

# **SRI BALAJI VIDYAPEETH, PONDICHERRY**

ACCREDITED BY NAAC WITH 'A' GRADE

**MAHATMA GANDHI MEDICAL COLLEGE & RESEARCH INSTITUTE CAMPUS**

PILLAYARKUPPAM, PUDUCHERRY - 607403

**INDIRA GANDHI INSTITUTE OF DENTAL SCIENCES**



**MASTER OF DENTAL SURGERY  
(MDS)**

**SYLLABUS, RULES AND REGULATIONS  
2018 – 2019 ONWARDS**

## ANNEXURE

Rules, regulation and curriculum of Balaji Vidyapeeth University have been placed before the Standing Academic Board, consisting of the following Internal & External Members.

- Chair Person : **Dr. R. Saravanakumar**  
Principal, IGIDS
- Internal Members : **Dr. Sanguida.A,**  
Dy. Registrar, IGIDS
- Dr. S. Sivasenthil,**  
Dy. COE, IGIDS
- Associate Professors : **Dr. Premlal,** Oral Pathology  
**Dr. Shivasakthy,** Prosthodontics
- Assistant Professors : **Dr. Padmaraj,** Conservative Dentistry  
**Dr. Sivaramakrishnan,** Oral Pathology

### Department of Conservative Dentistry and Endodontics

- External Members : **Dr. H.Murali,**  
Prof. Conservative Dentistry & Endodontics,  
RV Dental College, Bangalore
- Internal Members : **Dr. Karpagavinayagam,**  
HOD, Conservative Dentistry & Endodontics
- Dr. Bindu Meera John,**  
Reader, Conservative Dentistry & Endodontics

### Department of Oral and Maxillofacial Surgery

- External Members : **Dr. N.J. Eswari,** Professor,  
Dept. of Oral & Maxillofacial Surgery, MGPGI
- Internal Members : **Dr. R. Sathyanarayanan,** HOD,  
Oral & Maxillofacial Surgery
- Dr. Yuvaraj.V,**  
Prof. Oral & Maxillofacial Surgery

### Department of Oral Medicine and Radiology

- External Members : **Dr. Ravi David Austin,**  
Prof. & Head, Dept. of Oral Medicine &  
Radiology, RMDCH, Annamalai University.
- Internal Members : **Dr. Vishwanath Rangdhol,** HOD, Oral Medicine  
**Dr. Vandana,** Reader, Oral Medicine

### Department of Oral Pathology and Microbiology

- External Members : **Dr. R.Madhavan Nirmal,**  
Prof & Head, Dept. of Oral Pathology.  
RMDCH, Annamalai

Internal Members : **Dr. Santhadevy.A**, Prof. & Head,  
Dept. of Oral Pathology and Microbiology  
**Dr. Vezhavendhan.N**,  
Prof. Dept. of Oral Pathology and Microbiology

#### **Department of Orthodontics & Dentofacial Orthopedics**

External Members : **Dr. Kurunji Kumaran**,  
Associate Prof., Dept. of Orthodontics,  
RMDCH, Annamalai

Internal Members : **Dr. R.S.Senkutavan**, HOD,  
Orthodontics & Dentofacial Orthopedics  
**Dr. Pradeep Babu**, Reader,  
Orthodontics & Dentofacial Orthopedics

#### **Department of Paedodontics & Preventive Dentistry**

External Members : **Dr. Sharath Asokan**,  
Prof. & Head, Dept of Pedodontics,  
KSR Institute of Dental Sciences, Tiruchengode.

Internal Members : **Dr. Prathima.G.S**, Prof. & Head,  
Dept. of Paedodontics & Preventive Dentistry  
**Dr. Kayalvizhi**,  
Prof. Paedodontics & Preventive Dentistry

#### **Department of Periodontology**

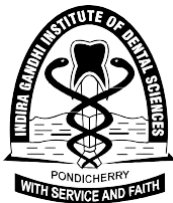
External Members : **Dr. Harinath Parthasarathy**,  
Prof. Dept of Periodontology,  
SRM Ramapuram, Chennai

Internal Members : **Dr. Saravanakumar.R**,  
Prof. & Head, Dept. of Periodontology  
**Dr. Pratebha.B**,  
Prof. Dept. of Periodontology

