patients right to information.

#### Course Contents :

##### Applied Anatomy of Head and Neck

© Development of face, paranasal sinuses and the associated structures and their anomalies, cranial and facial bones, TMJ anatomy and function, arterial and venous drainage of head and neck, muscles of face and neck including muscles of mastication and deglutition, brief consideration of structures and function of brain. Brief consideration of all cranial nerves and autonomic nervous system of head and neck. Salivary glands, Functional anatomy of mastication, deglutition and speech. Detailed anatomy of deciduous and permanent teeth, general consideration in physiology of permanent dentition, form, function, alignment, contact, occlusion.)

© Internal anatomy of permanent teeth and its significance

© Applied histology, histology of skin, oral mucosa, connective tissue, bone cartilage, blood vessels, lymphatics, nerves, muscles, tongue.

##### Development of Teeth

© Enamel - development and composition, physical characteristics, chemical properties, structure

© Age changes - clinical structure

© Dentin - development, physical and chemical properties, structure type of dentin, innervations, age and functional changes.

© Pulp - development, histological structures, innervations, functions, regressive changes, clinical considerations.

- © Cementum - composition, cementogenesis, structure, function, clinical consideration.
- © Periodontal ligament - development, structure, function and clinical consideration.
- © Salivary glands - structure, function, clinical considerations.

### **Applied Physiology**

- © Mastication, deglutition, digestion and assimilation, fluid and electrolyte balance.
- © Blood composition, volume, function, blood groups, haemostasis, coagulation, blood transfusion, circulation, heart, pulse, blood pressure, shock, respiration, control, anoxia, hypoxia, asphyxia, artificial respiration, and endocrinology - general principles of endocrine activity and disorders relating to pituitary, thyroid, parathyroid, adrenals including pregnancy and lactation.
- © Physiology of saliva - composition, function, clinical significance.
- © Clinical significance of vitamins, diet and nutrition - balanced diet.
- © Physiology of pain, sympathetic and Para sympathetic nervous system, pain pathways, physiology of pulpal pain, Odontogenic and non Odontogenic pain, pain disorders - typical and atypical, biochemistry such as osmotic pressure, electrolytic dissociation, oxidation, reduction etc., carbohydrates, proteins, lipids and their metabolism, nucleoproteins, nucleic acid and their metabolism. Enzymes, vitamin and minerals, metabolism of inorganic elements, detoxification in the body, anti metabolites, chemistry of blood lymph and urine.

### **Pathology**

- © Inflammation, repair, degeneration, necrosis and gangrene.
- © Circulatory disturbances - ischemia, hyperemia, edema, thrombosis, embolism, infarction, allergy and hypersensitivity reaction.
- © Neoplasms - classifications of tumors, characteristics of benign and malignant tumors, spread tumors.
- © Blood dyscrasias
- © 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.
- © Bacterial, viral, mycotic infections of the oral cavity.

### **Microbiology**

- © Pathways of pulpal infection, oral flora and micro organisms associated with endodontic diseases, pathogenesis, host defense, bacterial virulence factors, healing, theory of focal infections, microbes or relevance to dentistry - strepto, staphylococci, lactobacilli, comyebacterium, actinomycetes, Clostridium, neisseria, vibrio, bacterioids, fusobacteria, spirochetes, mycobacterium, virus and fungi.

- © Cross infection, infection control, infection control procedure, sterilization and disinfection.
- © Immunology - antigen antibody reaction, allergy, hypersensitivity and anaphylaxis, auto immunity, grafts, viral hepatitis, HIV infections and aids. Identification and isolation of microorganisms from infected root canals. Culture medium and culturing technique (Aerobic and anaerobic interpretation and antibiotic sensitivity test).

### **Pharmacology**

- © Dosage and route of *administration of drugs, actions and fate of drug in body, drug addiction, tolerance of hypersensitivity reactions.*
- © Local anesthesia - *agents and chemistry, pharmacological actions, fate and metabolism of anaesthetic, ideal properties, techniques and complications.*
- © General anesthesia - *pre medications, neuro muscular blocking agents, induction agents, inhalation anesthesia, and agents used, assessment of anesthetic problems in medically compromised patients.*
- © *Anaesthetic emergencies*
- © *Antihistamines, corticosteroids, chemotherapeutic and antibiotics, drug resistance, haemostasis, and haemostatic agents, anticoagulants, sympathomimetic drugs, vitamins and minerals (A, B, C, D, E, K IRON), anti sialogogue, immunosuppressants, drug interactions, antiseptics, disinfectants, anti viral agents, drugs acting on CNS.*

### **Biostatistics**

- © *Introduction, Basic concepts, Sampling, Health information systems - collection, compilation, presentation of data. Elementary statistical methods - presentation of statistical data, Statistical averages - measures of central tendency, measures of dispersion, Normal distribution. Tests of significance - parametric and non - parametric tests (Fisher exact test, Sign test, Median test, Mann Whitney test, Krusical Wallis one way analysis, Friedmann two way analysis, Regression analysis), Correlation and regression, Use of computers.*

### **Research Methodology**

- © *Essential features of a protocol for research in humans*
- © *Experimental and non-experimental study designs*
- © *Ethical considerations of research*

### **Applied Dental Materials**

- © *Physical and mechanical properties of dental materials, biocompatibility.*
- © *Impression materials, detailed study of various restorative materials, restorative resin and recent advances in composite resins, bonding- recent developments- tarnish and corrosion, dental amalgam, direct filling gold, casting alloys, inlay wax, die materials, investments, casting procedures, defects, dental cements for restoration and pulp protection (luting, liners, bases) cavity varnishes.*

© *Dental ceramics-recent advances, finishing and polishing materials.* © *Dental burs - design and mechanics of cutting - other modalities of tooth preparation.* © *Methods of testing biocompatibility of materials used.*

## **CONSERVATIVE DENTISTRY**

1. *Examination, diagnosis and treatment plan*
2. *Occlusion as related to conservative dentistry, contact, contour, its significance. Separation of teeth, matrices, used in conservative dentistry.*
3. *Dental caries- epidemiology, recent concept of etiological factors, pathophysiology, Histopathology, diagnosis, caries activity tests, prevention of dental caries and management - recent methods.*
4. *Hand and rotary cutting instruments, development of rotary equipment, speed ranges hazards.*
5. *Dental burs and other modalities of tooth reparation- recent developments (air abrasions, lasers etc)*
6. *Infection control procedures in conservative dentistry, isolation equipments etc.*
7. *Direct concepts in tooth preparation for amalgam, composite, GIC and restorative techniques, failures and management.*
8. *Direct and indirect composite restorations.*
9. *Indirect tooth colored restorations- ceramic, inlays and onlays, veneers, crowns, recent advances in fabrication and materials.*

### **a. Tissue management**

10. *Impression procedures used for direct restorations.*
11. *Cast metal restorations, indications, contraindications, tooth preparation for class I inlay, Onlay full crown restorations.*  
*Restorative techniques, direct and indirect methods of fabrication including materi used for fabrication like inlay wax, investment materials and*
12. *Direct gold restorations.*
13. *Recent advances in restorative materials and procedures.*
14. *Management of non-carious lesion.*
15. *Advance knowledge of minimal intervention dentistry.*
16. *Recent advances in restoration of endodontically treated teeth and grossly mutilated teeth*
17. *Hypersensitivity, theories, causes and management.*

18. Lasers in Conservative Dentistry
19. CAD-CAM & CAD-CIM in restorative dentistry
20. Dental imaging and its applications in restorative dentistry (clinical photography)
21. Principles of esthetics
  - Facial analysis
  - Smile design
  - Principles of esthetic integration
  - Treatment planning in esthetic dentistry

### **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. Pathobiology of periapex.
6. Diagnostic procedure - recent advances and various aids used for diagnosis-
  - a. Orofacial dental pain emergencies: endodontic diagnosis and management
7. Case selection and treatment planning
8. Infection control procedures used in endodontics (aseptic techniques such as rubber dam, sterilization of instruments etc.)
9. Access cavity preparation - objectives and principles
10. Endodontic instruments and instrumentation - recent developments, detailed description of hand, rotary, sonic, ultra sonic etc..
11. Working length determination / cleaning and shaping of root canal system and recent development in techniques of canal preparation.
12. Root canal irrigants and intra canal medicaments used including non - surgical endodontics by calcium hydroxide.
13. Endodontic microbiology.
14. Obturating materials, various obturation techniques and recent advances in obturation of root canal.
15. Traumatic injuries and management - endodontic treatment for young permanent teeth. Pediatric endodontics - treatment of immature apex.

16. Endodontic surgeries, recent developments in technique and devices, endosseous endodontic implants - biology of bone and wound healing.
17. Endoperio interrelationship, endo + Perio lesion and management
18. Drugs and chemicals used in endodontics
19. Endo emergencies and management.
20. Restoration of endodontically treated teeth, recent advances.
21. Geriatric endodontics
22. Endo emergencies and management.
23. Biologic response of pulp to various restorative materials and operative procedures.
24. Lasers in endodontics.
25. Multidisciplinary approach to endodontic situations. 26. Endodontic radiology- digital technology in endodontic practice. 27. Local anesthesia in endodontics.
28. Procedural errors in endodontics and their management. 29. Endodontic failures and retreatment.
30. Resorptions and its management. 31. Microscopes in endodontics.
32. Single visit endodontics, current concepts and controversies.

***First Year***

***Pre Clinical Work - Operative and Endodontics***

***Preclinical work on typhodont teeth***

- |  |       |
|--|-------|
| 1. Class 2 amalgam cavities  |       |
| a. Conservative preparation  |       |
| b. Conventional preparation  | - 0 3 |
| 2. Inlay cavity preparation on premolars And molars - MO, DO, MOD                      | - 0 3 |
| a. Wax pattern   |       |
| b. Casing  | - 1 0 |
| 3. Onlay preparation oh molars a. Casting  | - 0 6 |
| 4. Full Crown  | - 0 4 |
| a. Anterior  | - 0 2 |
| b. Posterior   | - 0 1 |
| (2 each to be processed)   | 0 5   |
| 5. 7/8 crown (1 to be processed)   | 0 5   |
| 6. 3 / 4 crown premolars (1 to be processed) <i>Pre Clinical work on natural teeth</i> | - 0 2 |
|  | - 0 2 |
| 1. Inlay on molars and premolars MO, DO, and MOD                                       | 0 8   |
| a. Casting   | 0 2   |
| b. Wax pattern   | 0 2   |
| 2. Amalgam cavity preparation  |       |
| a. Conventional  | 0 2   |

b. Conservative	02	
3. Pin retained amalgam on molar teeth	02	
4. Post and core build up		
Anterior teeth	10	
Posterior teeth	05	
5. <i>Casting</i>		
<i>Anterior</i>	04	
<i>Posterior</i>	02	
6. <i>Onlay on molars</i>	03	
<i>( 1 to be processed)</i>		
7. <i>Full crown premolars and molars</i>		04
8. <i>Full crown anterior</i>		06
<i>(2 and 3 to be processed)</i>		
9. <i>Veneers anterior teeth (indirect method)</i>		02
10. <i>Composite inlay (class 2)</i>		03
11. Full tooth wax carving - all permanent teeth		

### **Endodontics**

1. Sectioning of all maxillary and mandibular teeth.
2. Sectioning of teeth - in relation to deciduous molar, 2nd primary upper and lower molar 1 each
3. Access cavity opening and root canal therapy in relation to maxillary and mandibular permanent teeth
4. Access cavity preparation and BMP Anterior
  - a. Conventional prep
  - b. Step back
  - c. Crown down

### **Obturation**

**03**

5. BMP Premolar 06 (2 upper and 2 lower) obturation 1 each
6. BMP Molar 06 (3 upper - 2 first molars and 1 second molar, 3 lower - 2 first molars and 1 second molar) obturation 1 each
7. Post and core preparation and fabrication in relation to anterior and posterior teeth
  - a. Anterior 10 (casting 4)
  - b. Posterior 05 (casting 2)
  - c. Removable dies 04

**Note: Technique work to be completed in the first four months Clinical work**

<b>A. Composite restorations</b>	30
<b>B. GIC restorations</b>	30

C. Complex amalgam restorations	05
D. Composite inlay + veneers	05
Direct + Indirect	
E. Ceramic jacket crown	05
F G Post and core for anterior teeth Bleaching	05
vital	
	05
Non Vital	05
H. RCT Anterior	20
I. Endo surgery - observation and assisting	05

Presentation of

© Seminars - 5 seminars by each student - should include topics in dental conservative dentistry and endodontics

© Journal clubs - by each student

© Submission of synopsis at the end of 6 months

© Library assignment work

© Internal assessment - theory and clinicals.

**Second Year**

Case discussion-5

1 Ceramic jacket crowns	10
2 Post and core for anterior teeth	10
3 Post and core for posterior teeth	05
4 Composite restoration	05
5 Full crown for posterior teeth	15
6 Cast gold inlay	05
7 Other special types of work such as splinting- Reattachment of fractured teeth etc.	05
8 Anterior RCT	20
9 Posterior RCT	30
10 Endo surgery performed independently	05
11 Management of endo - Perio problems	05

© Under graduate teaching program as allotted by the HOD

© Seminars - 5 by each student

- © Journal club - 5 by each student
- © Dissertation work
- © Prepare scientific paper and present in conference and clinical meeting
- © Library assignment to be submitted 18 months after starting of the course
- © Internal assessment - theory and clinical

### **Third Year**

Dissertation work to be submitted 6 months before final examination. Clinical work

- © Cast gold inlay- Onlay, cuspal restoration 10
- © Post and core 20
- © Molar endodontics 50
- © Endo surgery 05

All other types of surgeries including crown 05

lengthening, perioesthetics, hemi sectioning, splinting, replantation, endodontic implants.

Presentation of

- © Seminars
- © Journal club
- Teaching - lecture (under graduates)
- © Internal assessment - theory and clinical

### **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 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. Checklists are given in Section IV.

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**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 (Part-I) 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 :** Applied Basic Sciences: Applied Anatomy, embryology, growth and development Genetics, Immunology, anthropology, Physiology, nutrition & Biochemistry, Pathology & Microbiology, virology, Applied pharmacology, Research Methodology and bio statistics, Applied Dental anatomy & histology, Oral pathology & oral Microbiology, Adult and geriatric psychology. Applied dental materials.

Part-II Examination shall consist of Paper-I, Paper-II and 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:

#### **DISTRIBUTION OF MARKS:**

##### **Theory :**

##### **(1) Part I University Examination (100 Marks):-**

There shall be 10 questions of 10 marks each (Total of 100 Marks)

##### **(2) Part II (3 papers of 100 Marks):-**

(i) Paper-I: 2 long essay questions of 25 marks each and 5 short essays of 10 marks each. (Total of 100 Marks)

(ii) Paper-II: 2 long essay questions of 25 marks each and 5 short essays of 10 marks each. (Total of 100 Marks)

(iii) Paper III: 2 out of 3 essay questions (50 x 2 = 100 Marks)

**Practical and Clinical Examination : 200 Marks**

**Viva-voce and Pedagogy : 100 Marks**



## **ORTHODONTICS & DENTOFACIAL ORTHOPAEDICS**

The training programme in Orthodontics is to structure and achieve the following four objectives **Knowledge of**

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 appliance - intra or extra oral, removable or fixed, mechanical or functional, and active or passive - for the treatment of any orthodontic problem to be treated singly or as a part of multidisciplinary treatment of orofacial deformities.

### **Attitudes:**

1. Develop an attitude to adopt ethical principles in all aspects of Orthodontic practice.
2. Professional honesty and integrity are to be fostered
3. Treatment care is to be delivered irrespective of the social Status, cast, creed or colleagues
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 orthodontic management developed from time to time based on scientific research, which are in the best interest of the patient
6. Respect patients rights and privileges, including patients right to information and right to seek a second opinion
7. Develop attitude to seek opinion from allied medical and dental specialists as and when required

### **Communication skills**

1. Develop adequate communication skills particularly with the patients giving them 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.
2. 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**

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.

### **Spread of the Curriculum**

Six months teaching o basic subjects including completion of pre - clinical exercises 2 ft years of coverage of all the relevant topics in Orthodontics, clinical training invoMng treatment of patients and submission of dissertation. These may be divided into blocks of 6 to 8 months duration each, depending on the training policies of each institution.

#### **I. Applied Anatomy:**

##### © Prenatal growth of head:

Stages of embryonic development, origin of head, origin of face, origin of teeth.

##### © Postnatal growth of head:

Bones of skull, the oral cavity, development of chin, the hyoid bone, general growth of head, face growth.

##### © Bone growth:

Origin of bone, composition of bone, units of bone structure, schedule of Ossification, mechanical properties of bone, roentgen graphic appearance of bone

##### © 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 growfo.

##### © Muscles of mastication:

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

##### © Development of dentition and occlusion:

Dental development periods, order of tooth eruption, chronology of permanent tooth formation, periods of occlusal development, pattern of occlusion.

##### © Assessment of skeletal age

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

### **Physiology**

© Endocrinology and its disorders

(Growth hormone, thyroid hormone, parathyroid hormone, ACTH) pituitary gland hormones, thyroid gland hormones, parathyroid gland hormones

© Calcium and its metabolism

© Nutrition-metabolism and their disorders: proteins, carbohydrates, fats, vitamins and minerals.

© Muscle physiology

© Craniofacial Biology: cell adhesion molecules and mechanism of adhesion

© Bleeding disorders in orthodontics: Hemophilia

### **III Dental materials:**

© Gypsum products: dental plaster, dental stone and their properties, setting reaction etc.

© Impression materials: impression materials in general and particularly of alginate impression material.

© Acrylics: chemistry, composition physical properties

© Composites: composition types, properties setting reaction

© Banding and bonding cements: Zn (P04)2, zinc silicophosphate, Zinc polycarboxylate, resin cements and glass ionomer cements

© Wrought metal alloys: deformation, strain hardening, annealing, recovery, recrystallization, grain growth, properties of metal alloys

© Orthodontic arch wires: stainless steel gold, wrought cobalt chromium nickel alloys, alpha&beta titanium alloys

© Elastics: Latex and non-latex elastics.

© Applied physics, Bioengineering and metallurgy.

© Specification and tests methods used for materials used in Orthodontics

© Survey of all contemporary literature and Recent advances in above - mentioned materials.

### **IV. Genetics:**

© Cell structure, DNA, RNA, protein synthesis, cell division

© Chromosomal abnormalities © Principles of orofacial genetics •

© Genetics in malocclusion

© 5 Molecular basis of genetics

- © Studies related to malocclusion
- © Recent advances in genetics related to malocclusion
- © Genetic counseling
- © Bioethics and relationship to Orthodontic management of patients.

**V Physical Anthropology:**

- © Evolutionary development of dentition
- © Evolutionary development of jaws.

**VI Pathology:**

- © Inflammation
- © Necrosis

**VII Biostatistics:**

- © Statistical principles
- © Data Collection
- © Method of presentation
- © Method of Summarizing
- © Methods of analysis - different tests/errors
- © Sampling and Sampling technique
- © Experimental models, design and interpretation
- © Development of skills for preparing clear concise and cogent 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:**

**X. Orthodontic history:**

- © 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 handicapped 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, handicapped and mentally retarded cases and their special problems
- © Critique of treated cases. Cephalometrics
- © Instrumentation
- © Image processing
- © Tracing and analysis of errors and applications
- © Radiation hygiene
- © Advanced Cephalometrics techniques
- © Comprehensive review of literature
- © Video imaging principles and application.