#### **Department of Prosthodontics and Crown and Bridge**

External Members : **Dr. Seyed Ashraf Ali**,  
Prof., Dept. of Prosthodontics, RMDCH, Annamalai

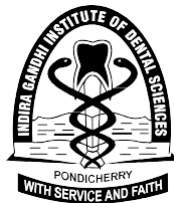
Internal Members : **Dr. Manoharan.P.S**,  
Prof. & Head, Dept. of Prosthodontics  
and Crown and Bridge  
**Dr. Varsha Murthy**,  
Prof. Prosthodontics & Crown & Bridge



# INDIRA GANDHI INSTITUTE OF DENTAL SCIENCES

## CONTENTS

Sl.No.	TITLE	Page No.
1	<b>Introduction</b>	7
2	<b>Examinations</b>	11
3	<b>Goals &amp; objectives of the MDS Curriculum</b>	17
4	<b>Specialities for the MDS Degree</b>	19
5	<b>Teaching/ Learning activities</b>	20
6	<b>Check list and log book details</b>	23
7	<b>Prosthodontics &amp; Crown &amp; Bridge</b>	30
	<b>Course content</b>	34
	<b>Teaching &amp; Learning activities</b>	49
	<b>Learning resource materials– Books and Journals</b>	62
	<b>Scheme of Examination</b>	65
8	<b>Periodontology</b>	69
	<b>Course content</b>	72
	<b>Teaching &amp; Learning activities</b>	78
	<b>Learning resource materials– Books and Journals</b>	82
	<b>Scheme of Examination</b>	85
9	<b>Oral &amp; Maxillofacial Surgery</b>	89
	<b>Course content</b>	92
	<b>Teaching &amp; Learning activities</b>	98
	<b>Learning resource materials– Books and Journals</b>	110
	<b>Scheme of Examination</b>	113
10	<b>Conservative Dentistry &amp; Endodontics</b>	116
	<b>Course content</b>	119
	<b>Teaching &amp; Learning activities</b>	125
	<b>Learning resource materials– Books and Journals</b>	129
	<b>Scheme of Examination</b>	132
11	<b>Orthodontics &amp; Dentofacial Orthopedics</b>	136
	<b>Course content</b>	139
	<b>Teaching &amp; Learning activities</b>	146
	<b>Learning resource materials– Books and Journals</b>	153
	<b>Scheme of Examination</b>	156
12	<b>Oral and Maxillofacial Pathology &amp; Oral Microbiology</b>	160



## INDIRA GANDHI INSTITUTE OF DENTAL SCIENCES

	<b>Course content</b>	<b>164</b>
	<b>Teaching &amp; Learning activities</b>	<b>170</b>
	<b>Learning resource materials– Books and Journals</b>	<b>175</b>
	<b>Scheme of Examination</b>	<b>178</b>
<b>13</b>	<b>Paedodontics &amp; Preventive Dentistry</b>	<b>181</b>
	<b>Course content</b>	<b>184</b>
	<b>Teaching &amp; Learning activities</b>	<b>189</b>
	<b>Learning resource materials– Books and Journals</b>	<b>194</b>
	<b>Scheme of Examination</b>	<b>197</b>
<b>14</b>	<b>Oral Medicine &amp; Radiology</b>	<b>201</b>
	<b>Course content</b>	<b>203</b>
	<b>Teaching &amp; Learning activities</b>	<b>211</b>
	<b>Learning resource materials– Books and Journals</b>	<b>214</b>
	<b>Scheme of Examination</b>	<b>217</b>

# **INTRODUCTION**

## **SALIENT FEATURES OF POSTGRADUATE DENTAL EDUCATION SYLLABUS & REGULATIONS**

In exercise of the powers conferred by Ministry of Human Resources Development Notification No.F.9-53/2005-u-3 dated 20/7/09 and after the declaration of Indira Gandhi Institute of Dental Sciences as constituent teaching units under the ambit of the Deemed University Sri Balaji Vidyapeeth, the Standing Academic board hereby make the following Rules and Regulations :

### **SHORT TITLE AND COMMENCEMENT :**

These regulations shall be called :

#### **THE RULES AND REGULATIONS FOR THE MASTER OF DENTAL SURGERY DEGREE COURSE OF INDIRA GANDHI INSTITUTE OF DENTAL SCIENCES OF SBV.**

They shall come into force from the academic year 2017-18 sessions. The regulations and the syllabus are subject to modification by the Standing Academic Board from time to time.

### **ELIGIBILITY :**

A candidate for admission to the Master in Dental Surgery course, must possess a recognised degree of Bachelor in Dental Surgery awarded by a university or institute in India and registered with the State Dental Council and has obtained provisional or permanent registration and has undergone compulsory rotatory internship of a year in an approved/recognised dental college:

Provided that in the case of a foreign national, the following procedure shall be followed:-

The Council may, on payment of the prescribed fee for registration, grant temporary registration for the duration of the post-graduate training restricted to the dental college/institution to which he or she is admitted for the time being exclusively for post-graduate studies:

Provided further that temporary registration to such foreign national shall be subject to the condition that such person is duly registered as medical practitioner in his/her own country from which he/she has obtained his/her basics dental qualification and that his/her degree is recognized by the corresponding state dental council or concerned authority.

### **SELECTION OF POSTGRADUATE STUDENTS :**

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 National Board of Examination or any other authority appointed by the Central Government in this behalf. The overall superintendence, direction and control of the NEET shall vest with the Council.

### **QUALIFYING CRITERIA FOR ADMISSION TO POST-GRADUATE COURSES.**

1. The candidate has to secure the following category-wise minimum percentile in NEET for admission to post-graduate courses held in a particular academic year.

General	50th Percentile
Person with locomotory disability of lower limbs	45th Percentile
Scheduled Castes, Scheduled Tribes, Other Backward Classes	40th Percentile

Provided that the percentile shall be determined on the basis of highest marks secured in the All-India common merit list in NEET for post-graduate courses :

Provided further, that when sufficient number of candidates in the respective categories fail to secure minimum marks as prescribed in NEET held for any academic year for admission to post-graduate courses, the Central Government in consultation with the Council may, at its discretion lower the minimum marks required for admission to post-graduate courses for candidates belonging to respective categories and marks so lowered by the Central Government shall be applicable for the said academic year only.

2. The reservation of seats in dental college/institutions for respective categories shall be as per applicable laws prevailing in States/Union territories. An all India merit list as well as State-wise merit list of the eligible candidates shall be prepared on the basis of the marks obtained in NEET Test and candidates shall be admitted to post-graduate courses from the said merit list only:

Provided that in determining the merit of candidates who are in service of Government / public authority, weightage in the marks may be given by the Government/competent authority as an incentive upto 10% of the marks obtained for each year of service in remote and/or difficult areas upto the maximum of 30% of the marks obtained in NEET. The remote and difficult areas shall be as defined by State Government /competent authority from time to time.

3. A candidate who has failed to secure the minimum percentile as prescribed in these regulations, shall not be admitted to any post-graduate courses in any academic year.
4. Minimum 5% seats of the annual sanctioned intake capacity shall be filled up by candidates with locomotory disability of lower limbs between 50% to 70%:

Provided that in case any seat in this quota remains unfilled on account of unavailability of candidates with locomotory disability of lower limbs between 50% to 70% then any such unfilled seat shall be filled up by persons with locomotory disability of lower limbs between 40% to 50% - before they are included in the annual sanctioned seats for general category candidates:

Provided further that this entire exercise shall be completed by each dental college/institution as per the statutory time schedule for admissions.

#### **COMMENCEMENT OF ACADEMIC SESSION AND CUT-OFF DATE FOR ADMISSION.**

1. The academic session shall be commenced from 1st of May and the cut-off date for admission, even for stray vacancies, in the Master of Dental Surgery course shall be 31st of May, every year. The universities and other institutions shall start the admission process in such a way that teaching in postgraduate courses starts by 1st May each year for which they shall strictly adhere to the time schedule specified in the Dental Council of India (Establishment of new dental colleges, opening of higher courses of study and increase of admission capacity in existing dental colleges) Regulations, 2006.
2. There shall be no admission of students in respect of any academic session beyond the 31st May for post-graduate courses under any circumstances. The universities or institute shall not register any student beyond the said date; in case, any institution which grants admission to any student after the last date specified for the same shall also be liable to face such action including surrender of seats equivalent to the extent of such admission made from its sanctioned intake capacity for the succeeding academic year.