#### **XVII. 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.

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

### **Orthodontic / Orthognathic surgery:**

- © Orthodontist' 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 / Perio / Prostho 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

## **Retention and relapse**

- © Mechanotherapy - special reference to stability of results with various procedures
- © Post retention analysis
- © Review of contemporary literature

## **XIX. Recent advances like:**

- © Use of implants
- © Lasers
- © Application of F.E.M.
- © Distraction Osteogenesis

## **Skills:**

### **II. Pre - Clinical Exercises**

A general outline of the type of exercises is given here. Every institution can decide the details of exercises under each category.

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 A.B.O.
7. Cephalometric tracing and various Analyses, also superimposition methods -
8. Fixed appliance orthodontic exercises.

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 other techniques.

- b) Typhodont exercise
  - i. Band making
  - ii. Bracket positioning and placement
  - iii. Different stages in treatment appropriate to technique taught
- 9. Clinical photography
- 10. Computerized imaging
- 11. Preparation of surgical splints, and splints for TMJ problems.
- 12. Handling of equipments like vacuum forming appliances and hydro solder etc

**First Year**

**I. Basic Pre-Clinical Exercise Work for the MDS Students:**

First 6 Months

**1. Non-appliance exercises**

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

SI. 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" side	1
6	Bending of 5U's	1
7	Bending of 5V's	1

**1. Clasps**

SI. No	Exercise	No.
1	$\frac{3}{4}$ 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

## 2. 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	Mill'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	
9	Fitted labial bow	
10	Split high labial bow	1

## 3. 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

## 1. CANINE RETRACTORS

SL NO	EXERCISE	NO
1	u loop canine retractor	2PAIRS
2	Helical canine retractor	2PAIRS
3	Palatal canine retractor	2PAIRS
4	Self -supporting canine retractor	2PAIRS
5	Self -supporting canine retractor	2PAIRS

## 2. Appliances

SL NO	EXERCISE
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 coffin spring
5	Upper expansion appliance with expansion screw
6	Habit breaking appliance with tongue crib
7	Oral screen and double oral screen
8	Lip bumper
9	Splint for Bruxism
10	Catalans appliance
11	Activator
12	Bionator
13	Frankel-FR 2 appliance
14	Twin block
15	Lingual arch
16	TPA

17	Quad helix
18	Bihelix
19	Utility arches
20	Pendulum appliance

### 3. Soldering exercises

SI.No.	Exercise	No.
1	Star	1
2	Comb	1
3	Christmas tree .	1
4	Soldering buccal tube on molar bands	1

### 4. Welding exercises

SI.No.	Exercise
1	Pinching and welding of molar, premolar, canine and Incisor bands
2	Welding of buccal tubes and brackets on molar bands and incisor bands

5. Impression of upper and lower arches in alginate

6. Study model preparation

7. Model analysis

SI. No.	EXERCISE
1	Impression of upper and lower dental arches
2	PREPARATION OF STUDY MODEL -1 And all the permanent dentition analyses to be done.
3	PREPARATION OF STUDY MODEL - 2 And all the permanent dentition analyses to be done.
4	PREPARATION OF STUDY MODEL - 3 And all the mixed dentition analyses to be done.

## 8. Cephalometrics

SI. No.	EXERCISE
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	Burrstone analysis
7	Rakosi's analysis
8	Mc Namara analysis
9	Bjork analysis
10	Coben's analysis
11	Harvold's analysis
12	Soft tissue analysis - Holdaway and Burrstone

- **Basics of Clinical Photography including Digital Photography**
- **Light wire bending exercises for the Begg technique**

SI.No.	Exercise
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	Up righting spring

## 2. Typhodont exercises

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-I
6. Stage-III

### **CLINICAL WORK:**

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

Each postgraduate student should start with a minimum of 50 cases of his/her own. Additionally he / she should handle a minimum of 20 transferred cases.

The type of cases can be as follows:

- i. Removable active appliances-5cases
- ii. Class-I malocclusion with Crowding
- iii. Class-I malocclusion with bi-maxillary protrusion
- iv. Class-II division-1
- v. Class-II division-2
- vi. Class-III (Orthopedic, Surgical, Orthodontic cases)
- vii. Inter disciplinary cases
- viii. Removable functional appliance cases like activator, Bionator, functional regulator, twin block and new developments
- ix. Fixed functional appliances - Herbst appliance, jasper jumper etc - 5 cases
- x. Dento-facial orthopedic appliances like head gears, rapid maxillary expansion niti expander etc., - 5 cases
- xi. Appliance for arch development such as molar distalization -m 5 cases
- xii. Fixed mechano therapy cases (Begg, PEA, Tip edge, Edgewise) Retention procedures of above treated cases.

### **Other work to be done during FIRST YEAR**

1. **Seminars:** One Seminar per week to be conducted in the department. A minimum of five seminars should be presented by each student each year
2. **Journal club:** One Journal club per week to be conducted in the department. A minimum of five seminars should be presented by each student each year
3. Protocol for dissertation to be submitted on or before the end of six months from the date of admission.
4. **Under graduate classes:** Around 4 - 5 classes should be handled by each post- graduate student
5. **Field survey:** To be conducted and submit the report
6. **Inter-departmental meetings:** should be held once in a month.
7. **Case discussions**
8. **Field visits:** To attend dental camps and to educate the masses
9. **Basic subjects classes**
10. **Internal assessment or Term paper Second Year:**

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. Seminars: One Seminar per week to be conducted in the department. Each student should present a minimum of five seminars each year.
2. Journal club: One Journal club per week to be conducted in the department. Each student should present a minimum of five seminars each year.
3. Library assignment to be submitted on or before the end of six months.
4. Undergraduate classes: each post-graduate student should handle Around 4-5 classes.
5. Inter-departmental meetings: Should be held once in a month
6. Case discussions
7. Field visits: To attend dental camps and to educate the masses.
8. Internal assessment or term paper.
9. Dissertation work: On getting the approval from the university work for the dissertation to be started.

### **Third Year:**

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. **Seminars:** One Seminar per week to be conducted in the department. E student should present a

minimum of five seminars each year.

2. **Journal Club:** One Journal club per week to be conducted in the departments minimum of five seminars should be presented by each student each year
3. **Under graduate classes:** each post - graduate student, should handle Around 4-5 classes.
4. **Inter-departmental meetings:** Should be held once in a month.
5. **The completed dissertation should be submitted six months before the final examination**
6. **Case discussions**
7. **Field visits:** To attend dental camps and to educate the masses.
8. **Finishing and presenting the cases taken up.**
9. **Preparation of finished cases and presenting the cases (to be presented for the examination)**
10. **Mock examination Dissertation:**
  - a. The protocol for dissertation should be submitted on or before the end of six months from the date of admission as per calendar of events to the Registrar, Rajiv Gandhi University of Health Sciences, Karnataka, through proper channel.
  - b. The completed dissertation should be submitted 6 months before the final examination as per calendar of events to the Registrar (Evaluation), Rajiv Gandhi University of Health Sciences, Karnataka, through proper channel.
  - c. The dissertation should not be just a repetition of a previously undertaken study but should try to explore some new aspects.
  - d. Approval of dissertation is essential before a candidate appears for the Univ examination.

### **Monitoring Learning Progress**

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

### **UNIVERSITY SCHEME OF EXAMINATION**

M.D.S. Degree examinations in any branch of study shall consist of dissertation, written paper (Theory) Part I at the end of 1st year and Part II at the end of 3 years Practical/Clinical and Viva voce.

**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 (Part-I) 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 :** Applied Basic Sciences: Applied Anatomy, embryology, growth and development Genetics, Immunology, anthropology, Physiology, nutrition & Biochemistry, Pathology & Microbiology, virology, Applied pharmacology, Research Methodology and bio statistics, Applied Dental anatomy & histology, Oral pathology & oral Microbiology, Adult and geriatric psychology. Applied dental materials.

Part-II Examination shall consist of Paper-I, Paper-II and 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:

#### **DISTRIBUTION OF MARKS:**

##### **Theory :**

##### **(1) Part I University Examination (100 Marks):-**

There shall be 10 questions of 10 marks each (Total of 100 Marks)

##### **(2) Part II (3 papers of 100 Marks):-**

(i) Paper-I: 2 long essay questions of 25 marks each and 5 short essays of 10 marks each. (Total of 100 Marks)

(ii) Paper-II: 2 long essay questions of 25 marks each and 5 short essays of 10 marks each. (Total of 100 Marks)

(iii) Paper III: 2 out of 3 essay questions (50 x 2 = 100 Marks)

**Practical and Clinical Examination : 200 Marks**

**Viva-voce and Pedagogy : 100 Marks**

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

No	Exercise	Marks allotted	Approximate time
1	Functional appliance, <ul style="list-style-type: none"><li>• case discussion, bite registration, fabrication and delivering of the appliance</li></ul>	50	1 hour 1 hour
2	III stage mechanics/ Bonding/ arch wire fabrication	50	1 hour 30 min
3	Display of case records (a minimum of 5 patients to be presented with all the records)	75	1 hour
4	Long cases	25	2 hours

**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 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 minute

**ORAL AND MAXILLOFACIAL PATHOLOGY; AND ORAL MICROBIOLOGY**

**objectives**

© To train a post graduate dental surgeon so as to ensure higher competence in both general and special pathology dealing with the nature of oral diseases, their causes, processes and effects.

© An oral pathologist is expected to perform routine histopathological evaluation of specimens relating to oral and perioral tissues, to carry out routine diagnostic procedures including hematological, cytological, microbiological, Immunological and ultrastructural investigations.

© 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 databases, automated data retrieval systems, referencing and skill in writing scientific papers.

© 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.

Broad outline of theoretical, clinical and practical courses.

1. Study of principles of routine and special techniques used for histopathology including principles of histochemistry, Immunochemistry, applied and theoretical biochemical basis of histochemistry as related to oral pathology.

1. Advanced histological and histopathological study of dental and oral tissues including embryonic considerations, clinical considerations, biology, histology, Pathology, prognosis and management of oral oncology, Concepts of oral premalignancy

2. Study of special and applied pathology of oral tissues as well as relation of local pathologic and clinical findings to systemic conditions.

3. Oral microbiology and their relationship to various branches of dentistry.

4. Oral microbiology affecting hard and soft tissues. Study of clinical changes and their significance to dental and oral diseases as related to oral pathology

5. Forensic odontology

6. Inter institutional postings such as cancer hospital, dermatology clinics, regional HIV detection centers, 'sophisticated instrumentation centers for electron microscopy and other techniques.

7. Maintenance of records of all postgraduates activities.

8. Library assignment.

9. University Dissertation.

### **A. Course contents First year**

#### **1) Biostatistics and Research Methodology**

© Basic principles of biostatistics and study as applied to dentistry and research

© Collection/organization of data/measurement scales presentation of data analysis.

© Measures of central tendency.

© Measures of variability.

© Sampling and planning of health survey.

© Probability, normal distribution and indicative statistics.

© Estimating population values.

© Tests of significance (parametric/non-parametric qualitative methods.)

- © Analysis of variance
- © Association, correlation and regression.

**Approach:**

- © Didactic lectures on biostatistics and discussion on research methodology by eminent researchers.
- © Two - day P.G. orientation course including general approach PG course, library and main dissertation, journal club topic selection and presentation, seminars, clinico- pathological meets, teaching methodology and use of audiovisual aids.

**2) Applied Gross Anatomy of Head and Neck including Histology:**

- © Temporomandibular joint
- © Trigeminal nerve and facial nerve
- © Muscles of mastication
- © Tongue
- © Salivary glands
- © Nerve supply; blood supply, lymphatic drainage and venous drainage of Oro-dental tissues.
- © Embryology
- Development of face, palate, mandible, maxilla, tongue and applied aspects of the same
- Development of teeth and dental tissues and developmental defects of oral and maxillofacial region and abnormalities of teeth
- © Maxillary sinus
- © Jaw muscles and facial muscles

**Genetics:**

Introduction modes of inheritance, chromosomal anomalies of oral tissues and single genetic disorders.

**Approach:**

- To be covered as didactic lectures.
- © Posting in department of anatomy for dissection of head, face and neck.

**3) Physiology (General and oral)**

- © Saliva
- © Pain
- © Mastication
- © Taste
- © Deglutition
- © Wound healing
- © Vitamins (Influence on growth, development and structure of oral soft and hard tissues and para oral

tissues.)

© Calcium metabolism.

© Theories of mineralization.

© Tooth eruption and shedding.

© Hormones. (Influence on growth, development and structure of oral soft and hard tissues and para oral tissues.)

© Blood and its constituents.

**Approach:**

To be covered as didactic lectures.

**4) Cell Biology:**

© Cell-structure and function (ultrastructural and molecular aspects), intercellular junctions, cell cycle and division, cell cycle regulators, cell - cell and cell - extra cellular matrix interactions.

© Detailed molecular aspects of DNA, RNA, and intracellular organelles, transcription and translation and molecular biology techniques.

Approach:

To be covered as seminars and didactic lecture.

**5) General Histology:**

Light and electron microscopy considerations of Epithelial tissues and glands, bone, hematopoietic system, lymphatic system, muscle, neural tissue, endocrinal system (thyroid, pituitary, parathyroid)

**Approach:**

© Topics to be covered as didactic lectures.

© Postings in the department of anatomy and 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, Electrophor Spectrophotometry, and radioactive techniques.

**Approach:**

© Topics to be covered as didactic lectures.

© Postings to the department of biochemistry to familiarize with various techniques

© Record book to be maintained.

### **7) General Pathology:**

© Inflammation and chemical mediators, thrombosis, embolism, necrosis, repair, degeneration, shock, hemorrhage pathogenic mechanisms at molecular level and blood dyscrasias, Carcinogenesis and Neoplasia.

#### **Approach:**

To be covered as seminars and didactic lectures.

### **8) General Microbiology:**

- © Definitions of various types of infections.
- © Routes of infection and spread
- © Sterilization, disinfection and antiseptics.
- © Bacterial genetics.
- © Physiology and growth of microorganisms.

#### **Approach:**

©To be covered as seminars and didactic lectures.

©Record book to be maintained.

### **9) Basic Immunology**

- © Basic principles of immunity, antigen and antibody reactions.
- © Cell mediated immunity and Humoral immunity.
- © Immunology of hypersensitivity.
- © Immunological basis of the autoimmune phenomena.
- © Immunodeficiency with relevance to opportunistic infections.
- © Basic principles of transplantation and tumor immunity.

#### **Approach:**

To be covered as didactic lectures.

### **10) Systemic microbiology/applied microbiology**

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

© Staphylococci

- © Streptococci
- © Corynebacterium diphtheria
- © Mycobacteria
- © Clostridia, Bacteroides and fusobacteria © Actinomycetis
- © Spirochetes

**Virology:**

**General properties:** structure, broad classification of viruses, pathogenesis, pathology of viral infections.

**Herpes virus:** list of viruses included, lesions produced, pathogenesis, latency principles and laboratory diagnosis.

**Hepatitis virus:** list of viruses, pathogenesis, and mode of infection, list of diagnostic tests, and their interpretations, methods of prevention and control.

**Human Immunodeficiency virus:** structure with relevance to laboratory diagnosis, type of infection, laboratory tests and their interpretation, universal precautions, specific precautions and recent trends in diagnosis and prophylaxis.

**Mycology:**

© General properties of fungi, classification bases on disease, superficial, subcutaneous, deep opportunistic infections.

© General principles of fungal infections, diagnosis rapid diagnosis method of collection of sample and examination for fungi.

**Approach:**

- © To be covered as seminars and didactic lectures
- © Postings to the dept. of microbiology to familiarize with relevant diagnostic methods
- © Record book to be maintained

**11) Oral Biology (oral and dental histology)**

© Structure and function of oral, dental and paraoral tissues including their ultra structure, molecular and biochemical aspects.

© Study of morphology of permanent and deciduous teeth (Lectures and practical demonstrations to be given by PG students)

**Approach:**

- © To be covered as seminars and didactic lectures.
- © Slide discussion on histological appearance of normal oral tissues.

© Record book to be maintained.

**12) Basic molecular biology and techniques:** experimental aspects - DNA extraction, PCR, western blotting. **Approach:**

© To be covered as didactic lectures

© Postings in centers where facilities are available for demonstration of routine molecular biology techniques.

© Record book to be maintained.

**13) Basic histo techniques and microscopy:**

© Routine hematological tests and clinical significance of the same.

© Biopsy procedures for oral lesions.

© Processing of tissues for Paraffin lesions.

© Microtome and principles of microtomy.

© Routine stains, principles and theories of staining techniques

© Microscope, principles and theories of microscopy.

© Light microscopy and various other types including electron microscopy.

© Methods of tissue preparation for ground sections, decalcified sections.

**Approach:**

© Topics to be covered as seminars.

© Preparation of ground and decalcified sections, tissue processing, sectioning and staining.

© Record book to be maintained

**Academic activities:**

© Submission of synopsis of dissertation at the end of six months.

© Journal clubs and seminars to be presented by every post graduate student twice a month.

© To attend interdepartmental meetings.

© To attend dental camps based on the survey to be done.

© Part -1 year ending examination to be conducted by the college.

**SECOND YEAR**

**Oral pathology**

© Developmental defects of oral and maxillofacial region and abnormalities of teeth Dental caries (Introduction, Epidemiology, microbiology, cariogenic bacterial including properties, acid production in plaque, development of lesion, response of dentine - pulp unit, histopathology, root caries, sequelae and immunology).

© Pulpal and Periapical diseases

© Infections of oral and Para oral regions (bacterial, viral and fungal infection)

© Non - neoplastic disorders of salivary glands

- © Bone pathology
- © Hematological disorders
- © Physical and chemical injuries, allergic and Immunological diseases.
- © Cysts of odontogenic origin
- © Dermatologic diseases.
- © Periodontal diseases
- © Oral manifestations of systemic diseases
- © Facial pain and neuromuscular disorders including TMJ disorders
- © Regressive alterations of teeth

**Clinical Pathology:**

- © Laboratory investigations - Hematology, Microbiology and Urine analysis
- © Postings to Clinical Pathology for relevant training
- © Record book to be maintained.

**Specialized histological techniques and special stains:** Special staining techniques for different tissues.

Immunohistochemistry

Preparation of frozen sections and cytological smears

**Approach:**

Training to be imparted in the department or in other institutions having the facility Record book to be maintained

**Recording of Case history and Clinicopathological discussions: Approach**

Posting to the department of Oral medicine, Diagnosis and Radiology and Oral and Maxillofacial surgery

Record of case histories to be maintained Dermatology

Study of selected mucocutaneous lesions-etio-pathogenesis, pathology, clinical presentation and diagnosis.

**Approach**

- © Posting to the dept of Dermatology of a Medical college
- © Topics to be covered as Seminars
- © Record of cases seen to be maintained.

**Oral oncology**

Detailed study including Pathogenesis, molecular and biochemical changes of tumor like lesions and Premalignant lesions affecting the hard and soft tissues of oral and para oral tissues

Tumor markers

Approach

To be covered as seminars

Posting to a Cancer center to familiarize with the pathological appearances, diagnosis, radio-diagnosis and treatment modalities.

Oral Microbiology and immunology

© Normal Oral microbial flora

© Defense mechanism of the oral cavity

© Microbiology and immunology of Dental caries and Periodontal diseases © Dental caries (Introduction, epidemiology, microbiology, cariogenic bacteria including properties, acid production in plaque, development of lesion, response of dentin-pulp unit, histopathology, root caries, sequelae and immunology)

© Tumor immunology

© Infections of Pulp and Periapical and periodontal tissues

© Oral sepsis and Bacteremia

© Microbial genetics

© Infections of oral and Para oral regions (bacterial, viral and fungal infections)

Approach

To be covered as seminars Forensic Odontology:

Legal procedures like inquest, medico-legal evidences post mortem examination of violence around mouth and neck, identification of deceased individual-dental importance.