3. The Council may direct, that any student identified as having obtained his/her admission after the last date for closure of admission be discharged from the course of study, or any dental qualification granted to such a student shall not be a recognised qualification for the purpose of the Act.

#### **COMMON COUNSELING.**

1. There shall be a common counseling for admission to all post-graduate courses (Diploma / MDS) in all dental educational institutions on the basis of merit list of the NEET.
2. The designated authority for counseling for the 50% All India Quota seats of the contributing States, as per the existing scheme for post graduate (Diploma/MDS) courses shall be the Directorate General of Health Services, Ministry of Health and Family Welfare, Government of India. Further Directorate General of Health Services, Ministry of Health and Family Welfare, Government of India shall conduct counseling for all post-graduate (Diploma/MDS) Courses in Dental Educational Institutions of the Central Government, Universities established by an Act of Parliament and the Deemed Universities.
3. The counseling for admission to post-graduate (Diploma/MDS) courses in all dental Educational Institutions in a State/Union Territory, including dental educational institutions established by the State Government, University established by an Act of State/Union Territory Legislature, Trust, Society, Minority Institutions shall be conducted by the State/Union Territory Government.
4. In case, any dispute arises on such common counseling, the matter to the Central Government and its decisions shall be final, in this regard.

#### **INFORMATION ON ADMISSION AND SCHEDULE OF EXAMINATION.**

Every dental institution and its affiliating university shall furnish information on admissions in the courses of study, schedule of examinations to the Council, in such form as the Council may specify, within stipulated period from time to time.

#### **PERIOD OF TRAINING:**

1. The period of training for the award of the MDS course shall be of three years duration for three academic years as full time candidates in an institution including the period of examination:

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:

Provided further that the duration of the post-graduate course for the post-graduate Diploma holders shall be of two years in the respective speciality.

The syllabus and curriculum shall be the same as MDS Course in the concerned speciality except that they are not required (i) to undergo study and training in Basic Sciences and (ii) pass the PART-I Examination of MDS Course. However, they have to submit the dissertation work, as part of the post-graduate programme.

#### **GENERAL :**

1. The institutions recognised by the Central Government and after consultation with the Council shall be eligible for conducting the post-graduate degree or diploma course(s).
2. The maximum number of students for a post-graduate course, for training for the award of post-graduate degree or diploma by the affiliating university, shall be determined by

the facilities available in the department in terms of infrastructure, teaching staff and clinical teaching material. However, to start with, a maximum of three postgraduate students, (one Unit) shall be permitted in a speciality department. The annual intake capacity recommended by the Council and approved by the Central Government for the academic year shall be final. No institution shall be permitted to increase more than three seats at a time in its annual intake capacity in a particular speciality in a given academic year. Not more than two units consisting of six seats (including increase of seats) shall be granted to any dental institutions for each speciality.

3. The students undergoing post-graduate courses shall be exposed to the following:—
  - i. basics of bio-statistics and research methodology;
  - ii. basics of human behaviour studies;
  - iii. basics of pharmaco-economics;
  - iv. introduction to the non-linear mathematics.

#### **ETHICS IN DENTISTRY.**

There is a definite shift from the traditional patient and doctor relationship and delivery of dental care. With the advances in science and technology and the increasing needs of the patient, their families and community, there is a concern for the health of the community as a whole. There is a shift to greater accountability to the society. Dental specialists like the other health professionals are confronted with many ethical problems. It 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.

#### **STIPEND :**

The MDS students shall be paid stipend only for duration of three years of the course, as may be fixed by the Central Government / respective State Government / Union Territory Administration or such authority as the respective government / administration may authorize. Where any dispute arises regarding any such stipend, including, quantum of the stipend, it shall be considered and decided by the Central Government / respective State Government / Union Territory Administration at its own level and its decision shall be final.

### **ELIGIBILITY :**

The following requirements should be fulfilled by every candidate to become eligible to appear for the final examination

### **ATTENDANCE:**

Every candidate should have fulfilled the minimum attendance prescribed by Dental Council of India and respective University (80% of the attendance during each academic year of postgraduate course).