Bite marks rugae patterns and lip prints.

Approach

To be covered as seminars

Posting to a Cancer center to familiarize with the pathological appearances, diagnosis, and radio-diagnosis and treatment modalities

Histopathology - slide discussion Record book to be maintained Laboratory techniques and Diagnosis

© Routine hematological tests and clinical significance of the same

© Microtome and principles of microtomy

© Routine stains, principles and theories of staining techniques

© Microscope, principles and theories of microscopy

© Light microscopy and various other types including electron microscopy

© Methods of tissue preparation for ground sections, decalcified sections.

© Special stains and staining techniques for different tissues

© Immunohistochemistry

© Preparation of frozen sections and cytological smears

Other Topics in Oral Pathology.

# Detailed description of diseases affecting oral mucosa, teeth, supporting tissues & jaws

# Cysts of the oral & Para-oral regions

## # Systemic diseases affecting oral cavity

. Approach: Seminars & Slide discussions. Record notebook to be maintained. Training in histopathology slide reporting.

Experimental aspects of Oral diseases

Approach: Posting is desirable in Centers where animal experimentation is carried out to familiarize with laboratory technique's, upkeep & care of experimental animals.

Recent advances in Oral Pathology.

Approach: Update of knowledge in Oral Pathology through study of recent journals & Internet browsing.

Journal Clubs & Group discussions

Academic activities

© Library assignment to be submitted at the end of 6 months © Commencement of dissertation work

© Journal clubs and seminars to be presented by every PG student © Clinicopathological discussions once in a month by every PG student © To attend interdepartmental meetings.

© Lecture and practical classes and slide discussions to be taken for II BDS students in oral and dental anatomy, dental histology and oral physiology. © Year ending examination (theory and practical) to be conducted by the college.

## IIIRD YEAR

© Non-neoplastic disorders of salivary glands.

© Bone pathology

© Physical and chemical injuries, allergic and Immunological diseases.

© Cysts of odontogenic origin

© Oral manifestations of systemic diseases

Approach

To be covered as seminars Slide discussions of the same Record book to be maintained

Academic activities

© Visit to center out Animal experimentation to familiarize with Laboratory techniques, upkeep and care of animals

© Completion of Dissertation work and submission of the same, six months before the Final Examination

© Study of Journals, Internet Browsing, and group discussions, to update knowledge in the recent advances in Oral Pathology

© Lecture and Practical demonstrations for third B.D.S students in Oral pathology and Microbiology

© Reporting of histopathology slides

© Journal clubs and Seminars to be presented by every post graduate student twice a month

© Clinicopathological discussions by every student once in a month

© To attend Interdepartmental meetings.

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 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

#### UNIVERSITY SCHEME OF EXAMINATION

M.D.S. Degree examinations in any branch of study shall consist of dissertation, written paper (Theory) Part I at the end of 1<sup>st</sup> year and Part II at the end of 3 years Practical/Clinical and Viva voce.

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 (Part-I) 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 : Applied Basic Sciences: Applied Anatomy, embryology, growth and development Genetics, Immunology, anthropology, Physiology, nutrition & Biochemistry, Pathology & Microbiology, virology, Applied pharmacology, Research Methodology and bio statistics, Applied Dental anatomy & histology, Oral pathology & oral Microbiology, Adult and geriatric psychology. Applied dental materials.

Part-II Examination shall consist of Paper-I, Paper-II and 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:

#### DISTRIBUTION OF MARKS:

Theory :

(1) Part I University Examination (100 Marks):-

There shall be 10 questions of 10 marks each (Total of 100 Marks)

(2) Part II (3 papers of 100 Marks):-

(i) Paper-I: 2 long essay questions of 25 marks each and 5 short essays of 10 marks each. (Total of 100 Marks)

(ii) Paper-II: 2 long essay questions of 25 marks each and 5 short essays of 10 marks each. (Total of 100 Marks)

(iii) Paper III: 2 out of 3 essay questions (50 x 2 = 100 Marks)

Practical and Clinical Examination : 200 Marks

Viva-voce and Pedagogy : 100 Marks

B. Practical/Clinical - 200 Marks

1. Case Presentation

a) Long case - 20 marks

b) Short case — 10 marks

2. Clinical Hematology (any two investigations) - 20 Marks

Hb%, bleeding time, clotting time, Total WBC count, Differential WBC count and ESR

3. Smear Presentation - 20 marks

4. Cytology or microbial smear and staining

5. Paraffin sectioning and H & E Staining - 30 Marks

6. 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 rill components of course contents. It includes presentation and discussion on dissertation also.

iii. 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

## **PUBLIC HEALTH DENTISTRY**

## **Objectives**

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

- © 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.
- © 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.
- © 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. © 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.

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

## **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 Contents:**

**Paper I: Applied Basic Sciences**

**I. Applied Anatomy and Histology**

**A. Applied Anatomy in relation to:**

- # Development of face
- # Bronchial arches
- # Muscles of facial expression
- # Muscles of mastication
- # TMJ
- # Salivary gland
- # Tongue
- # Salivary gland
- # Tongue
- # Hard and soft palate
- # Infratemporal fossa
- # Paranasal air sinuses
- # Pharynx and larynx
- # Cranial and spinal nerves- with emphasis on trigeminal, facial, glossopharyngeal and hypoglossal nerve
- # Osteology of maxilla and mandible
- # Blood supply, venous and lymphatic drainage of head and neck
- # Lymph nodes of head and neck
- # Structure and relations of alveolar process and edentulous mouth
  
- # Genetics-fundamentals

**B. Oral Histology**

- # Development of dentition, Innervations of dentin and pulp
  
- # Periodontium-development, histology, blood supply, nerve supply and lymphatic drainage
- # Oral mucous membrane

# Pulp-periodontal complex

## **II. Applied Physiology and Biochemistry:**

- Cell
  - Mastication and deglutition
  - Food and nutrition
  - Metabolism of carbohydrates, proteins and fats
- 
- ☒ Vitamins and minerals
  - ☒ Fluid and electrolyte balance
  - ☒ Pain pathway and mechanism-types, properties
  - ☒ Blood composition and functions, clotting mechanism and erythropoiesis, Blood groups and transfusions, Pulse and blood pressure,
  - ☒ Dynamics of blood flow
  - ☒ Cardiovascular homeostasis-heart sounds
  - ☒ Respiratory system: Normal physiology and variations in health and diseases, Asphyxia and artificial respiration
  - ☒ Endocrinology: thyroid, parathyroid, adrenals, pituitary, sex hormones and pregnancy, Endocrine regulation of blood sugar.

## **III. A. Applied Pathology:**

- # Pathogenic mechanism of molecular level
  - # Cellular changes following injury
  - # Inflammation and chemical mediators
  - # Oedema, thrombosis and embolism
  - # Hemorrhage and shock
  - # Neoplasia and metastasis
  - # Blood disorders
  - # Histopathology and pathogenesis of dental caries, periodontal disease, oral mucosal lesions, and malignancies, HIV
  - # Propagation of dental infection
- ## **B. Microbiology**
- Microbial flora of oral cavity
  - Bacteriology of dental caries and periodontal disease
  - Methods of sterilization
  - Virology of HIV, herpes, hepatitis

- Parasitology
- Basic immunology - basic concepts of immune system in human body Cellular and humoral immunity  
Antigen and antibody system

Hypersensitivity and Autoimmune diseases

#### C. Oral Pathology

- Detailed description of diseases affecting the oral mucosa, teeth, supporting tissues and jaws.

#### IV. Physical and Social Anthropology

- Introduction and definition
- Appreciation of the biological basis of health and disease
- Evolution of human race, various studies of different races by anthropological methods

#### V. Applied Pharmacology:

- Definition, scope and relations to other branches of medicine, mode of action, bioassay, standardization, pharmacodynamics , pharmacokinetics.
- Chemotherapy of bacterial infections and viral infections - sulphonamides and antibiotics.
- Local anesthesia
- Analgesics and anti-inflammatory drugs
- Hypnotics, tranquilizers and antipyretics
- Important hormones-ACTH, cortisone, insulin and oral antidiabetics.
- Drug addiction and tolerance
- Important pharmacological agents in connection with autonomic nervous system-adrenaline, noradrenaline, atropine
- Brief mention of antihypertensive drugs
- Emergency drugs in dental practice
- Vitamins and haemopoietic drugs

#### VI. Research Methodology and Biostatistics:

Health informatics: basic understanding of computers and its components, operating software (Windows), Microsoft office, preparation of teaching materials like slides, project, multimedia knowledge.

Research methodology- definitions, types of research, designing written protocol for research, objectivity in methodology, quantification, records and analysis.

Biostatistics-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 summarizing, parametric and non-parametric tests of significance, correlation and regression, multivariate analysis, sampling and sampling techniques - types, errors, bias, trial and calibration  
COMPUTERS-Basic operative skills in analysis of data and knowledge of multimedia.

Paper II - Public Health

## 1. Public Health

- Definition, concepts and philosophy of dental health
- History of public health in India and at international level
- Terminologies used in public health

## 2. Health

- Definition, concepts and philosophy of health
- Health indicators
- Community and its characteristics and relation to health

## 3. Disease

- Definition, concepts.
- Multifactorial causation, natural history, risk factors
- Disease control and eradication, evaluation and causation, infection of specific diseases
- Vaccines and immunization

## 4. General Epidemiology

- Definition and aims, general principles
- Multifactorial causation, natural history, risk factors
- Methods in epidemiology, descriptive, analytical, experimental and classic epidemiology of specific diseases, uses of epidemiology
- Duties of epidemiologist
- General idea of method of investigating chronic diseases, mostly non-infectious nature, epidemic, endemic, and pandemic.
- Ethical conversation in any study requirement
- New knowledge regarding ethical subjects
- Screening of diseases and standard procedures used

## 5.Environmental Health:

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

## 6. Public Health Education:

- Definition, aims, principles of health education
- Health education, methods, models, contents, planning health education programs

## 7. Public Health Practice and Administration System In India

## 8. Ethics and Jurisprudence

- Basic principles of law
- Contract laws- dentist - patient relationships & Legal forms of practice
- Dental malpractice
- Person identification through dentistry
- Legal protection for practicing dentist.
- Consumer protection act

## 9. Nutrition In Public Health:

- Study of science of nutrition and its application to human problem e Nutritional surveys and their evaluations

e Influence of nutrition and diet on general health and oral health, dental caries, periodontal disease and oral cancers

- Dietary constituents and carcinogenicity Guidelines for nutrition

## 10. Behavioral Sciences:

- Definition and introduction
- Sociology: social class, social group, family types, communities and social relationships, culture, its effect on oral health.
- Psychology: definition, development of child psychology, anxiety, fear and phobia, intelligence, learning, motivation, personalities, fear, dentist-patient relationship, modeling and experience

## 11 Hospital Administration:

- Departmental maintenance, organizational structures
- Types of practices
- Biomedical waste management

## 12..Health Care Delivery System:

- International oral health care delivery systems - Review
- Central and state system in general and oral health care delivery system if any
- National and health policy
- National health programme
- Primary health care - concepts, oral health in PHC and its implications
- National and international health organizations
- Dentists Act 1928, Dental council of India, Ethics, Indian Dental Association
- Role of W.H.O. and Voluntary organizations in Health Care for the Community

## 13. Oral Biology And Genetics:

# A detailed study of cell structure

- # Introduction to Genetics, Gene structure, DNA, RNA
- # Genetic counseling, gene typing
- # Genetic approaches in the study of oral disorders
- # Genetic Engineering - Answer to current health problems

### Paper III: Dental Public Health

#### 1. Dental Public Health:

- # History
- # Definition and concepts of dental public health
- # Differences between clinical and community dentistry
- # Critical review of current practice
- # Dental problems of specific population groups such as chronically ill, handicapped and institutionalized group

#### 2. Epidemiology of Oral Diseases and Conditions

- Dental caries, gingival, periodontal disease malocclusion, dental Fluorosis, oral cancer, TMJ disorders and other oral health related problems.

#### 3. Oral Survey Procedures:

- # Planning
- # Implementation
- # WHO basic oral health methods 1997
- # Indices for dental diseases and conditions
- # Evaluation

#### 4. Delivery of Dental Care

- # Dental person power - dental auxiliaries
- # Dentist - population ratios,
- # Public dental care programs
- # School dental health programs- Incremental and comprehensive care
- # Private practice and group practice
- # Oral health policy - National and international policy

#### 5. Payment for Dental care

- Prepayment
- Post-payment
- Reimbursement plans
- Voluntary agencies
- Health insurance

#### 6. Evaluation of Quality of Dental care

- Problems in public and private oral health care system program

- Evaluation of quality of services, governmental control

## 7. Preventive Dentistry

# Levels of prevention

# Preventive oral health programs screening, health education and motivation

# Prevention of all dental diseases-dental caries, periodontal diseases, oral cancer, malocclusion and Dentofacial anomalies

- Role of dentist in prevention of oral diseases at individual and community level.

- Fluoride

-History

-Mechanism of action

-Metabolism

-Fluoride toxicity

-Fluorosis

-Systemic and topical preparations

-Advantages and disadvantages of each

-Update regarding Fluorosis

-Epidemiological studies

-Methods of fluoride supplements

-Defluoridation techniques

- Plaque control measures-

-Health Education

-Personal oral hygiene

-Tooth brushing technique

-Dentifrices, mouth rinses

- Pit and fissure sealant, ART

- Preventive oral health care for medically compromised individual

- Update on recent preventive modalities

- Caries vaccines

- Dietary counseling

## 8. Practice Management

- Definition

- Principles of management of dental practice and types

- Organization and administration of dental practice

- Ethical and legal issues in dental practice

- Current trends Structured Training Schedule First Year Seminars

- 5 seminars in basic sciences subject,
- To conduct 10 journal clubs Library assignment on assigned topics - 2
- Submission of synopsis for dissertation-within 6 months
- Periodic review of dissertation at two monthly intervals

#### Clinical Training

1. Clinical assessment of patient
2. Learning different criteria and instruments used in various oral indices - 5 cases each

- Oral Hygiene Index - Greene and Vermillion
- Oral Hygiene Index - Simplified
- DMF - DMF (T), DMF (S)
- Def
- Fluorosis Indices - Dean's Fluorosis Index, Tooth Surface Index for Fluorosis and the Thylstrup Fejerskov Index.

Community Periodontal Index (CPI) Plaque Index-Silness and Loe WHO Oral Health Assessment Form - 1997

- Carrying out treatment (under comprehensive oral health care) of 10 patients - maintaining complete records.

#### Field Programme:

1. Carrying out preventive programs and health education for school children of the adopted school.

2. School based preventive programs-

- Topical Fluoride application-Sodium Fluoride, Stannous Fluoride, AckW\* Phosphate Fluoride preparations and Fluoride varnishes, Fluoride mouth rinses

- Pit and Fissure Sealant - chemically cured (GIC), light cured
- Minimal Invasive Treatment-Preventive Resin Restorations (PRR), Atraumatic Restorative Treatment (ART)

- 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 additions the postgraduate shall assist and guide the under graduate students in their clinical and field programs.

#### Second Year Seminars

- Seminars in Public Health and Dental Public Health topics
- Conducting journal clubs
- Short term research project on assigned topics - 2

- Periodic review of dissertation at monthly reviews

#### Clinical Training-Continuation of the clinical training

##### 1. Clinical assessment of patient

##### 2. Learning different criteria and instruments used in various oral indices e Oral Hygiene Index - Greene and Vermillion

- Oral Hygiene Index – Simplified
- DMF - DMF (T), DMF (S)
- Def t/s
- Fluorosis Indices - Dean's Fluorosis Index, Tooth Surface Index for Fluorosis, Thylstrup and Fejerskov Index
- Community Periodontal Index (CPI)
- Plaque Index-Silness and Loe
- WHO Oral Health Assessment Form -1987
- Carrying out treatment (under comprehensive oral health care) of 10 patients - maintaining complete records

#### Field Program - Continuation of field program

##### 1. Carrying out school dental health education

##### 2. School based preventive programs-

- Topical Fluoride application-Sodium Fluoride, Stannous Fluoride, Acidulated Phosphate Fluoride preparations and Fluoride varnishes, Fluoride mouth rinses
- Pit and Fissure Sealant - chemically cured (GIC); light cured
- Minimal Invasive Treatment-Preventive Resin Restorations (PRR), Atraumatic Restorative Treatment (ART)
- Organizing and carrying out dental camps in both urban and rural areas.

##### 5. Assessing oral health status of various target groups like School children, Expectant mothers Handicapped, Underprivileged, and geriatric populations. Plan dental manpower and financing dental health care for the above group.

##### 6. Application of the following preventive measures in clinic-10 Cases each.

- Topical Fluoride application - Sodium Fluoride, Stannous Fluoride, Acidula' Phosphate Fluoride preparations and Fluoride varnishes.
- Pit and Fissure Sealant

##### 7. Planning total health care for school children in an adopted school:

- a) Periodic surveying of school children
- b) Incremental dental care
- c) Comprehensive dental care

##### 8. Organizing and conducting community oral health surveys for all oral condition- 3 surveys

9. In addition the postgraduate shall assist and guide the under graduate student in their clinical and field programs

10. To take lecture classes (2) for Undergraduate students in order to learn teaching methods (pedagogy) on assigned topic.

Third Year: Seminars

- Seminars on recent advances in Preventive Dentistry and Dental Public Health
- Critical evaluation of scientific articles -10 articles
- Completion and submission of dissertation

Clinical Training

1. Clinical assessment of patient

2. Learning different criteria and instruments used in various oral indices - 5 each

- Oral Hygiene Index - Greene and Vermillion
- Oral Hygiene Index - Simplified
- DMF - DMF (T), DMF (S)
- Def t/s
- Fluorosis Indices - Dean's Fluorosis Index, Tooth Surface Index for Fluorosis Thylstrup and Fejerskov

Index

- Community Periodontal Index (CPI)
- Plaque Index-Silness and Loe
- WHO Oral Health Assessment Form -1987
- Carrying out treatment (under comprehensive oral health care) of 10 patients - maintaining complete records

3. Carrying out school dental health education

4. School based preventive programs-

- Topical Fluoride application - Sodium Fluoride, Stannous Fluoride, Acidulated Phosphate Fluoride preparations and Fluoride varnishes.
- Pit and Fissure Sealant
- Minimal Invasive Techniques - Preventive Resin Restorations (PRR), Atraumatic Restorative Treatment (ART)

Treatment (ART)

5. To take lecture classes (2) for Undergraduate students in order to learn teaching methods (pedagogy) on assigned topic

6. Exercise on solving community health problems -10 problems

7. Application of the following preventive measures in clinic -10 cases each.

- Topical Fluoride application - Sodium Fluoride, Stannous Fluoride, Acidulated Phosphate Fluoride preparations
- Pit and Fissure sealants

8. Dental - health education training of school teachers, social workers, health workers,

9. Posting at dental satellite centers/ nodal centers

10. In addition the post graduate shall assist and guide the under graduate students in their clinical and field programs

Before completing the third year M.D.S., a student must have attended two national conferences.

Attempts should be made to present two scientific papers, publication of a scientific article in a journal.

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 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. Checklists are given in Section IV.