**PROGRESS AND CONDUCT :** Every candidate should have participated in seminars, journal review meetings, symposia, conferences, case presentations, clinics and didactic lectures during each year as designed by the concerned department.

**WORK DIARY AND LOG BOOK :** Every candidate shall maintain a work diary and log book for recording his/ her participation in the training programs conducted by the department. The work diary and log book shall be verified and certified by the Head of the department and Head of the institution. The certification of satisfactory progress is based on the work diary and log book.

### **DISSERTATION :**

The Dissertation work should have been accepted by the University which appoints the examiners.

### **UNIVERSITY EXAMINATION :**

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

#### **i. Theory :**

Part-I : Shall consist of one paper

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 concerned Department/ Specialty.

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 : Shall consist of three papers, namely- Paper-I, Paper-II & Paper-III

**ii. Practical and Clinical Examination;**

**iii. Viva-voce; and**

**iv. Pedagogy.**

A candidate who wishes to study in a second speciality, shall have to undergo the full course of three years duration in that speciality.

### **DISSERTATION :**

Every candidate appearing for the MDS degree examination for the first time shall submit with his application for the admission to the Examination, four typewritten copies of a Dissertation of a research topic undertaken by the candidate and prepared under the

direction and guidance and to the satisfaction of his University teacher. The Dissertation should be submitted 6 months prior to the MDS examination. The Dissertation shall be referred to the examiners for the MDS examination and acceptance of it by the examiners shall be a precondition to the admission of the candidate to the written part of the examination.

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

#### **SCHEME OF WRITTEN EXAMINATION :**

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-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:

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**

Paper-I : Removable Prosthodontics and Implant supported prosthesis (Implantology), Geriatric dentistry and Cranio facial Prosthodontics

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

Paper-III : Essays

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

#### **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**

**CLINICAL /PRACTICAL EXAMINATION :**

Clinical/practical examination is designed to test the clinical skill, performance and competence of the candidate in skills such as communication, clinical examination, medical/dental procedures or prescription, exercise prescription, latest techniques, evaluation and interpretation of results so as to undertake independent work as a specialist. The affiliating university shall ensure that the candidate has been given ample opportunity to perform various clinical procedures.

The practical/clinical examination in all the specialities shall be conducted for six candidates in two days :

Provided that practical/clinical examination may be extended for one day, if it is not complete in two days.

**VIVA VOCE EXAMINATION :**

Viva voce examination shall aim at assessing depth of knowledge, logical reasoning, confidence and verbal communication skills.

Two set of examiners shall conduct the viva voce at a time as two teams, each team for 20 minutes. When one examiner is conducting the viva, the other examiner could make a note of the questions asked and the performance level to enable proper assessment and award of marks.

**EXAMINERS :**

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

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

**QUALIFICATION AND EXPERIENCE FOR EXAMINERS :**

The qualification and experience for appointment of an examiner shall be as under:-

- i. shall possess qualification and experience of a Professor in a post-graduate degree programme;
- ii. a person who is not a regular post-graduate teacher in the subject shall not be appointed

as an examiner;

- iii. the internal examiner in a subject shall not accept external examinership in a college for the same academic year;
- iv. no person shall be appointed as an external examiner for the same institution for more than two consecutive years. However, if there is a break of one year, the person can be re-appointed

### **VALUATION OF ANSWER BOOKS :**

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

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

### **CRITERIA FOR DECLARING AS 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.

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

### **MIGRATION**

Under no circumstances, the migration or the transfer of students undergoing post-graduate Degree/Diploma shall not be permitted by the university or the authority. No inter-change of the speciality in the same institution or in any other institution shall be permitted after the date of the commencement of session.

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

#### **PROSTHODONTICS AND CROWN & BRIDGE**

##### **Part-I**

Paper-I : Applied Basic Sciences: Applied anatomy, embryology, growth and development Genetics, Immunology, anthropology, Physiology, nutrition and Biochemistry, Pathology 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 prosthesis(Implantology), Geriatric dentistry and Cranio facial Prosthodontics

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

Paper-III : Descriptive and analysing 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 analysing 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 analysing type question

**vii. PAEDODONTICS & PREVENTIVE 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 analysing type question

**viii. 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 analysing type question



# Goals And Objectives Of The MDS Curriculum

---

## GOALS :

The goals of Postgraduate training in various specialties is to train BDS graduate who will -

- Practice respective speciality efficiently and effectively, backed by scientific knowledge and skill.
- Exercise empathy and a caring attitude and maintain high ethical standards.
- Continue to evince keen interest in continuing professional education in the speciality and allied specialities irrespective of whether in teaching or practice.
- Willing to share the knowledge and skills with any learner, junior or a colleague.
- To 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 speciality practice. A candidate must achieve a high degree of clinical proficiency in the subject matter and develop competence in research and its methodology as related to the field concerned.