#### UNIVERSITY SCHEME OF EXAMINATION

M.D.S. Degree examinations in any branch of study shall consist of dissertation, written paper (Theory) Part I at the end of Ist year and Part II at the end of 3 years Practical/Clinical and Viva voce.

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 (Part-I) 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 : Applied Basic Sciences: Applied Anatomy, embryology, growth and development Genetics, Immunology, anthropology, Physiology, nutrition & Biochemistry, Pathology & Microbiology, virology, Applied pharmacology, Research Methodology and bio statistics, Applied Dental anatomy & histology, Oral pathology & oral Microbiology, Adult and geriatric psychology. Applied dental materials.

Part-II Examination shall consist of Paper-I, Paper-II and 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:

#### DISTRIBUTION OF MARKS:

Theory :

(1) Part I University Examination (100 Marks):-

There shall be 10 questions of 10 marks each (Total of 100 Marks)

(2) Part II (3 papers of 100 Marks):-

(i) Paper-I: 2 long essay questions of 25 marks each and 5 short essays of 10 marks each. (Total of 100 Marks)

(ii) Paper-II: 2 long essay questions of 25 marks each and 5 short essays of 10 marks each. (Total of 100 Marks)

(iii) Paper III: 2 out of 3 essay questions (50 x 2 = 100 Marks)

Practical and Clinical Examination : 200 Marks

Viva-voce and Pedagogy : 100 Marks

B. Practical / Clinical Examination : 200 Marks

1. Clinical examination of at least 2 patients representing the community- includes history, main 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. (50 Marks -1 Hrs)

2. Performing – MAXIMUM – 50 marks

- One of the treatment procedures as per treatment plan. (Restorative, surgical, rehabilitation)

- a. Preventive oral health care procedure.

- b. One of the procedures specified in the curriculum

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

(50 Marks -1 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 Hour)

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 minute.

## **PEDIATRIC DENTISTRY**

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

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

### **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.

### **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

1. Applied Anatomy & genetics
2. Applied Physiology
3. Applied Pathology
4. Nutrition and Dietetics
  
5. Growth & Development: Prenatal and postnatal development of cranium, face, jaws, teeth and supporting structures. Chronology of dental development and development of occlusion. Dimensional changes in dental arches. Cephalometric evaluation of growth.
6. Child Psychology: Development & Classification of behavior, personality, intelligence in children, theories of child psychology, stages of psychological child development, fear anxiety, apprehension and its management
7. Behavior Management: Non- pharmacological and Pharmacological methods.
8. Child Abuse & Dental Neglect
9. Conscious Sedation, Deep Sedation and General Anesthesia in Pediatric Dentistry: (Including Other Drugs, Synergic & Antagonistic Actions of Various Drugs Used in Children
10. Preventive Pedodontics: Concepts, chair side preventive measures for dental diseases, high-risk caries including rampant & extensive caries - Recognition, Features & Preventive Management, Pit and Fissures Sealants, Oral Hygiene measures, Correlation of brushing with dental caries and periodontal diseases. Diet and Nutrition as related to dental caries. Diet Counseling
11. Dental Plaque: Definition, Initiation, Pathogenesis, Biochemistry, and Morphology' & Metabolism.
12. Microbiology & Immunology as related to Oral Diseases in Children. Basic concepts, immune system in human body, Auto Immune diseases, Histopathology, Pathogenesis, Immunology of dental caries, Periodontal diseases. Tumors, Oral Mucosal lesions etc.
13. Gingival and Periodontal diseases in Children:

- Normal Gingiva & Periodontium in children.
  - Gingival & Periodontal diseases - Etiology, Pathogenesis, Prevention & Management
14. Pediatric Operative Dentistry
- Principle Of Operative Dentistry along with modifications of materials/past, current & latest including tooth colored materials.
  - Modifications required for cavity preparation in primary and young permanent teeth.
  - Various Isolation Techniques
  - Restorations of decayed primary, young permanent and permanent teeth in children using various restorative material like Glass Ionomer, Composites, Silver, Amalgam & latest material (gallium)
  - Stainless steel, Polycarbonate 8s Resin Crowns / Veneers & fibre pvit systems.
15. Pediatric Endodontics:
- a. Primary Dentition: - Diagnosis of pulpal diseases and their management - Pulp capping, Pulpotomy, Pulpectomy (Materials & Methods), Controversies 8s recent concepts.
  - b. Young permanent teeth and permanent teeth, Pulp capping, Pulpotomy, Apexogenesis, Apexification, Concepts, Techniques and Materials used for different procedures.
  - c. Recent advances in Pediatric diagnosis and Endodontics.
16. Prosthetic consideration in-Paediatric Dentistry.
17. Traumatic Injuries in Children:
- Classifications & Importance.
  - Sequelae & reaction of teeth to trauma.
  - Management of Traumatized teeth with latest concepts.
  - Management of jaw fracture in children.
18. Interceptive Orthodontics:
- a. Concepts of occlusion and esthetics: Structure and function of all anatomic components of occlusion, mechanics of articulations, recording of masticatory function, diagnosis of Occlusal dysfunction, relationship of TMJ anatomy and pathology and related neuromuscular physiology.
  - b. A comprehensive review of the local and systemic factors in the causation of malocclusion.
  - c. Recognition and management of normal and abnormal developmental occlusions in primary, mixed and permanent dentitions in children (Occlusal Guidance).
  - d. Biology of tooth movement: A comprehensive review of the principles of teeth movement Review of contemporary literature. Histopathology of bone and Periodontal ligament, Molecular and ultra cellular consideration in tooth movement.
  - e. Myofunctional appliances: Basic principles, contemporary appliances: Design & Fabrication
  - f. Removable appliances: Basic principles, contemporary' appliances: Design & Fabrication
  - g. Case selection & diagnosis in interceptive Orthodontics (Cephalometric, Image processing, Tracing, Radiation hygiene, Video imaging 8s advance Cephalometric techniques).

h. Space Management: Etiology, Diagnosis of space problems, analysis, Biomechanics, Planned extraction in interception orthodontics.

19. Oral Habits in Children:

- Definition, Etiology & Classification
- Clinical features of digit sucking, tongue thrusting, mouth breathing & various other secondary habits.
- Management of oral habits in children

20. Dental care of Children with special needs:

- Definition Etiology, Classification, Behavioral, Clinical features & Management of children with:
- Physically handicapping conditions
- Mentally compromising conditions
- Medically compromising conditions
- Genetic disorders

21. Oral manifestations of Systemic Conditions in Children & their Management

22. Management of Minor Oral Surgical Procedures in Children

23. Dental Radiology as related to Pediatric Dentistry

24. Cariology

- Historical background
- Definition, Etiology & Pathogenesis
- Caries pattern in primary, young permanent and permanent teeth in children.
- Rampant caries, early childhood caries and extensive caries. Definition, etiology, Pathogenesis, Clinical features, Complications & Management.
- Role of diet and nutrition in Dental Caries
- Dietary modifications & Diet counseling.
- Subjective & objective methods of Caries detection with emphasis on Caries Activity tests, Caries prediction, Caries susceptibility & their clinical Applications

25. Pediatric Oral Medicine & Clinical Pathology: Recognition & Management of developmental dental anomalies, teething disorders, stomatological conditions, mucosal lesions, viral infections etc.

26. Congenital Abnormalities in Children: Definition, Classification, Clinical features of Management.

27. Dental Emergencies in Children and their Management.

28. Dental Materials used in Pediatric Dentistry.

29. Preventive Dentistry:

- Definition

- Principles 8s Scope
  - Types of prevention
  - Different preventive measures used in Pediatric Dentistry including fissure sealants and caries vaccine.
30. Dental Health Education 8s School Dental Health Programmes
  31. Dental health concepts, Effects of civilization and environment, Dental Health delivery system, Public Health measures related to children along with principles of Pediatric Preventive Dentistry
  32. Fluorides:
    - Historical background
    - Systemic & Topical fluorides
    - Mechanism of action
    - Toxicity & Management.
    - Defluoridation techniques.
  33. Medicological aspects in Paediatric Dentistry with emphasis on informed concept.
  34. Counseling in Paediatric Dentistry
  35. Case History Recording, Outline of principles of examination, diagnosis & treatment planning.
  36. Epidemiology: Concepts, Methods of recording & evaluation of various oral diseases. Various national & global trends of epidemiology of oral diseases.
  37. Comprehensive Infant Oral Health Care.
  38. Principles of Bio-Statistics & Research Methodology & Understanding of Computers and Photography
  39. Comprehensive cleft care management with emphasis on counseling, feeding, nasoalveolar bone remodeling, speech rehabilitation.
  40. Setting up of Pedodontics & Preventive Dentistry Clinic.
  41. Emerging concept in Paediatric Dentistry of scope of laser/minimum invasive procedures :

## 1ST YEAR

### Preclinical Work

(Duration - first 6 Months of First Year MDS) (One On Each Exercise)

1. Carving of all deciduous teeth
2. Basic wire bending exercises
3. Fabrication of
  - a. Maxillary bite plate / Hawley's'
  - b. Maxillary expansion screw appliance
  - c. Canine retractor appliance

d. All habit breaking appliances

e. Two Myofunctional appliance

i. Removable type

ii. Fixed type

iii. Partially fixed and removable

f. Making of inclined plane appliance

g. Feeding appliances

4. Basic soldering exercise I - making of a lamppost of stainless steel wire pieces of different gauges soldered on either side of heavy gauge main post.

5. Fabrication of space maintainers

a. Removable type-

- Unilateral Non - functional space maintainer
- Bilateral Non-Functional space maintainer
- Unilateral functional space maintainer
- Bilateral functional space maintainer

b. Space Regainers -

- Hawley's appliances with Helical space regainer
- Removable appliance with Slingshot space regainer
- Removable appliance with Dumbbell space regainer

c. Fixed Space maintainers

- Band & long loop space maintainer
- Band & short loop space maintainer
- Mayne's space maintainer
- Transpalatal arch space maintainer
- Nance Palatal holding arch
- Nance Palatal holding arch with canine stoppers
- Gerbcr space regainer
- Distal shoe appliance

a. Active space maintainers

b. For guiding the eruption of first permanent molar - rags

- c. Arch holding device
- d. Functional space maintainer
- 6. Basics for spot welding exercise
- 7. Collection of extracted deciduous and permanent teeth
  - a. Sectioning of the teeth at various levels and planes
  - b. Drawing of section and shapes of pulp
  - c. Phantom Head Exercises : Performing ideal cavity preparation for various restorative materials for both Deciduous and permanent teeth
  - d. Performing pulpotomy, root canal treatment and Apexification procedure
  - i) Tooth preparation and fabrication of various temporary and permanent restorations on fractured anterior teeth.
  - ii) Preparation of teeth for various types of crowns
  - iii) Laminates/veneers
  - iv) Bonding & banding exercise
- 8. Performing of behavioral rating and IQ tests for children.
- 9. Computation of: -
  - Caries index and performing various carrier activity test. Oral Hygiene Index
  - Periodontal Index
  - Fluorosis Index
- 10. Surgical Exercises : a. Fabrication of splints b. Type of Wiring c. Suturing, various pvit system, prcing & porm. tuli
  - 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 is analysis.
  - d. Mixed dentition cast analysis
- 11. Library assignment 12.Synopsis

Clinical work Requirements from 7 to 36 months

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	7 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 & Dental Caries	11	1	5	5
4	Practical application of Preventive dentistry concepts in a class of 35-50 children & Dental Health Education & Motivation.	7	1	4	2
5	Pediatric Operative Dentistry with application of recent concepts.(a). Management of Dental Caries (I) Class I	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 &	20	02	08	10
	Apexogenesis				
6	Stainless Steel Crowns	50	10	20	20
7	Other Crowns	05	01	02	02
8	Fixed Space Maintainers	30	08	12	10

9	Removable Space Maintainers	20	05	07	08
10	Functional Maintainers	05	01	02	02
11	Preventive measures like fluoride applications & Pit & Fissure Sealants applications with complete follow-up and diet counseling	20	08	08	04
12	Special Assignments(i) School Dental Health Programmes	03	01	01	01
	(ii) Camps etc.,	02	01	01	

13 Library usage

14. Laboratory usage

15. Continuing Dental Health Programme

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

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 should be done using checklists that assess various aspects. Checklists are given Section IV.

UNIVERSITY SCHEME OF EXAMINATION

M.D.S. Degree examinations in any branch of study shall consist of dissertation, written paper (Theory) Part I at the end of Ist year and Part II at the end of 3 years Practical/Clinical and Viva voce.

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 (Part-I) 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 : Applied Basic Sciences: Applied Anatomy, embryology, growth and development Genetics, Immunology, anthropology, Physiology, nutrition & Biochemistry, Pathology & Microbiology, virology, Applied pharmacology, Research Methodology and bio statistics, Applied Dental anatomy & histology, Oral pathology & oral Microbiology, Adult and geriatric psychology. Applied dental materials.

Part-II Examination shall consist of Paper-I, Paper-II and 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:

#### DISTRIBUTION OF MARKS:

Theory :

(1) Part I University Examination (100 Marks):-

There shall be 10 questions of 10 marks each (Total of 100 Marks)

(2) Part II (3 papers of 100 Marks):-

(i) Paper-I: 2 long essay questions of 25 marks each and 5 short essays of 10 marks each. (Total of 100 Marks)

(ii) Paper-II: 2 long essay questions of 25 marks each and 5 short essays of 10 marks each. (Total of 100 Marks)

(iii) Paper III: 2 out of 3 essay questions (50 x 2 = 100 Marks)

Practical and Clinical Examination : 200 Marks

Viva-voce and Pedagogy : 100 Marks

A. Practical Examination 200 Marks

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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

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

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

B. 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 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

## ORAL MEDICINE AND RADIOLOGY

### Objectives:

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

Knowledge: Theoretical, Clinical and practical knowledge of all mucosal lesions, diagnostic procedures pertaining to them and latest information of imaging modules.

Skills and Attitude: Three important skills need to be imparted

1. . Diagnostic skill in recognition of oral lesions and their management
2. Research skills in handling scientific problems pertaining to oral treatment
3. Clinical and Didactic skills in encouraging younger doctors to attain learning objectives Attitudes:

Positive mental attitude and the persistence of continued learning need to be inculcated

### Course Contents

#### Paper I: Applied Basic Sciences Applied Anatomy

##### 1. Gross anatomy of the face:

- a. Muscles of Facial Expression And Muscles Of Mastication
- b. Facial nerve
- c. Facial artery
- d. Facial vein
- e. Parotid gland and its relations

##### 2. Neck region:

- a. Triangles of the neck with special reference to Carotid, Digastric triangles and midline structures
- b. Facial spaces
- c. Carotid system of arteries, Vertebral Artery, and Subclavian arteries
- d. Jugular system Internal jugular

##### External jugular

- e. Lymphatic drainage
- f. Cervical plane
- g. Muscles derived from Pharyngeal arches
- h. Infratemporal fossa in detail and temporomandibular joint
- i. Endocrine glands Pituitary
- j. Sympathetic chain
- k. Cranial nerves-V, VII, IX, XI, & XII
  - Thyroid
  - Parathyroid
- l. Exocrine glands
  - Parotid

- Thyroid
- Parathyroid

### 3. Oral Cavity:

- Vestibule and oral cavity proper
- Tongue and teeth
- Palate - soft and hard

### 4. Nasal Cavity

- Nasal septum
- Lateral wall of nasal cavity
- Paranasal air sinuses

5. Pharynx:  
Gross salient features of brain and spinal cord with references to attachment of cranial nerves to the brainstem.

Detailed study of the cranial nerve nuclei of V, VII, IX, X, XI, XII  
Osteology: Comparative study of fetal and adult skull  
Mandible:

Development, ossification, age changes and evaluation of mandible in detail

### Embryology

- Development of face, palate, nasal septum and nasal cavity, paranasal air sinuses
- Pharyngeal apparatus in detail including the floor of the primitive pharynx
- Development of tooth in detail and the age changes
- Development of salivary glands
- Congenital anomalies of face must be dealt in detail.

### Histology:

- Study of epithelium of oral cavity and the respiratory tract
- Connective tissue
- Muscular tissue
- Nervous tissue
- Blood vessels
- Cartilage
- Bone and tooth
- Tongue
- Salivary glands
- Tonsil, thymus, lymph nodes

### Physiology:

#### 1. General Physiology:

- Cell
- Body Fluid Compartments
- Classification
- Composition

- Cellular transport
- RMP and action potential Muscle Nerve Physiology
- 2. Structure of a neuron and properties of nerve fibers
- 3. Structure of muscle fibers and properties of muscle fibers
- 4. Neuromuscular transmission
- 5. Mechanism of muscle contraction

Blood:

- 2. RBC and Hb
- 3. WBC - Structure and functions
- 4. Platelets - functions and applied aspects
- 5. Plasma proteins
- 6. Blood Coagulation with applied aspects
- 7. Blood groups
- 8. Lymph and applied aspects

Respiratory System:

- Air passages, composition of air, dead space, mechanics of respiration with pressure and volume changes

# Lung volumes and capacities and applied aspects

# Oxygen and carbon dioxide transport

# Neural regulation of respiration

# Chemical regulation of respiration

# Hypoxia, effects of increased barometric pressure and decreased barometric pressure

• Cardio-Vascular System:

- Cardiac Cycle
- Regulation of heart rate/ Stroke volume / cardiac output / blood flow
- Regulation of blood pressure
- Shock, hypertension, cardiac failure

Excretory system

- Renal function tests

Gastro - intestinal tract:

- Composition, functions and regulation of:
- Saliva
- Gastric juice
- Pancreatic juice
- Bile and intestinal juice
- Mastication and deglutition

Endocrine system:

- Hormones - classification and mechanism of action
- Hypothalamic and pituitary hormones
- Thyroid hormones
- Parathyroid hormones and calcium homeostasis
- Pancreatic hormones
- Adrenal hormones

Central Nervous System:

- Ascending tract with special references to pain pathway

Special Senses:

- Gustation and Olfaction

Biochemistry

3. Carbohydrates - Disaccharides specifically maltose, lactose, sucrose

-Digestion of starch/absorption of glucose

-Metabolism of glucose, specifically glycolysis, TCA cycle, gluconeogenesis

-Blood sugar regulation

-Glycogen storage regulation

-Glycogen storage diseases

-Galactosemia and fructosemia

2. Lipids

- Fatty acids- Essential/non essential

- Metabolism of fatty acids- oxidation, ketone body formation, utilization ketosis

- Outline of cholesterol metabolism- synthesis and products formed from cholesterol

3. Protein

-Amino acids- essential/non essential, complete/ incomplete proteins

- Transamination/ Deamination (Definition with examples)

-Urea cycle

- Tyrosine- Hormones synthesized from tyrosine

-In born errors of amino acid metabolism

- Methionine and transmethylation

4. Nucleic Acids

- Purines/Pyrimidines Purine analogs in medicine

- DNA/RNA-Outline of structure

- Transcription/translation Steps of protein synthesis Inhibitors of protein synthesis Regulation of gene function

## 5. Minerals

- Calcium/Phosphorus metabolism specifically regulation of serum calcium levels
- Iron metabolism
- Iodine metabolism
- Trace elements in nutrition

## 6. Energy Metabolism

- Basal metabolic rate
- Specific dynamic action (SDA) of foods

## 7. Vitamins

- Mainly these vitamins and their metabolic role- specifically vitamin A, Vitamin C, Vitamin D, Thiamin, Riboflavin, Niacin, Pyridoxine

### Pathology:

#### 1. Inflammation:

- Repair and regeneration, necrosis and gangrene
- Role of complement system in acute inflammation
- Role of arachidonic acid and its metabolites in acute inflammation
- Growth factors in acute inflammation
- Role of molecular events in cell growth and intercellular signaling cell surface receptors
- Role of NSAIDS in inflammation
- Cellular changes in radiation injury and its manifestations

#### **Homeostasis**

- Role of Endothelium in thrombo - genesis
- Arterial and venous thrombi
- Disseminated Intravascular Coagulation

#### **Shock**

- Pathogenesis of hemorrhagic, neurogenic, septic, cardiogenic shock, circulatory disturbances, ischemic hyperemia, venous congestion, edema, infarction
- Chromosomal Abnormalities:

- Marfan's syndrome
- Ehler's Danlos Syndrome
- Fragile X Syndrome

#### **Hypersensitivity:**

- Anaphylaxis
- Type II Hypersensitivity
- Type III Hypersensitivity

- Cell mediated Reaction and its clinical importance
- Systemic Lupus Erythmatosus
- Infection and infective granulomas

**Neoplasia:**

- Classification of Tumors
- Carcinogenesis & Carcinogens - Chemical, Viral and Microbial
- Grading and Staging pf Cancer, tumor Angiogenesis, Paraneoplastic Syndrome
- Spread of tumors
- Characteristics of benign and malignant tumors

**Others:**

- Sex linked agamaglobulinemia
- AIDS
- Management of Immune deficiency patients requiring surgical procedures
- De George's Syndrome
- Ghons complex, post primary pulmonary tuberculosis - pathology and pathogenesis

**Phamacology:**

1. Definition of terminologies used

1. Dosage and mode of administration of drugs
2. Action and fate of drugs in the body
3. Drugs acting on the CNS
4. Drug addiction, tolerance and hypersensitive reactions

5. General and local anesthetics, hypnotics, analeptics, and & tranquilizers
6. Chemotherapeutics and antibiotics
7. Analgesics and anti - pyretics
8. Anti - tubercular and anti - syphilitic drugs 10. Antiseptics, sialogogues, and anti - sialogogues
11. Haematinics
12. Anti - diabetics
13. Vitamins - A B Complex, C, D, E, K
14. Steroids

## **Paper II: Oral And Maxillofacial Radiology**

### **Study includes Seminars / lectures / Demonstrations**

1. History of radiology, structure of x - ray tube, production of x - ray, property of x rays
2. Biological effects of radiation
3. Filtration of collimation, grids and units of radiation
4. Films and recording media
5. Processing of image in radiology
6. Design of x -ray department, dark room and use of automatic processing units
7. Localization by radiographic techniques
8. Faults of dental radiographs and concept of ideal radiograph
9. Quality assurance and audit in dental radiology
10. Extra - oral-imaging techniques
11. OPG and other radiologic techniques
12. Advanced imaging technique like CT Scan, MRI, Ultras one & thermo graphic
13. Radio nucleotide techniques
14. Contrast radiography in salivary gland, TMJ, and other radiolucent pathologies
15. Radiation protection and ICRP guidelines
16. Art of radiographic report, writing and descriptors preferred in reports
17. Radiograph differential diagnosis of radiolucent, radio opaque and mixed lesions
18. Digital radiology and its various types of advantages

### **Paper III: Oral Medicine, therapeutics and laboratory investigations**

1. Study includes seminars / lectures / discussion
2. Methods of clinical diagnosis of oral and systemic diseases as applicable to oral tissue including modern diagnostic techniques
3. Laboratory investigations including special investigations of oral and bro - facial diseases
4. Teeth in local and systemic diseases, congenital, and hereditary disorders

5. Oral manifestations of systemic diseases
6. Oro - facial pain
7. Psychosomatic aspects of oral diseases
8. Management of medically compromised patients including medical emergencies in the dental chair
9. Congenital and Hereditary disorders involving tissues of oro facial region
10. Systemic diseases due to oral foci of infection
11. Hematological, Dermatological, Metabolic, Nutritional, & Endocrinal conditions with oral manifestations
12. Neuromuscular diseases affecting oro -facial region
13. Salivary gland disorders
14. Tongue in oral and systemic diseases
15. TMJ dysfunction and diseases
16. Concept of immunity as related to oro - facial lesions, including AIDS
17. Cysts, Neoplasms, Odontomes, and fibro - osseous lesions
18. Oral changes in Osteo - dystrophies and chondro - dystrophies
19. Pre malignant and malignant lesions of oro facial region
20. Allergy and other miscellaneous conditions
21. Therapeutics in oral medicine -clinical pharmacology
22. Forensic odontology
23. Computers in oral diagnosis and imaging
24. Evidence based oral care in treatment planning

### **Essential Knowledge**

Basic medical subjects, Oral Medicine, Clinical Dentistry, Management of Medical Emergencies, Oral Radiology, Techniques and Inter - Operation, Diagnosis of Oro-facial Disorders

Procedural and Operative Skills:

(The numbers mentioned are minimum to be performed by each candidate)

1st Year

Observe, Assist, & Perform under supervision

1. *Examination of Patient* - *Case history recordings* -50

- *FNAC & Biopsy* - 5 each

Observe, Assist, & Perform under supervision

2. Intra - oral radiograph

Perform an interpret -100

2<sup>nd</sup> year

1. *Dental treatment to medically compromised patients*

- *Observe, assist, and perform under supervision*

2. *Extra - oral radiographs, digital radiography - 25*

- *Observe, assist and perform under supervision*

Operative skills:

1. *Giving intra - muscular and intravenous injections*

2. *Administration of oxygen and life saving drugs to the patients*

3. *Performing basic CPR and certification by Red Cross*

**3rd Year**

**All the above**

Performed independently-Case history: Routine cases -25 Interesting Cases - 25

Intra - oral Radiographs - 100

Periapical view - 50

Bitewing view - 25

- Occlusal view - 25

Extra-oral radiographs of different views - 50 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. Checklists are given in Section IV

### **UNIVERSITY SCHEME OF EXAMINATION**

M.D.S. Degree examinations in any branch of study shall consist of dissertation, written paper (Theory) Part I at the end of 1st year and Part II at the end of 3 years Practical/Clinical and Viva voce.

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 (Part-I) 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 : Applied Basic Sciences: Applied Anatomy, embryology, growth and development Genetics, Immunology, anthropology, Physiology, nutrition & Biochemistry, Pathology & Microbiology, virology, Applied pharmacology, Research Methodology and bio statistics,. Applied Dental anatomy & histology, Oral pathology & oral Microbiology, Adult and geriatric psychology. Applied dental materials.

Part-II Examination shall consist of Paper-I, Paper-II and 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:

**DISTRIBUTION OF MARKS:**

Theory :

(1) Part I University Examination (100 Marks):-

There shall be 10 questions of 10 marks each (Total of 100 Marks)

(2) Part II (3 papers of 100 Marks):-

(i) Paper-I: 2 long essay questions of 25 marks each and 5 short essays of 10 marks each. (Total of 100 Marks)

(ii) Paper-II: 2 long essay questions of 25 marks each and 5 short essays of 10 marks each. (Total of 100 Marks)

(iii) Paper III: 2 out of 3 essay questions (50 x 2 = 100 Marks)

Practical and Clinical Examination : 200 Marks

Viva-voce and Pedagogy : 100 Marks

B. Practical / Clinical Examination 200 Marks

1st Day

Clinical Case Presentation

2 Spotters 2 x 10 = 20 Marks

2 Short Cases 2 x 15 = 30 Marks

1 Long Case 1 x 50 = 50 Marks

Total = 100 Marks Radiology Exercise

I.A) One Intra Oral Radiograph 10 Marks

B) One Occlusal Radiograph 30 Marks

II. A) Two Extra Oral Radiograph 2 x 30 = 60 Marks Including technique and interpretation

2<sup>nd</sup> Day

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 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

SECTION IV

TEACHING/LEARNING ACTIVITIES AND MONITORING

LEARNING PROGRESS

All the candidates registered for MDS course in various specialties shall pursue the course for a period of 3 years as full time students. During this period, each student shall take part actively in learning activities designed by the institution / university. A list is given below. Institutions may include additional activities, if so, desired.

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 helps students

to evaluate themselves. The monitoring be done by the staff of the department based on participation of students in various teaching / learning activities using checklists. Model Checklists are given in this section. They may be copied and used. The number of activities attended and the topics prevented are to be recorded in log book. The log book should periodically be validated by the supervisors.

i) Acquisition of Knowledge

Journal Review Meeting (Journal Club): The trainees should make presentation from the allotted journals of selected article at least five times in a year. The ability to do literature search, in depth study, presentation skills, and use of audio- visual aids are to be assessed during presentation. The assessment be made by faculty members and peers attending the meeting using Model Checklist 1 in Section IV.

Seminars: The seminars may be held at least twice a week in each postgraduate department. All candidates are expected to participate actively and enter relevant detail in the logbook. Each candidate shall make at least five seminar presentations in each year. The topics should be assigned to the student well in advance to facilitate in depth study. The ability to do literature search, in depth study, presentation skills and use of audio- visual aids are to be assessed using the Model Checklist 2, in Section IV.

Symposium: It is recommended to hold symposiums on topics covering multiple disciplines

Clinico-Pathological Conferences (CPC): The CPCs should be held once in a month involving the faculties in Oral Medicine and Radiology, Oral Pathology and concerned clinical departments. The PG student should be encouraged to present the clinical details, radiological, and histopathological interpretations, and participation in the discussion. All departments should attend CPCs.

Interdepartmental meetings: To bring in more integration among various specialities, interdepartmental meetings are recommended, chaired by the dean, with all heads of post graduate departments, at least once a month.

ii) Clinical skills

Day to Day work: Skills in outpatient and ward work should be assessed periodically.

The assessment should include the candidate's sincerity and punctuality, analytical ability and communication skills (see Model Checklist 3, Section IV).

Clinical meetings : Candidates should periodically present cases to his peers and faculty members. This should be assessed using a check list (see Model checklist 4, Section IV).

Clinical and Procedural skills : The candidate should be given graded responsibility to enable learning by apprenticeship. The performance is assessed by the guide by direct observation.

Particulars are recorded by the student in the log book. (Table No.3, Section IV)

iii) Teaching skills: All the candidates shall be encouraged to take part in undergraduate teaching programs, either in the form of lectures or group discussions. This performance should be based on assessment by the faculty members of the department and from feedback from the undergraduate students (See Model checklist 5, Section IV)

iv) Periodic tests: The concerned departments may conduct three tests, two of them be annual tests, one at the end of first year and the other in the second year. The third test may be held three months before the final examination. The tests may include written papers, practicals / clinicals and viva voce.

vii) Work Diary / Log Book: Every candidate shall maintain a work diary and record his/her participation in the training programmes conducted by the department such as journal reviews, seminars, etc. Special mention may be made of the presentations by the candidate as well as details of clinical or laboratory procedures, if any conducted by the candidate.

viii) Records: Records, log books and marks obtained in tests will be maintained by the Head of the Department and will be made available to the University or DCI.

Continuing dental education programmes: Each postgraduate department is recommended to organize these programs on regular basis involving other institutions. The trainees shall also be encouraged to attend such programs conducted elsewhere

Conferences / workshops / advance courses: The trainee shall be encouraged not only to attend conferences/workshops/advanced courses, but also to present at least 2 papers at state, national specialty meetings during their training period.

Dissertation: Every candidate shall prepare a dissertation based on the clinical or experimental work or any other study conducted by them under the supervision of the post graduate guide. (See Model checklist 6 & 7, Section IV) Log book

The log book is a record of the important activities of the candidates during the training, Internal assessment should be based on the evaluation of the log book. Collectively, log books are a tool for the evaluation of the training programme of the institution by exte agencies. The record includes academic activities as well as the presentations and p carried out by the candidate.

Format for the log book for the different activities is given in Tables 1,2 and 3 of Section IV Copies may be made and used by the institutions.

Procedure for defaulters: Every department should have a committee to review such situations. The defaulting candidate is counseled by the guide and head of the department. In extreme cases of default the departmental committee may recommend that defaulting candidate be withheld from appearing the examination, if she/he fails to fulfill the requirements in spite of being given adequate chances to set himself or herself right.

## **Section V Ethics in Dentistry**

Introduction: There is a definite shift now from the traditional patient and doctor relation and delivery of dental care. With the advances in science and technology and the increased needs of the patient, their families and community, there is a concern for the health of community as a whole. There is a shift to greater accountability to the society. specialists like the other health professionals are confronted with many ethical problems is therefore absolutely necessary for each and every one in the health care delivery to prepare themselves to deal with these problems. To accomplish this and develop human values, it is desired that all the trainees undergo ethical sensitization by lectures or discussion on ethical issues, discussion of cases with an important ethical component.

Course Content: Introduction to ethics -

- What is ethics?
- What are values and norms?
- How to form a value system in one's personal and professional life? Hippocratic oath.
- Declaration of Helsinki, WHO declaration of Geneva, International code of ethics,
- D.C.I. Code of ethics.

Ethics of the individual -

- The patient as a person.
- Right to be respected
- Truth and confidentiality
- Autonomy of decision
- Doctor Patient relationship

Professional Ethics-

- Code of conduct
- Contract and confidentiality
- Charging of fees, fee splitting
- Prescription of drugs
- Over-investigating the patient
- Malpractice and negligence

Research Ethics -

Animal and experimental research

Human volunteer research-informed consent for trials Drug trials

Ethical workshop of cases Gathering all scientific factors Gathering all value factors

Fortifying areas of value - conflict, setting of priorities Working out criteria towards decisions.

**Recommended Reading:**

1. Francis CM., Medical Ethics, 2nd Edn, 2004, Jaypee Brothers, New Delhi, Rs 150/.
2. Ethical Guidelines for Biomedical Research on Human Subjects, Indian Council of Medical Research, New Delhi, 2000.

### CHECKLISTS AND LOGBOOKS

#### CHECKLIST- 1

#### MODEL CHECK LIST FOR EVALUATION OF JOURNAL REVIEW PRESENTATIONS.

Name of the Trainee:

Date:

Name of the Faculty / Observer:

<u>Sl. No</u>	Items for observation during presentation	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	<i>Article chosen was</i>					
2.	<i>Extent of understanding of scope &amp; objectives of the paper by the candidate</i>					
3.	<i>Whether cross-References have been consulted</i>					
4.	<i>Whether other relevant publications consulted</i>					
5.	<i>Ability to respond to questions on the paper/ Subject</i>					
6.	<i>Audio - Visual aids used</i>					
7.	<i>Ability to discuss the Paper</i>					
8.	<i>Clarity of presentation</i>					
9.	<i>Any other observation</i>					
	<i>Total Score</i>					

## CHECKLIST- 2

### MODEL CHECK LIST FOR EVALUATION OF SEMINAR PRESENTATIONS.

Name of the Trainee:

Date:

Name of the Faculty / Observer:

Sl no	Items for observation during presentation	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1	Whether other relevant publications consulted					
2	Whether cross - references have been consulted					
3	Completeness of Preparation					
4	Clarity of Presentation					
5	Understanding of subject					
6	Ability to answer the questions					
7	Time scheduling					
8	Appropriate use of Audio -Visual aids					
9	Overall performance					
10	Any other observation					
	Total score					

Please use a separate sheet for each faculty member

CHECKLIST- 3

MODEL CHECK LIST FOR EVALUATION OF CLINICAL WORK IN OPD

Name of the Trainee:

Date:

Name of the Unit Head:

<u>Sl. No.</u>	Items for observation during presentation	<i>Poor</i> 0	<i>Below Average</i> 1	<i>Average</i> 2	<i>Good</i> 3	<i>Very Good</i> 4
1.	<i>Regularity of attendance</i>					
2.	<i>Punctuality</i>					
3.	<i>Interaction with colleagues and supportive Staff</i>					
4.	<i>Maintenance of case Records</i>					
5.	<i>Presentation of cases</i>					
6.	<i>Investigations work -up</i>					
7.	<i>Chair - side manners</i>					
8.	<i>Rapport with patients</i>					
9.	<i>Overall quality of clinical Work</i>					
	<i>Total score</i>					

Please use a separate sheet for each faculty member

CHECKLIST - 4  
EVALUATION FORM FOR CLINICAL CASE PRESENTATION

Name of the Trainee:

Date:

Name of the faculty / Observer:

<u>Sl.No</u>	Items for observation during presentation	<i>Poor</i> 0	<i>Below Average</i> 1	<i>Average</i> 2	<i>Good</i> 3	<i>Very Good</i> 4
1.	Completeness of history					
2.	Whether all relevant points elicited					

3.	Clarity of presentation					
4.	Logical order					
5.	Mentioned all positive and negative					
6.	Accuracy of general physical examination					
7.	Investigations required					
	Complete list					
8.	Relevant order					
	Intepretation of Investigations					
	Ability to discuss differential diagnosis.					
9.	Ability to discuss diagnosis.					
10.	Others					
	Grand Total					

Please use a separate sheet for each faculty member

#### CHECKLIST-5

#### *MODEL CHECK LIST FOR EVALUATION OF TEACHING SKILL*

Name of the Trainee:

Date:

Name of the faculty Observer:

Sl. No.		Strong Point	Weak Point
1.	Communication of the purpose of the talk		
2.	Evokes audience interest in the subject		
3.	The introduction		
4.	The sequence of ideas		
5.	The use of practical examples and / or illustrations		
6.	Specking style (enjoyable, monotonous, etc. Specify)		

7.	Attempts audience participation		
8.	Summary of the main points at the end		
9.	Ask questions		
10.	Answer questions asked by the Audience		
11.	Rapport of speaker with his Audience		
12.	Effectiveness of the talk		
13.	Uses AV aids appropriately		

Please use a separate sheet for each faculty member

#### CHECKLIST- 6

#### MODEL CHECKLIST FOR DISSERTATION PRESENTATION

Name of the Trainee:

Date:

Name of the faculty / Observer:

SI.No.	Prints to be considered	Poor <i>0</i>	<i>Below</i> <i>Average 1</i>	<i>Average</i> <i>2</i>	<i>Good</i> <i>3</i>	<i>Very</i> <i>Good 4</i>
1.	<i>Interest show in selecting topic</i>					
2.	<i>Appropriate review</i>					
3.	<i>Discussion with guide and other faculty</i>					
4.	<i>Quality of protocol</i>					
5.	<i>Preparation of Proforma</i>					
	Total Score					

#### CHECKLIST- 7

#### CONTINUOUS EVALUATION OF DISSERTATION WORK BY GUIDE/CO-GUIDE

Name of the Trainee:

Date

Name of the Faculty/Observer:

Sl.No	Items for observation during presentation	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Periodic consultation with guide / co- guide					
2.	Regular collection of case material					
3.	Depth of Analysis / Discussion					
4.	Department presentation of findings					
5.	Quality of final output					
6.	Others					
	Total score					

#### CHECKLIST - 8 OVERALL ASSESSMENT SHEET

Name of the College:

Date:

Check List No	PARTICULARS										
		A	B	C	D	E	F	G	t	J	
1.	Journal Review Presentation										
2.	Seminars										
3.	Clinical work in wards										
4-	Clinical presentation										
5.	Teaching skill practice										
6.											
	TOTAL										

**Signature of HOD**

**Signature of Principal**

The above overall assessment sheet used along with the logbook should form the basis for certifying satisfactory completion of course of study, in addition to the attendance requirement.