The above objectives are to be achieved by the time the candidate completes the course. The objectives may be considered as under:-

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

## KNOWLEDGE

- Demonstrate understanding of basic sciences relevant to speciality.
- Describe etiology, pathophysiology, principles of diagnosis and management of common problems within the 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 speciality/ competence and to refer them to an appropriate specialist.
- Update knowledge by self-study and by attending courses, conference and seminars relevant to speciality.
- Undertake audit, use information technology and carryout research, both basic and clinical, with the aim of publishing or presenting the work at various scientific gatherings.

## SKILLS

- 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.

- Acquire adequate skills and competence in performing various procedures as required in the speciality.

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

- Adopt ethical principles in all aspects of practice.
- Professional honesty and integrity are to be fostered.
- Patient care is to be delivered irrespective of social status, caste, creed or religion of the patient.
- Develop communication skills 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.

### **SPECIALITIES FOR THE MDS DEGREE**

1. Prosthodontics and Crown & Bridge
2. Periodontology
3. Oral and Maxillofacial Surgery
4. Conservative Dentistry and Endodontics
5. Orthodontics & Dentofacial Orthopedics
6. Oral Pathology & Microbiology
7. Paedodontics & Preventive Dentistry
8. Oral Medicine & Radiology

### **DEFINITIONS OF VARIOUS SPECIALITIES**

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

Prosthodontics and Crown & Bridge and Oral Implantology is 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 and Maxillofacial Surgery**

Oral and maxillofacial surgery and Implantology deals with 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, along with restoration of those teeth to normal form function and aesthetics.

#### **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 & Maxillofacial Pathology and Oral Microbiology**

Oral & Maxillofacial Pathology and Oral Microbiology 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. Paedodontics and preventive dentistry**

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

#### **8. Oral Medicine and Radiology**

Oral medicine is that specialty of dentistry concerned with the basic diagnostic procedure and techniques useful in recognizing the disease of the oral tissues of local and constitution origin and their medical management Radiology is a science dealing with x-rays and their uses in diagnosis and treatment diseases in relation of orofacial diseases.



# **TEACHING AND LEARNING ACTIVITIES**



All the candidates registered to 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 and teaching activities designed by the institution / University.

### **1. Lectures**

There shall be some didactic lectures in the speciality and in the allied fields. The departments shall encourage guest lectures in the required areas and integrated lectures by multi-disciplinary teams on selected topics, to strengthen the training programmes.

### **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 log book. The trainee should make presentation from the allotted journals of selected articles.

### **3. Seminars**

The seminars shall be held at least twice a week in each postgraduate department. All trainees are expected to participate actively and enter relevant details in logbook.

### **4. Symposium**

It is recommended to hold symposium on topics covering multiple disciplines

### **5. 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.

### **6. Clinic pathological conference**

The clinico pathological conferences should be held once in a month involving the faculties or Oral medicine and Radiology, Oral Pathology and allied clinical department. The trainees should be encouraged to present the clinical details, radiological and histopathological interpretations and participation in the discussions.

### **7. Interdepartmental meetings**

To bring in more integration among various specialties there shall be inter departmental meetings chaired by the dean with all Heads of PG departments at least once a month.

### **8. Teaching skills**

All the trainees shall be encouraged to take part in UG teaching programs either in the form of lectures or group discussions

### **9. Dental Education Programmes**

Each PG department shall organize these programs on regular basis involving the other institutions. The trainees shall also be encouraged to attend such programs conducted outside their university or institute.

### **10. Conferences/ workshops / advanced courses**

The trainees shall be encouraged to attend conference / workshops / advanced courses and also to present at least two scientific papers and two posters at State / national level speciality and allied conferences / conventions during the training period.