### Academic Presentations made by the trainee

Name :

Admission Year:

College:

Date	Topic	Type of activity - Specify Seminar, Journal club, Presentation, UG teaching

### LOGBOOK

#### Table3 Diagnostic and operative procedures performed

Name

Admission Year:

College:

Date	Name	OP No.	Procedure	Category 0, A, PA, PI
		!		


Key:

C - WASHED UP AND OBSERVED - INITIAL 6 MONTHS OF ADMISSION A - ASSISTED A MORE SENIOR SURGEON - 1 YEAR MDS

PA - PERFORMED PROCEDURE UNDER THE DIRECT SUPERVISION OF A SENIOR SURGEON - II YEAR MDS

PI - PERFORMED INDEPENDENTLY - III YEAR MDS

## SECTION VI

### LIBRARY & EQUIPMENT REQUIREMENTS

#### 1. Infrastructure & Functional Requirements:

1. Space: In addition to the BDS functional programme the following physical facilities shall be made available to start postgraduate training programmes leading to MDS degree.

feet visual

a. A separate clinical area for postgraduate students. Minimum Area-600 sq

b. A seminar room furnished with proper seating arrangement and audio-

equipments - Minimum area -300 sq. ft.

c. A separate room for the use of postgraduate students - Minimum area -200 sq.ft.

2. Equipment: Each postgraduate department shall be provided with the required equipments as recommended by Dental Council of India.

3. Library: A departmental library shall be provided with copies of relevant books. In addition a central library should provide all the recent editions of books pertaining to the speciality and allied subjects as per the recommendations of Dental Council of India.

All the journals of relevant specialty and allied subjects shall be made available..

## 2. Recommended Books And Journals

### I. Prosthodontics Implantology

	<i>Title</i>	<i>Author</i>
1.	Osseo integration in skeletal reconstruction and joint Replacement	Branemark
2.	Advanced osseointegration surgery	Philip
3.	Surgical atlas of dental implant technique	Bubbush
4.	Contemporary implant dentistry	Carl Misch
5.	Dental implant are they for me?	Thomas d Taylor
6.	A color atlas of dental implant surgery	Block
7.	A color atlas of dental and maxillofacial implantology	John Hobkrick
8.	The Branemark novum protocol for same day	Branemark
9.	Osseo integration and esthetics	Branemark
10.	Color atlas of Branemark system of oral reconstruction	Richard A/ Rassmuser
11.	Color atlas of dental medicine (implantology)	Spekerman
12.	Osseo integration in craniofacial reconstruction	Branemark
13.	Endosteal implant	McKinney
14.	Implant Prosthodontics	M. Fagan

15.	Dental Implant	Wolfe
16.	Dental Implant: Implant support prosthesis	Vincente Jimenz
17.	Periodontal and Prosthodontic management of Advanced case.	Marvian
18.	Oral implantology: Basic ITV cylinder	Schroeder
19.	Dental Implant	McKiney
20.	Tissue Integrated prosthesis	Branemark/ Zarb/ Alberketson
21.	Dental implants (The art and science)	Charles Bubbush
22.	Implant and restorative dentistry Carl Misch /Klaus U. Benner	Gerald M. Scortecchi/
23.	Tissue integration in orthopedic and maxillofacial Reconstruction	William R. Laney
24.	Oral Implantology	Andre
25.	Implant therapy	Myron
26.	Guided bone regeneration: Inlmpant dentistry	Daniel Buser
27.	Laboratory techniques for Branemark system	Taylor & Bergman
28.	Implant Prosthodontics: Surgical and prosthetic techniques For dental implants	Fagan
29.	A color atlas of the Branemark system on oral reconstruction	George A. Zarb
30.	Dental implant color atlas fundamentals and advance Laboratory technology	Robert

### **Dental Materials**

<b>Title</b>		<b>Author</b>
1.	Dental ceramics; proceedings of the First international symposium on ceramics	John W. McLean
2.	The science and art of dental ceramics	John W. McLean
3.	Science of dental materials (9th and 10th edition)	Philips
4.	Biocompatibility of dental materials (Vol 1 - 4)	Dennis G Smith / David Williams
5.	Dental materials; Multiple-choice questions	
6.	Dental materials, properties and manifestations	William O. Brien
7.	Porcelain and composite inlays and onlays	Graber and Goldstein

8.	Applied dental materials	Anderson
9.	Dental material science	Basu
10.	Notes on dental materials	Combe
11.	Dental materials a problem oriented approach	Craig
12.	Restorative dental materials	Craig
13	Dental materials: Properties and manipulation	Craig
14	Clinical restorative materials and techniques	Leineelder and Lemons
15.	Restorative dental materials - A preview	Reese and Valega
16.	Dental materials in clinical dentistry	Reisbick
17.	Science of dental materials	Skinner
18.	Clinical handling of dental materials	Smith
<b>TMJ and Occlusion</b>		
<b>Sl. No</b>	<b>Title</b>	<b>Author</b>
1	Introduction to Gnathology	Dr.E.GR. Solomon
2	Clinical management of head, neck and TMJ pain and dysfunction	Harold Gelb
3	The TMJ; a biological basis for clinical practice	Sarnat Laskin
4	Clinical management of TM Disorder and orofacial pain	Richard Pertes / Sheldon G. Gross Gerber

5	Dental occlusion and the TMJ	
6	Imaging atlas of TMJ	Leslie B. Heffez/ Mehmood
7	A color atlas of occlusion and malocclusion	A.P. Howard/N.J. Capp
8	Occlusion (3rd edition)	Ramfjord/Ash
9	Current controversies in TM disorders	Charles McNeill
10	Anthroscopic atlas of TMJ	David I. Blaustein/Leslie B. Heffez
11	Craniomandibular disorders and oro facial pain	Iven Klineberg
12	A text and color atlas of TM JOral rehabilitation; Clinical determination of occlusion	John Norman/Paul BramelySumiya Hobo
13	Total TMJ reconstruction	
14	Medical management of TM disorders	

15	Modern g-nathological concepts (updated)	Victor Lucian
16	Principles and practice of TMJ anthropscopy	Joseph P McCain
17	Evaluation, Diagnosis and treatment of occlusal problems	Dawson
18	Management of TMD and occlusion	Okeson
19	TMD Classification, diagnosis and management	Welden E. Bell
20	TMJ and craniofacial pain diagnosis and management	James R. Fricton
21	TMJ dysfunction: A practice guide	Annika Isberg
22	Occlusion principles and concepts	Jose Dos Santos Jr.
23	Oral rehabilitation problem cases: treatment and Evaluation	Schweizer
24	Occlusion collection of monographs	Guichet
25	Conjoint in occlusion	Marquette. University
26	Occlusion in clinical practice	Thomson

### **Maxillofacial Surgical Considerations And Reconstruction**

<b>Sl. No</b>	<b>Title</b>	<b>Author</b>
1	Color atlas of dental medicine. Oral surgery for the general Dentist	Hermann F. Seiler
2	Maxillofacial rehabilitation; Prosthodontic and surgical Consideration	John Berumer III / Thomas A. Curtis
3	Management of facial head and neck pain	Barry C. Cooper / Frank E. Zucente
4	Prosthetic rehabilitation	Keith F. Thomas
5	Maxillofacial rehabilitation; Prosthodontic and Surgical consideration	John Beumer III / Thomas A. Curtis Branemark
6	Complex cleft palate and cranio-maxillofacial defects	
7	Medical emergencies in dental office	

### **Fixed Partial Prosthodontics**

<b>Sl. No</b>	<b>Title</b>	<b>Author</b>
1	Fixed bridge prosthesis	D.H. Roberts
2	Fundamentals of Fixed Prosthodontics	Shillinburg
24	Essentials of removable partial dentures	Applegate

25	Planned partials	Applegate
26	Color atlas of Removable Partial Denture	I.C. Devenport

### General Prosthodontics

Sl. No	Title	Author
1	DENTISTRY: An illustrated history	Malvin E. Ring
2	Text book of Geriatric dentistry	Paul Holm/Pedersor
3	Prosthodontics: Principle and management strategies	Bengt <i>OwaW</i>
4	Prosthodontics for the elderly: Diagnosis and Treatment	Ejvind Budtz
5	Dental secrets	Stephen
6	Essentials of Clinical dental assisting	Joseph
7	Clinical Dental Prosthesis	Fenn
8	Essentials of dental Technology	Fowler
9	Management of Geriatric dental patients	Freedman
10	Diagnosis and treatment plan of maxillofacial prosthodontics	Laney and Gibilisco
11	Facial growth and Facial Orthopedics	Wander Linden
12	Lasers in Dentistry	Leo
13	Pharmacology and therapeutics for dentistry	John A. Yagiela
14	Dental drug reference	Delmars
15	Modern concepts in diagnosis and treatment of fissure caries	Paterson / Watts
16	Biomechanics in clinical dentistry	Caputo and Standlee
17	Color atlas of preprosthetic surgery	Hopkins
18	Clinical epidemiology and biostatistics	Rebecca Knapp
19	Legal procedure in medical cases	Apurva Nandy
20	Law and medicine	Jogaroa
21	Modern dental assisting	Torres
22	Preservation and restoration of tooth structure, esthetics	Graham J. Mount
23	Fundamentals of esthetics	Claud R. Rufenacht
24	Esthetic dentistry and ceramic restorations	Bernard Tauti
25	Esthetic dentistry - Ceramic restorations	IoraWc
26	Esthetics in dentistry	Goldstein
27	Esthetics	Lauller

28	Esthetic guidelines for restorative dentistry	Schareer
29	Suggested chair side procedures for natural esthetics in complete denture	Branemark
30	Esthetic approach in metal ceramic restoration for the mandibular anterior region	Muthethies
31	Natural ceramics	Korson
32	The polychromatic layering techniques	Rinn
33	Creative ceramic color - a practical system	Hegenbarth
34	Basic techniques for metal ceramics	Yamamoto
35	Porcelain laminate	Garber
36	Fundamentals of esthetics	Rufenacht
37	Color atlas of porcelain laminate veneers	Freedman
38	Perspective in dental ceramics	Preston
39	Techniques for porcelain laminate veneers	Haga and Nakazawa

3	Planning and making crowns and bridges	Bernard G.N. Smith
4	Johnston's modern practice in fixed prosthodontics	Dykema
5	Failures in restored dentition; management and Treatment	Michael D. Wise
6	Precision fixed prosthodontics; Clinical and lab aspects	M.Martigone ;
7	Contemporary fixed Prosthodontics	SteephenS. Rosenstie
8	Theory and practice of Fixed Prosthodontics	Tyllman
9	Fundamentals of esthetics	Rufeflacht
10	Esthetics of anterior fixed prosthodontics	Gerald J. Chiche
11	Precision attachment	Gareth
12	Color atlas of ceramo metal technology	Kuwata
13	Inlays, crown and bridges	Krantirowich
14	Advanced restorative dentistry	Bacom
15	Fixed and removable prosthodontics	Bardy
16	Metal ceramic crown and fixed partial denture	Calomn
17	_aboratory manual for fixed partial denture	Douglas
18	Adhesive metal free restorations	Dietschi & Spreafico
19	Ceramo metal fixed partial denture	George
20	Essentials of dental ceramics - an artistic approach	Chuiche&Alspnault
21	Direct bonded retainers	McLaughlin
22	Crown and Bridge Prosthodontics	Allan and Foreman
23	Inlays crowns and Bridges	Cowell
24	Clinical procedures for partial crowns, inlays and pontics	Ravasini
25	Fixed Prosthodontics manual of procedures	Riis
26	Fixed Prosthodontics manual of procedures	Schorr
27	Multiple cantilevers in fixed prosthetics	Schweikert
28	Laboratory procedures for inlays. Crowns and bridges	Stananought
29	Precision fixed prosthodontics	Martignoni Schonenberger
<b>Complete Dentures</b>		
<b>Sl. No</b>	<b>Title</b>	<b>Author</b>
1	Treatment of edentulous patient	Victor O. Lucia
2	A color of Complete Dentures	JA. Hobkirk

3	Esthetics in Complete Dentures	Dr. E.G.R. Solomon
4	Syllabus of Complete Denture	Heartwell
5	Prosthodontic treatment for edentulous patients	Zarb/Boucher
6	Dental lab procedure - Complete Denture	Morrow and Rudd
7	Color atlas of complete denture fabrication	Hirosh Muraoka
8	Complete Denture Prosthodontics (3rd edition)	Sharry
9	Principles and practice of Complete Dentures	Iwao Hayakawa
10	Handbook of immediate over dentures	Robert
11	Over denture	Allen
12	Occlusal correction: Principles and Practice	John
13	Immediate and replacement dentures	Albert
14	Sectional dentures: A clinical and treatment manual	Pullen
15	Mastering the art of complete dentures	Alexander
16	Dental laboratory procedures in complete dentures	Robert
" 21 7	Overdenture made easily	Harold
18	Full dentures	Mack
19	Sectional dentures	Pullen-Wamer& Lestrance
20	Atlas of over dentures and attachments	Kumber
21	Immediate and Replacement dentures	Anderson and Storer
22	Complete dentures	Hobkirk
23	Impressions for Complete Dentures	Levin
24	Complete denture prosthetics, clinical and laboratory manual	Nell and Niern
25	Complete denture prosthetics	Nell and Niern
26	Designing Complete Dentures	Watt and Maggregor
27	Atlas of complete denture	Passamonti
28	Fundamental of complete denture prosthodontics	Shillingburg
29	Essentials of complete denture Prosthodontics	Coinkler

### Removable Partial Prosthodontics

Sl. No	Title	Author
1	Removable Partial Prosthodontics	Mc Cracken's

2	Clinical Removable Partial Prosthodontics	Sterward
3	Color atlas of dental medicine	
4	Removable Partial Prosthodontics	George Graber
5	Attachments for Prosthetic Dentistry	Michael Sherring
6	Laboratory procedures for full and partial dentures	Derek Stannought
7	Fundamentals of removable partial dentures	Owen
8	Designing partial dentures	David
9	Advanced removable partial dentures	James Brudvik
10	Partial dentures Singer	
11	Restoration of partially dentate mouth	Bates
12	Removable partial denture construction	Bates
13	Treatment of partially edentulous patients	Boucher and Renner
14	Introduction to removable denture prosthetics	Grant and Johnson
15	Partial removable prosthodontics	Kratochvil
16	Partial denture prosthetics	Neill and Walter
17	Removable partial denture laboratory manual	Reitz and Yokoyama
18	Removable partial dentures	Renner and Boucher
19	Removable partial dentures	Taylor
20	Prosthodontic treatment of partially edentulous patients	Zarb
21	Atlas of removable partial denture design	Starrttpm
22	Removable partial denture	Grasso and Miller
23	Precision attachments in prosthodontics	Preiskel

### ***I. Periodontics***

1. Textbook of clinical periodontology and implant dentistry, by Janlinde, Nicklans Lang and Thorklid K., 1st edn. 1997.
2. The periodontium by Schroeder
3. Periodontal Ligament by Berkovitz
4. Contemporary Periodontics by Geneo R. J. and. Cohen S.

5. Periodontics by Grant, Stern and Listgarten
6. Periodontal regeneration-current concepts-further directions by Aban Poison
7. Periodontal Instrumenarium by Gill and Ginger
8. Periodontitis in man and other animals by Page and Schroeder
9. Crevicular fluid updated by Cimason
10. Colour Atlas of Periodontal surgery by Cohen E.
11. Colour Atlas of Periodontal surgery by Cohen E.
12. Advances in periodontics by Wilson and Karnman.

## **II. Oral & Maxillofacial Surgery**

1. Principles of Oral & Maxillofacial Surgery; Vol. 1,2 & 3; Peterson I.J & etal.
2. Rowe and Williams Maxillofacial injuries Vol. 1 & 2; Williams Jlied
3. Handbook of Medical emergencies in the dental office; Malamed S.F.
4. Plastic surgery; Vol. 1 - 5; McCarthy JG
5. Cancer of the face and mouth; McGregor IA & Mc
6. Oral & Maxillofacial Surgery Vol. 1 & 2; Laskin DM
7. Oral & Maxillofacial Trauma; Vol 1 & 2; Fonseca RJ & Davis
8. Oral & Maxillofacial infections; Topazian RG & Goldberg MH
9. Surgical correction of dentofacial deformities Vol 1,2 & 3; Bell WH & etal
10. Surgery of the mouth and jaws; Moore JR.
11. Dentofacial deformities:integrated orthodontic and surgical correction; Vol 1 to 4; Epker BN & Fish LC
12. Maxillofacial Surgery; Peter Wardbooth

## **CONSERVATIVE DENTISTRY :**

Reference:

1. Fractures of the teeth, prevention and treatment of the vital and non-vital pulp by Basrani
2. Textbook of operative dentistry by Baum
3. Dentin and pulp in restorative dentistry by Brannstorm
4. Principles and practice of operative dentistry by Charbeneau
5. Operative dentistry by Gilmore
6. Esthetic composite bonding by Jordan

7. Operative dentistry: modern theory and practice by Marzook
8. Art, science and practice of operative dentistry by Sturdevant
9. Atlas of operative dentistry - pre clinical and clinical procedures by Evans & Wetz
10. New concepts in operative dentistry by Fusiyaama
11. Handbook of clinical Endodontics by Bence.
12. Pathways of the pulp by Cohen & Burns
13. Bleaching teeth by Feinman
14. Endodontic practice by Grossman
15. Problem solving in Endodontics, prevention, identification and management by Gutmann
16. Endodontics in clinical practice by Harty
17. Endodontics by Ingle & Taintor
18. Endodontics- science and practice by Schroeder
19. Endodontology - biologic considerations in Endodontic procedures by Seltzer
20. Restoration of the endodontically treated tooth by Schillingberg & Kessler
21. Principles and practice of Endodontics by Walton & Torabinejad
22. Endodontic therapy by Weine
23. Colour atlas of Endodontics by Messing & Stock
24. The dental pulp by Seltzer & Bender
25. Experimental Endodontics by Spangberg
26. Cariology by Newbrun
27. Silver amalgam in clinical practice by Gainsford
28. Glass ionomer cement by Wilson & McClean
29. Pediatric operative dentistry by Kenedy
30. Fluorides in caries prevention by Muroy & Rugg-Geenn
31. Color atlas and text of Endodontics by Stock
32. Why root canal therapy? By Berns 1986.
33. Contemporary esthetic dentistry- practice fundamentals by Crispin 1994
34. Enamel micro abrasion by Croll 1991
35. Advances in Glass Ionomers by Davidson 1991
36. Complete dental bleaching by Goldstein 1995
37. Fiber reinforced composite in clinical dentistry by Freilich 2000
38. Dental ceramics by Mclean 1983
39. LASERS in dentistry by Miserendind 1995

40. Esthetic approach to metal ceramic restorations by Muterthies 1990
41. Life and times of GV. Black by Pappas 1983
42. Bonded ceramic inlays by Roulat 1991
43. Fundamentals of tooth preparation by Schillingburg 1996
44. Esthetics with indirect restorations by Stein 1992
45. Surgical Endodontics by Barnes 1991
46. Operative dentistry by Marzook 1996
47. Inlays, crowns and bridges by GF.Kantorowicz 19.93

**ORTHODONTICS : Recommended:**

1. WILLIAM R.PROFFIT, Contemporary Orthodontics
2. GRABER & VANARSDALL, Orthodontics - Current Principles & Techniques
3. MOYERS, Text Book of Orthodontics
4. GRABER, Orthodontics Principles and practice.
5. GRABER, PETROVIC, & RAKOSI Dentofacial Orthopedics with Functional Appliances
6. ATHENASIOU E ATHENASIOU, Orthodontic cephalometry
7. JACOBSON, Radiographic Cephalometry
8. RAKOSI, An Atlas And Manual of Cephalometric Radiography
9. ENLOW, Handbook of Facial Growth
10. EPKER & FISH, Dentofacial Deformities Vol. 1
11. PROFFIT & WHITE, Surgical Orthodontic Treatment
12. NANDA, Biomechanics in Clinical Orthodontics
13. NANDA & BURSTONE, Retention and Stability in Orthodontics
14. OKESON, Management of T.M. Disorders And Occlusion
15. LOU NORTON & DAVIDOWITZ, Biology of tooth movement
16. GERHARD PFIEFER, Craniofacial Abnormalities and clefts of the lip, Alveolus and Palate.
17. OKESON, TMJ Disorders.

## References

1. L. JOHNSTON, New Vistas in Orthodontics
2. LEE GRABER, Orthodontics - State of the Art -  
The Essence of Science
3. NIKOLAI, Bio Engineering Analysis of Orthodontic Mechanics
4. M. RAKOSI & GRABER, A Color Atlas of Dental Medicine
5. BURSTONE, Modern Edgewise Mechanics and Segmented Arch Technique
6. W J CLARK, The Twin Block Functional Therapy
7. McNAMARA & BRUDON, Mixed Dentition
8. R D ROBLEE, Interdisciplinary Dentofacial Therapy
9. NANDA, The Developmental Basics of Occlusion and Malocclusion
10. TIMMS, Rapid Maxillary Expansion
11. WILLIAMS & COOKS, Fixed Orthodontic Appliances
12. RICKETTS, Bioprogressive Therapy
13. VAN DER LINDEN, Quintessence Series
14. MICHIGAN CENTER, Craniofacial Growth Series for human growth and Development
15. SALZMAN, Practice of Orthodontics Vol II and I
16. ROHIT SACHDEVA, Orthodontics for the next millennium
17. SCHWIDLING, The Jasper Jumper
18. ROBERT RICKETTS, Provocations and preceptions in Craniofacial Orthopedics

### **ORAL PATHOLOGY**

#### **I. Oral Anatomy, Histology & Physiology & Biochemistry**

1. Oral Histology, development, structure & function - A Color atlas & text book of Oral Anatomy, histology & embryology - A.R.Tencate
2. B.K.B.Berkovitz, GR.Holland & B.J.Moxham
3. Ham's Histology - David.H.Cormack
4. Applied Oral Physiology - Lavelle

5. Basic & Applied Dental Biochemistry - R.A.D. Williams & J.C. Elliot

## **II. Microbiology, Immunology & Basic Molecular Biology & Genetics**

1. Text book of Microbiology - R. Ananthnarayan & C.K.J. Paniker
2. Essential Immunology - Ivan. M. Roitt
3. Immunology of Oral diseases - Thomas Lehner
4. Oral Microbiology & Immunology - Newman & Nisengard
5. PCR - a practical approach - Me Pherson, Quirke P & Taylor
6. Molecular Cloning - a Laboratory manual - Sambrook J, Fritsch E.F & Maniatis

## **III. Physiology**

1. Review of Medical Physiology - Ganong

## **IV. General Pathology & Haematology**

1. Cell, tissue & Disease - Wolf
2. Robbins's pathologic basis of disease - Cotran, Kumar & Robbins
3. Clinical Haematology - R.D. Eastham

## **V. Oral Medicine & Radiology**

1. Burket's Oral Medicine - Lynch, Brightman & Greenberg
2. Oral Radiology - principles & Interpretation - S.C. White, Pharoah M.J

## **VI. Oral Pathology & Forensic Odontology & Histopathology Techniques.**

1. A Text Book of Oral Pathology - Shafer W.G, M.K. Hine & B.M. Levy
2. Oral Pathology - Clinical Pathologic correlations - J.A. Regezi & James Sciubba
3. Oral Diseases in the Tropics - S.R. Prabhu, D.F. Wilson, D.K. Daftary & N.W. Johnson
4. Soft tissue tumours - S.M. Weiss, J.S. Brooks
5. Color atlas of Oral disease, Clinical & Pathologic Correlations - Cawson R.A, Binnie W.H, J.H. Eveson
6. Atlas & text of pathology of tumours of the oral tissues - R.B. Lucas
7. Evan's histological appearances of tumours - David B. Ashley
8. Histopathology of Skin - Lever
9. Cysts of the Oral regions - Mervyn Shear

10. Cellular Pathology Technique - c.F.A.Culling.R.T.Allison & W.T.Barr
  11. Surgical Pathology of Salivary Glands - Ellis, Auclair, Gnepp
  12. Syndromes of Head & Neck - Smith.D.W
  13. Forensic Dentistry - Cameroone J.M, Sims
- 
1. Dentistry, dental practice and community by Striffler DF
  2. Primary preventive dentistry by Harris N & Christen AG
  3. Community dental health by Jong AW
  4. Principles of dental public health vol I part 1 &2 vol 2 by Dunning JM
  5. Dental public health: an introduction to community dentistry by Slack G.L.
  6. Fluoride in dentistry by Fejerskar Ok & Etal Ed
  7. Fluorides & dental caries by Tiwari A
  8. Text book of preventive and social medicine by Mahajan BK & Gupta Mc
  9. Dental health education by Who Expert Committee
  10. Metabolism and toxicity of fluoride vol I by Whitford GM.
  11. Epidemiology bio-statistics and preventive medicine by Jekel JF & Etal
  12. Introduction to oral preventive medicine: a programme for the first clinical experience by Muhlemann HR
  13. Text book of preventive medicine by Stallard CE
  14. Handbook of dental jurisprudence and risk management by Pollack BR ED
  15. Fluorides and human health by World Health Organisation
  16. Appropriate use of fluorides for human health by Murry JJ ED
  17. Community health by Green LW
  18. Prevention of dental diseases by Murry JJ ED
  19. Color atlas of forensic dentistry by Whittaker DK & DAC Donald DG
  20. Health research design and methodology by Okolo EN
  21. Oxford text book of public health vol.3 by Holland WW & Et Al
  22. Guidelines for drinking water quality vol 1 recommendations by WHO
  23. Introduction to Bio-statistics by Mahajan B.K.

24. Guidelines for drinking water quality vol. 2 health criteria & other supporting information by WHO
25. Dentistry, dental practice and the community by Burt BA & Et Al
26. Occupational hazards to dental staff by Scully C
27. Forensic dentistry by Cameron JM
28. Research methodology: methods & techniques Kothari R
29. Law & ethics in dentistry by Shear J & Walters L
30. Health research methodology : a guide for training in research methods (western pacific education in action series no.5) by WHO
31. Community oral health by Pine CM
32. Park's text book of preventive and social medicine by Park K
33. Epidemiology, bio-statistics and preventive medicine by Katz DI
34. Oral health surveys basic methods by WHO
35. Essentials of preventive and community dentistry by Peter S
36. Fluorides in caries prevention by Murry JI ED
37. Preventive dentistry by Forrest John O
38. Fluorine and fluorides: a report by World Health Organisation
39. Planning and evaluation of public dental health services: a technical report by World Health Organization
40. Prevention methods and programmes for oral diseases: a technical report by World Health Organization
41. Community periodontal index of treatment needs development, field-testing and static evaluation by World Health Organization
42. Planning oral health services by World Health Organization
43. Guide to epidemiology and diagnosis of oral mucosal diseases and conditions by World Health Organization
44. Community dentistry (pgd hand book series vol 8) by Silberman SI & Tryon AF.ED.

#### **PEDODONTICS & PREVENTIVE DENTISTRY**

1. Pediatric Dentistry (Infancy through Adolescence) - Pinkham.

2. Kennedy's Pediatric Operative Dentistry - Kennedy & Curzon.
3. Occlusal guidance in Pediatric Dentistry - Stephen H. Wei.
4. Clinical Use of Fluorides - Stephen H. Wei.
5. Pediatric Oral & Maxillofacial Surgery - Kaban.
6. Pediatric Medical Emergencies - P. S. Whatt.
7. Understanding of Dental Caries - Niki Foruk.
8. An Atlas of Glass Ionomer cements - G J. Mount.
9. Clinical Pedodontics - Finn.
10. Textbook of Pediatric Dentistry - Braham Morris.
11. Primary Preventive Dentistry - Norman O. Harris.
12. Handbook of Clinical Pedodontics - Kenneth. D.
13. Preventive Dentistry - Forrester.
14. The Metabolism and Toxicity of Fluoride - Garry M. Whitford.
15. Dentistry for the Child and Adolescence - Mc. Donald.
16. Pediatric Dentistry - Damle S. G
17. Behaviour Management – Wright
18. Pediatric Dentistry - Mathewson.
19. Traumatic Injuries - andreason.
20. Occlusal guidance in Pediatric Dentistry - Nakata.
21. Pediatric Drug Therapy – Tomare
22. Contemporary Orthodontics - Profit.
23. Endodontic Practice - Grossman.
24. Endodontics-Ingle.
25. Pathways of Pulp - Cohen.
26. Management of Traumatized anterior Teeth - Hargreaves.
27. Essentials of Community & Preventive Dentistry - Soben Peters.
28. Post graduate hand book by Barber
29. Scientific foundation of Pediatric Dentistry by Stewart and Barber

30. Diet and Nutrition in dentistry by Rutgunn
31. Preventive Dentistry by Murray.

### **ORAL MEDICINE AND RADIOLOGY**

- a) Oral Diagnosis, Oral Medicine & Oral Pathology
1. Burkit - Oral Medicine - J.B. Lippincott Company
2. Coleman - Principles of Oral Diagnosis - Mcsby Year Book
3. Jones - Oral Manifestations of Systemic Diseases - W.B. Saunders company
4. Wood and Goaz - Differential diagnosis of Oral Lesions - Mosby Year Book
5. Langlais - Oral Diagnosis / Oral Medicine and Treatment planning Lea & Febiger & Waverly Co.,
6. Mitchell - Oral Diagnosis & Oral Medicine
7. Pindburg- Syndromes of the Head & Neck
8. Stones - Oral Diseases
9. Irwin Walter Scopp - Oral Medicine
10. Kerr - Oral Diagnosis
11. Miller - Oral Diagnosis & Treatment
12. Bennier - Differential diagnosis & Oral Lesions
13. Munford - Orofacial pain
14. Bell - Oral facial pain
15. Tullmen - Systemic diseases in Dental Treatment
16. Mean - Diseases of the Mouth
17. Hutchinson - clinical Methods
18. McCleods - Clinical Examination
19. Chamberlin - Symptoms & Signs of Clinical Medicine
20. Davidson - Principles and Practice of Medicine

21. Harrison - Principles of Interns Medicine
22. Schweitner - Oral Rehabilitation problem cases
23. Burkhardt - Oral Cancer
24. Dolby - Oral Mucosa in Hearth & Diseases
25. Sonis.S.T, Fazio.R.C. and Fang.L - Principles and practice of Oral Medicine
26. Nally F.F. and Eggleston.D. J. - A Manual of Oral Medicine
27. Prabhu.S.R. et al - Oral Diseases in the Tropics
28. Samaranayake L.Ret al - Oral Candidos is

b) **Oral Radiology**

1. White & Goaz - Oral Radiology - Mosby year Book
2. Weahrman - Dental Radiology - C.V. Mosby Company
3. Stafne - Oral Roentgenographic Diagnosis - W.B.Saunders Co.,
4. Langlairs - Diagnostic Imaging of the Jaws - William & Wilkins
5. Smith - Dental Radiography - Blackwell Scientific Publication
6. Eric Whaites - essentials of Dental Radiography - Churchill Livingstone
7. Sonis.S.T., Fazio.R.C. and Fang.L - Principles and practice of Oral Medicine
8. Malamed S.F. - Book of Medical Emergencies in the Dental
9. Cawson.R.A. and Scully CM. - Medical Problems in Dentistry
10. Pindborg.J.J. - Atlas of diseases of the oral mucosa
11. Linch M.A. - ET'S Oral Medicine, Diagnosis and Treatment

12. Dayal P.K. - Text book of Oral Medicine
- c) Forensic Odontology
1. Derek H. Clark - Practical Forensic Odontology - Wright
  2. Cottone Standish - Outline of Forensic Dentistry
  3. Whittaker - A colour atlas of Forensic Dentistry

### **JOURNALS:**

The journals are best source of information for professionals to keep abreast with the recent developments and trends in their respective specialties. Considering the array of journals that are available today the council desires that the institutions provide as a minimum requirement the list of journals mentioned below:

Pertaining to Dental education and practice.

1. Journal of Indian Dental Association
2. British Dental Journal
3. Journal of American Dental Association
4. Journal of Dentistry
5. Dental Clinics of North America
6. Journal of Dental Education
7. Dental Abstracts
8. Journal of Dental Research
9. Dental Index '
10. Quintessence International
11. International Dental Journal
12. Australian Dental Journal

13. Journal of dental materials
14. Journal of aesthetic dentistry
15. Journal of cleft palate

### **PROSTHODONTICS**

1. International Journal of Oral & Maxillofacial Implants
2. International Journal of Prosthodontics
3. Journal of Dental Materials
4. Journal of Esthetic Dentistry
5. Journal of Geriatric Dentistry
6. Journal of Prosthetic Dentistry
7. Journal of Prosthodontics
8. International Journal of Oral & Maxillofacial Surgery
  
9. Journal of Clinical Periodontology.
10. Journal of Periodontology.
11. Dental Technician.
12. Journal of Endodontics.
13. European Journal of Prosthetics & Restorative Dentistry.
14. The Journal of Adhesive Dentistry.
15. International Journal of Endodontics.
16. Journal of Oral & Maxillofacial Surgery

### **PERIODONTICS**

1. Journal of periodontology
2. Journal of clinical periodontology
3. Journal of periodontal Research
4. International journal of periodontics
5. Journal of Indian Society of periodontics
6. Journal of oral and maxillofacial implants
7. Periodontology 2000
8. Annals of periodontology

## **ORAL & MAXILLOFACIAL SURGERY**

1. Journal of Oral & Maxillofacial Surgery
2. International Journal of Oral & Maxillofacial Surgery
3. Journal of Cranio Maxillofacial Surgery
4. British Journal of Oral & Maxillofacial Surgery
5. Oral, Surgery, Oral Medicine, Oral Pathology
6. Oral & Maxillofacial clinics of North America
7. Journal of oro-facial pain
8. Int. Journal of Oral & Maxillofacial Implants
9. Indian Journal of Oral & Maxillofacial Surgery
10. Plastic & Reconstructive Surgery
11. Cancer

## **CONSERVATIVE DENTISTRY**

1. Endodontics & Dental Traumatology
2. International Endodontic Journal
3. Operative Dentistry
4. Esthetic Dentistry
5. Endodontology
6. Dental Materials
7. Oral Surgery, Oral Medicine, Oral Pathology
8. Oral Radiology & Endodontics
9. Journal of Prosthetic Dentistry
10. International Journal of Prosthetic Dentistry
11. Periodontics & Restorative Dentistry
12. Index to Dental Literature

## **ORTHODONTICS**

1. American Journal of Orthodontics and Dentofacial Orthopedics
2. Journal of Orthodontics (formerly British Journal of Orthodontics)
3. Angle Orthodontics
4. Journal of Clinical Orthodontics
5. Journal of Indian Orthodontic Society
6. Seminars in Orthodontics
7. Journal of Orthodontics and Dentofacial Orthopedics

8. European Journal of Orthodontics
9. Australian Journal of Orthodontics
10. International Journal of Adult Orthodontics and Orthognathic surgery
11. The Functional Orthodontist.

#### **ORAL PATHOLOGY**

1. Journal of Oral Pathology
2. Journal of Oral Medicine, Oral Surgery, Oral Pathology
3. Journal of Oral and Maxillofacial Surgery
4. British journal of Oral and Maxillofacial Surgery
5. International journal of Oral and Maxillofacial Surgery
6. Journal of Craniofacial surgery
7. Cancer

#### **COMMUNITY DENTISTRY**

1. Journal of Community Dentistry and Oral Epidemiology
2. Journal of Public Health Dentistry
3. Fluoride Journal of International Society
4. Journal of Community Dental Health
5. Journal of Fluoride research
6. Journal of clinical preventive dentistry

#### **PEDODONTICS & PREVENTIVE DENTISTRY .**

1. ASDC Journal of Dentistry for children.
2. International Journal of Pediatric Dentistry
3. Pediatric Dentistry
4. Journal of Indian Society of Pedodontics & Preventive Dentistry

#### **ORAL MEDICINE AND RADIOLOGY**

1. Journal of Oral Pathology/Oral Medicine and Radiology/Oral Surgery
2. Journal of Oral Diseases
3. Journal of Oral Pathology / Medicine
4. Journal of Community Dentistry & Oral Epidemiology
5. Journal of Indian Academy of Oral Medicine and Radiology
6. Journal of Indian association of Oral Pathology

**EQUIPMENTS**  
**DEPARTMENT: PROSTHODONTICS AND CROWN & BRIDGE**

S. No.	NAME	SPECIFICATION	Quantity		Availability
			1 Unit	2 Units	
1.	Electrical Dental Chairs and Units	With shadowless lamp, spittoon, 3 way syringe, instrument tray and motorized suction, micromotor and airtor attachment with handpieces.	One chair and unit per PG student and two chairs with unit for the faculty.		
			<b>1 Unit</b>	<b>2 Units</b>	
2.	Articulators – semi adjustable/ adjustable with face bow		6	12	
3.	Micromotor – (Lab Type can also be attached (fixed) to wall		2	4	
4.	Ultrasonic scaler		2	2	
5.	Light cures		2	2	
6.	Hot air oven		1	1	
7.	Autoclave		2	2	
8.	Surveyor		2	2	
9.	Refrigerator		1	1	
10.	X-ray viewer		1	2	
11.	Pneumatic, Crown bridge remover		2	3	
12.	Needle destroyer		1	2	
13.	Intra oral camera		1	1	
14.	Digital SLR camera		1	1	
15.	Computer with internet connection with attached printer and scanner		1	1	
16.	LCD projector		1	1	
<b>Clinical Lab for Prosthetics</b>					
1.	Plaster dispenser		2	2	
2.	Model trimmer with carborandum Disc		1	2	
3.	Model trimmer with diamond disc		1	2	
4.	High speed lathe		2	3	
5.	Vibrator		2	4	
6.	Acrylizer		1	2	
7.	Dewaxing unit		1	2	
8.	Hydraulic press		1	1	
9.	Mechanical press		1	1	
10.	Vacuum mixing machine		1	1	
11.	Micro motor lab type		2	3	
12.	Curing pressure pot		1	1	
13.	Pressure molding machine		1	1	

<b>Chrome – Cobalt Lab Equipment</b>			
1.	Duplicator	1	1
2.	Index system	1	1
3.	Burn-out furnace	1	1
4.	Welder	1	1
5.	Sandblaster	1	1
6.	Electro polisher	1	1
7.	Model trimmer with carborandum disc	1	1
8.	Model trimmer with diamond disc	1	1
9.	Model trimmer with double disc (one Carborandum and one diamond disc)	1	1
10.	Casting machine, motor cast with the safety door closure, gas blow torch with regulator	1	1
11.	Dewaxing furnace	1	1
	Induction casting machine with vacuum pump, capable of casting titanium chrome cobalt precision metal	1	1
12.	Spot welder with soldering, attachment of cable	1	1
13.	Steam cleaner	1	1
14.	Vacuum mixing machine	1	1
15.	Spindle grinder 24,000 RPM with vacuum suction	1	1
16.	Wax heater	2	3
17.	Wax carvers (Full PKT Set)	2	3
18.	Milling machine	1	1
19.	Stereo microscope	1	1
20.	Magnifying work lamp	1	1
21.	Heavy duty lathe with suction	1	1
22.	Preheating furnace	1	1
23.	Dry model trimmer	1	1
24.	Die cutting machine	1	2
25.	Ultrasonic cleaner	1	1
26.	Composite curing unit	1	1
<b>Ceramic Lab Equipment</b>			
1.	Fully programmable porcelain furnace with vacuum pump	1	1
2.	Ceramic kit (instruments)	3	3
3.	Ceramic materials (kit)	1	1
4.	Ceramic polishing kit	2	2
<b>Implant Equipment</b>			
1.	Electrical dental chair and unit	1	1
2.	Physio dispenser	1	1
3.	Implant kit	2	2
4.	Implants	10	10
5.	Prosthetic components	10	10
6.	Unit mount light cure	1	2
7.	X-ray viewer	1	2
8.	Needle destroyer	1	2
9.	Ultrasonic cleaner capacity 3.5 ltr	1	1
10.	Autoclave programmable for all recommended cycles	1	2
11.	X-ray machine with RVG	1	1
12.	Refrigerator	1	1
13.	Surgical kit/prosthetic kit	2	2
14.	Educating models	1	1
15.	Implant removing instruments	1	1

**DEPARTMENT: PERIODONTOLOGY**

S. No.	NAME	SPECIFICATION	Quantity		Availability
			1 Unit	2 Units	
1.	Dental Chairs and Units	Electrically operated with shadowless lamp, spittoon, 3 way syringe, instrument tray and motorized suction, micromotor attachment with contra angle handpiece, airroter attachment, ultrasonic scaler (Piezo) with detachable autoclavable hand piece	One chair and unit per post-graduate student and Two chairs with unit for the faculty		
2.	Autoclave (fully automatic) front loading		1	2	
3.	Steel bin		4	6	
4.	Airroter hand pieces		2	2	
5.	UV chamber		1	1	
6.	Formalin chamber		1	1	
7.	W.H.O probe		2	2	
8.	Nabers probe		2	2	
9.	Williams probe		2	2	
10.	UNC-15 probe		4	4	
11.	Gold Man fox probe		1	1	
12.	Pressure sensitive probe		1	1	
13.	Marquis color coded probe		1	1	
14.	Supra gingival scalers	set	2	2	
15.	Sub gingival scaler	set	2	2	
16.	Arkansas sharpening stone		1	1	
<b>Surgical Instruments</b>					
1.	Routine surgical instrument kit (Benquiv periosteal elevator, periostome)	set	2	3	
2.	Surgery trolleys		6	6	
3.	X ray viewer		1	2	

4.	Surgical cassette with sterilisation pouches		4	6	
5.	Electro surgery unit		1	1	
<b>Special Surgical Instruments</b>					
1.	Kirkland's knife	set	1	1	
2.	Orban's knife	set	1	1	
3.	Paquette blade handle		1	1	
4.	Krane kaplan pocket marker	set	1	1	
5.	Mc Call's universal curettes	set	1	1	
6.	Gracey's curettes (No.1-18)	set	2	2	
7.	Mini five curettes	set	1	1	
8.	Cumine sealar		1	1	
9.	Mallet		1	1	
10.	Chisel		1	1	
11.	Oschneubain chisel	straight, curved	1	1	
12.	Schluger bone file		1	1	
13.	Bone fixation screw kit		1	1	
14.	Bone scrapper		1	1	
15.	Bone trephines for harvesting autografts	1 set	1	1	
16.	Bone regenerative materials	Bone graft and GFR membranes	5	5	
17.	Local drug delivery systems	At least two different agents	1 each	1	
18.	Root conditioning agent	At least two different agents	2	2	
19.	Micro needle holder		1	1	
20.	Micro scissors		1	1	
21.	Magnifying loop (2.5 – 3.5x)		1	2	
22.	Operating microscope	optional	1	1	
23.	3 <sup>rd</sup> generation digital probe	optional	1	1	
24.	Bone expander and bone crester	optional	1	1	
25.	Distraction osteogenesis kit	optional	1	1	
26.	Bone mill	optional	1	1	
27.	Bone graft / membrane placement spoon		1	1	
28.	Bone condenser		1	1	
29.	Peizo-surgery unit	optional	1	1	
30.	Centrifuge for PRF/PRF preparation	optional	1	1	
31.	Soft tissue laser (8 watt)		1	1	
32.	Osteotome	set optional	1	1	
<b>MISCELLANEOUS INSTRUMENTS</b>					

1.	Composite gun with material kit		1	1	
2.	Splinting kit with material		2	3	
3.	Composite finishing kit		1	1	
4.	Glass ionomer cement		1	1	
5.	Digital camera		1	1	
6.	Intra Oral camera		1	1	
7.	Ultrasonic cleaner		1	1	
8.	Emergency kit		1	1	
9.	Refrigerator		1	1	
10.	X-ray viewer		2	2	
11.	LCD projector		1	1	
12.	Computer with internet connection with attached printer and scanner		1	1	
13.	Implant Equipment				
14.	Electrical dental chair and unit		1	1	
	Physio dispenser		1	1	
15.	Implant kit	At least two different systems	2	2	
16.	Implants		10	10	
17.	Implant maintenance kit (plastic instruments)		1 set	1 set	
18.	Implant guide		1	1	
19.	X-ray viewer		1	2	
20.	Needle destroyer		1	2	
21.	Ultrasonic cleaner capacity 3.5 lbs		1	1	
22.	Autoclave programmable for all recommended cycles		1	1	
23.	RVG with x-ray machine		1	1	
24.	Refrigerator		1	1	
25.	Surgical kit		2	2	
26.	Sinus lift kit		1	1	
27.	Educating models		1	1	
28.	Implant removing kit		1	1	

**DEPARTMENT: ORAL & MAXILLOFACIAL SURGERY**

S.No.	NAME	SPECIFICATION	Quantity		Availability
1.	Dental Chairs and Units	Electrically operated with shadowless lamp, spittoon, 3 way syringe, instrument tray and high motorized suction, with micromotor and micro motor attachment	1 Unit	2 Units	

2.	Autoclave	Front loading	2	3	
3.	Fumigators		1	1	
4.	Oscillating saw	With all hand pieces pieces	1	1	
5.	<b>Surgical instruments</b> General surgery kit including tracheotomy kit Minor oral surgery kit Osteotomy kit		2 5 1	2 10 1	
	Cleft surgery kit Bone grafting kit Emergency kit Trauma set including bone plating kit Implantology kit with implants		1 1 1 2 1	1 1 1 2 1	
		Minimum 2 systems	2 10	2 10	
6.	Distraction osteogenesis kit		1	1	
7.	Peizo surgical unit		1	1	
8.	Magnifying loops		1	1	
9.	Operating microscope and Microsurgery kit	desirable	1	1	
10.	Dermatomes		1	1	
11.	Needle destroyer		2	3	
12.	Ultrasonic Cleaner capacity 3.5 ltr.		1	1	
13.	Formalin chamber		1	1	
14.	Pulse oxymeter		1	1	
15.	Ventilator		1	1	
16.	Major operation theatre with all facilities		1	1	
17.	Recovery and Intensive Care Unit with all necessary life support equipments		2 beds	2 beds	
18.	Fibrooptic light		1	1	
19.	Inpatient beds		20	20	
20.	Fiber optic laryngoscopy		1	1	
21.	Computer with internet connection with attached printer and scanner		1	1	
22.	LCD projector		1	1	
23.	Refrigerator		1	1	

**DEPARTMENT : CONSERVATIVE DENTISTRY AND ENDODONTICS**

S.No.	NAME	SPECIFICATION	Quantity	Availability
1.	Dental Chairs and Units	Electrically operated with shadowless lamp, spittoon, 3 way syringe, instrument tray and motorized	One chair & unit per post-graduate student and two chairs with unit for the faculty	

		suction, micromotor, motor attachment with hand pieces	1 Unit	2 Units
2.	ENDOSONIC HANDPIECES Micro endosonic Tips, retro treatment		2	3
3.	Mechanised rotary instruments including hand pieces (speed and torque control) and hand instruments various systems		3	6
4.	Rubber dam kit		1 per chair	1 per chair
5.	Autoclaves for bulk instrument sterilization vacuum (front loading)		2	3
6.	Autoclaves for hand piece sterilization		1	1
7.	Apex locators one for every two chairs		2	4
8.	Pulp tester		2	4
9.	Equipments for injectable thermoplasticized gutta percha		1	2
10.	Operating microscopes 3 step or 5 step magnification		1	1
11.	Surgical endo kits (Microsurgery)		2	2
12.	Set of hand instruments (specifications required)		1	2
13.	Sterilizer trays for autoclave		4	4
14.	Ultrasonic cleaner capacity 3.5 ltr		1	1
15.	Variable Intensity polymerization equipments - VLC units	Desirable	1	1
16.	Conventional VLC units one for every two chairs		2	4
17.	Needle destroyer		2	2
18.	Magnifying loupes one for students and one for faculty		1	2
19.	LCD projector		1	1
20.	Composite kits with different shades and polishing kits		2	4
21.	Ceramic finishing kits, metal finishing kits	In ceramic labs	2	3
22.	Amalgam finishing kits		2	3
23.	RVG with x-ray machine developing kit		1	1
24.	Chair side micro abrasion		1	1
25.	Bleaching unit		1	1
26.	Instrument retrieval kits		1	1
27.	Computer with internet connection with attached printer and scanner		1	1
28.	Refrigerator		1	1
29.	Equipments for casting procedures		1	1
30.	Equipments for ceramics including induction casting machines/ burnout preheat furnaces/ wax elimination furnaces		1	1
31.	Lab micro motor/ metal grinders / sand blasters/ polishing lathes/ duplicator equipment/ vacuum investment equipments		1	1

32.	Laser (preferably hard tissue)	1	1	
33.	Face bow with semi adjustable articulator	1	2	

**DEPARTMENT : ORTHODONTICS AND DENTOFACIAL ORTHOPEDICS**

S. No.	NAME	SPECIFICATION	Quantity		Availability
			1 Unit	2 Units	
1.	Dental Chairs and Unit	Electrically operated with shadow less lamp, spittoon, 3 way syringe, instrument tray and motorized suction	One chair & unit per PG student and Two chairs with unit for the faculty		
2.			1 Unit	2 Units	
3.	Vacuum/pressure moulding unit		1	1	
4.	Hydrogen soldering unit		1	1	
5.	Lab infeno motor		3	5	
6.	Spot welders		3	5	
7.	Model trimmer (Double disc)		2	3	
8.	Light curing unit		2	2	
9.	High intensity light curing unit		1	2	
10.	Polishing lathes		2	3	
11.	Tracing tables		3	5	
12.	SLR digital camera		1	1	
13.	Scanner with transparency adapter		1	1	
14.	X ray viewer		3	4	
15.	LCD projector		1	1	
16.	Autoclaves for bulk instrument Sterilization vacuum (front loading)		1	1	
17.	Needle destroyer		1	1	
18.	Dry heat sterilizer		1	1	
19.	Ultrasonic sealer		1	1	
20.	Sets of Orthodontic pliers		3	3	
21.	Orthodontic impression trays		3	5	
22.	Ultrasonic cleaner capacity 3.5 lts		1	1	
23.	Electropolisher		1	1	
24.	Typodonts with full teeth set		3	3	
25.	Anatomical articulator with face bow attachments		1	1	
26.	Free plane articulators		1	1	
27.	Hinge articulators		4	4	
28.	Computer software for cephalometrics		1	1	
29.	Computer with internet connection with attached printer and scanner		1	1	
30.	Refrigerator		1	1	

**DEPARTMENT: ORAL & MAXILLOFACIAL PATHOLOGY AND ORAL MICROBIOLOGY**

S. No.	NAME	SPECIFICATION	Quantity		Availability
			1 Unit	2 Units	
1.	Dental Chairs and Units	Electrically operated with shadow less lamp, spittoon, 3 way syringe, instrument tray and suction	3	6	

2.	Adequate laboratory glassware's as required for processing of biopsy specimens and staining.	Reasonable quantity should be made available		
3.	Adequate tissue capsules / tissue embedding cassettes	Reasonable quantity should be made available		
4.	Paraffin wax bath	thermostatically controlled	1	1
5.	Leuckhart pieces		10	10
6.	Block holders		25	25
7.	Microtome	Manual	1	1
8.	Microtome	semi automated	1	1
9.	Tissue floatation water bath	thermostatically controlled	1	1
10.	Slide warming table		1	1
11.	Steel slide racks for staining		5	5
12.	Diamond glass marker		2	2
13.	Research microscope with phase contrast, dark field, polarization, image analyzer, photomicrography attachments		1	1
14.	Multi head microscope	Penta headed	1	1
15.	Binocular compound microscope		2 for faculty and one per student	4 for faculty and one per student
16.	Stereo microscope		1	1
17.	Aluminium slide trays		5	5
18.	Wooden / plastic slide boxes		5	5
19.	Wax block storing cabinet		5,000 capacity	10,000 capacity
20.	Slide storing cabinet		5,000 capacity	10,000 capacity
21.	Refrigerator		1	1
22.	Pipettes		5	5
23.	Surgical kit for biopsy		3	6
24.	Immunohistochemistry lab		1	1
25.	Computer with Internet Connection with attached printer and scanner		1	1
26.	LCD projector		1	1
27.	<b>Desirable Equipment</b>			
28.	Cryostat		1	1
29.	Fluorescent microscope		1	1
30.	Hard tissue microtome		1	1
31.	Tissue storing cabinet (frozen)		1	1
32.	Microwave		1	1

**DEPARTMENT : PUBLIC HEALTH DENTISTRY**

S. No.	NAME	SPECIFICATION	Quantity	Availability
<b>Instruments in the department for comprehensive Oral health care programme</b>				
1.	Dental chairs	Electrically operated with shadowless lamp, spittoon, 3 way syringe, instrument tray and motorized suction, micromotor attachment	One chair and unit per post graduate student and one chair with unit for	

		with contra angle handpiece,airroter attachment, ultrasonic scaler (Piezo) with detachable autoclavable hand piece with min 3 tips.	the faculty		
2.	Extraction forceps		1 Unit	2 Units	
3.			4 sets	6 sets	
4.		Filling instruments		4 sets	6 sets
5.	Scaling instruments	Supra gingival scaling	4 sets	6 sets	
6.	Amalgamator		1	1	
7.	Pulp tester		1	1	
8.	Autoclave		1	1	
9.	X ray viewer		1	1	
10.	Instrument cabinet		1	1	
11.	LCD or DLP multimedia projector		1	1	
	Computer with internet connection with attached printer and scanner		1	1	
13.	<b>For peripheral dental care or field programme</b>				
14.	Staff bus		1	1	
15.	Mobile dental clinic fitted with at least 2 dental chairs with complete dental unit with fire extinguisher		1	1	
16.	Ultrasonic scaler,		1	2	
17.	Ultrasonic cleaner capacity 3.5 lbs		1	1	
18.	Compressor	One with chair			
19.	Generator		1	1	
20.	Public address system, audio-visual aids		1	1	
21.	Television		1	1	
22.	Digital Versatile Disc Player		1	1	
23.	Instrument cabinet, emergency medicine kits, Blood pressure apparatus		1	1	
24.	Portable oxygen cylinder		1	1	
25.	Portable chair		1	1	
26.	Refrigerator		1	1	

**DEPARTMENT : PAEDODONTICS AND PREVENTIVE DENTISTRY**

S. No.	NAME	SPECIFICATION	Quantity	Availability
1	Dental Chairs and Units	Electrically operated with shadowless lamp, spittoon, 3 way syringe, and motorised suction.	One chair and unit per post-graduate student and Two chairs with unit for the faculty	

2.		micromotor attachment with contra angle miniature handpiece, arotor attachment with miniature handpiece. dental operator stool (40% dental chairs shall be pedo chairs)	1 Unit	2 Units
3.	Pedo extraction forceps sets		3	4
4.	Autoclaves for bulk instrument sterilization vacuum (front loading)		1	2
5.	RVCi with intra oral x-ray unit		1	1
6.	Automatic developer		1	1
7.	Pulp tester		2	3
8.	Apex locator		1	1
9.	Rubber dam kit	One set per student	1	1
10.	Injectable GP condenser		1	1
11.	Endodontic pressure syringe		1	1
12.	Glass bead steriliser		2	4
13.	Spot welder		2	3
14.	Ultrasonic scalers		2	4
15.	Needle destroyer		1	1
16.	Formulan chamber		1	1
17.	Ultrasonic cleaner capacity 3.5 lts		1	1
18.	X-ray viewer		2	3
19.	Amalgamator		1	2
20.	Plaster dispenser		2	2
21.	Dental lathe		1	2
22.	Vibrator		2	3
23.	Typodonts	One set per student	1	1
24.	Soldering unit		1	1
25.	Band punching beak pliers		2 Sets	2 Sets
26.	Proximal contouring pliers		2	3
27.	Crown crimping pliers		2	3
28.	Double beak pliers anterior and posterior		2	3
29.	Lab micro motor		2	3
30.	Acryliser		1	2
31.	Magnifying loupes		1	1
32.	Conscious sedation unit	Desirable	1	1
33.	Pulse oxymeter		1	1
34.	Phantom head table with attached Light, Arotor and micro motor	One set per each P.G. Student	1	1
35.	Computer with internet connection with attached printer and scanner		1	1
36.	LCD projector		1	1
37.	Refrigerator		1	1

#### **DEPARTMENT: ORAL MEDICINE AND RADIOLOGY**

S. No.	NAME	SPECIFICATION	Quantity	Availability
1.	Dental Chairs and Units	Electrically operated with shadowless lamp, spittoon, 3 way syringe,	One chair and unit per post-graduate student and one chair with unit	

2.		instrument tray and suction	for the faculty	
			1 Unit	2 Units
3.	RVC with intra-oral radiography machine (FDA Approved)	55-70 kVp with digital compatibility	1	1
4.	Extra-oral radiography machine	100 kcp	1	1
5.	Panoramic radiography (OPG) machine with cephalometric and TMJ attachment with printer	Digital compatibility	1	1
	Intra-oral camera		1	2
	Pulp tester		2	4
	Autoclave		1	1
	Punch biopsy tool		2	3
	Biopsy equipment		1	2
	Surgical trolley		2	2
	Emergency medicines kit		1	1
	Extra-oral cassettes with intensifying screens (Conventional and rare earth)		4	6
	Lead screens		2	2
	Lead aprons		2	2
	Lead gloves		2	2
	Radiographic filters (Conventional and rare earth)		1	1
	Dark room with safe light facility		1	1
	Automatic radiographic film processors		2	2
	Radiographic film storage lead containers		1	1
	Thyroid collars		1	1
	Digital sphygmomanometer		1	1
	Digital blood glucose tester		1	1
	Digital camera		1	1
	X-ray viewer boxes		2	3
	Lacrimal probes		2 sets	2 Sets
	Sialography cannula		2 sets	2 Sets
	Illuminated mouth mirror and probe		2	2
	Computer with internet connection with attached printer and scanner		1	1
	LCD projector		1	1
	Refrigerator		1	1

Note: Any regulations, clause which is not mentioned in the above, shall be as per the DCI – MDS Regulations notified vide ref No. DE-87-2017, Dated 1st September 2017.