### **11. Rotation & posting in other departments**

To bring in more integration between the specialty and allied fields each postgraduate department shall work out a program to rotate the trainees in related disciplines

## 12. Dissertation / thesis

Trainees shall prepare a Dissertation based on the clinical or experimental work or any other study conducted by them under the supervision of the postgraduate guide.

**All the students of the speciality departments shall complete the minimum quota for the teaching and learning activities, as follows :-**

1	Journal Clubs	5 in a year
2	Seminars	5 in a year
3	Clinical Case Presentations	4 in a year
4	Lectures taken for undergraduates	1 in a year
5	Scientific Paper / Poster Presentations In State / National Level Conferences	4 papers / posters during three years of training workshop period
6	Clinico Pathological Conferences:	2 presentations during three years of training period
7	Scientific Publications (optional)	one publication in any indexed scientific journal
8	Submission of Synopsis	one synopsis within six months from the date of commencement of the course
9	Submission of Dissertation months	one dissertation within six before appearing for the university examination
10	Submission of Library Dissertation	one dissertation within eighteen months from the date of commencement of the course



# **CHECK LISTS AND LOG BOOK**



### Checklist - 1

#### MODEL CHECK LIST FOR EVALUATION OF JOURNAL REVIEW 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	Article chosen was					
2	Extent of understanding of scope & objectives of the paper by the candidate					
3	Whether cross references have consulted					
4	Whether other relevant publications consulted					
5	Ability to respond to questions on the paper/subject					
6	Audio visual aids used					
7	Ability to defend the paper					
8	Clarity of presentation					
9	Any other observation					
	<b>Total Score</b>					

### 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					
	<b>Total Score</b>					

**Checklist – 3**

**MODEL CHECK LIST FOR EVALUATION OF CLINICAL WORK IN OPD**

(To be completed once a month by respective unit heads including posting in other department)

Name of the trainee :

Date :

Name of the unit head :

Sl.No	Items for observation during presentation	Poor 0	Below average 1	Average 2	Good 3	Very good 4
1	Regularity of attendance					
2	Punctuality					
3	Interaction with colleagues and supportive staff					
4	Maintenance of case records					
5	Presentation of cases					
6	Investigations work up					
7	Chair side manners					
8	Rapport with patients					
9	Overall quality of clinical work					
	<b>Total score</b>					

**Checklist – 4**

**EVALUATION OF CLINICAL CASE PRESENTATION :**

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	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	Diagnosis: whether it follows logically from history and findings					
8	Investigations required					
	Complete list					
	Relevant order					
	Interpretation of investigations					
9	Ability to react to questioning whether it follows logically from history and findings					
10	Ability to defend diagnosis					
11	Ability to justify differential diagnosis					
12	Others					
	<b>Grand Total</b>					

**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	Items for observation during presentation	Poor 0	Below average 1	Average 2	Good 3	Very good 4
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	Speaking style (enjoyable, monotonous etc-specify)					
7	Attempts audience participation					
8	Summary of the main points at the end					
9	Asks questions					
10	Answers questions by the audience					
11	Rapport of speaker with his audience					
12	Effectiveness of the talk					
13	Uses AV aids appropriately					

**Checklist – 6**

**MODEL CHECK LIST FOR DISSERTATION PRESENTATION :**

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	Interest shown in selecting topic					
2	Appropriate review					
3	Discussion with guide and other faculty					
4	Quality of protocol					
5	Preparation of proforma					
	<b>Total Score</b>					

**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	Quality of final output						
5	Others						
	<b>Total Score</b>						

**Checklist – 8**

**OVERALL ASSESSMENT SHEET**

Date :

Sl.No	Faculty member	Name of the trainee and mean score									
		A	B	C	D	E	F	G	H	I	J
1											
2											
3											
4											
5											
6											

Signature of the HOD

Signature of the 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.

**Key :**

**Faculty members :** Name of the faculty doing the assessment

**Mean Score :** Is the sum of all scores of checklists 1 to 7

**A,B,.....:**Name of the trainees

**LOG BOOK**

**TABLE 1 : ACADEMIC ACTIVITIES ATTENDED**

Name :

College :

Admission year :

Date	Type of activity – specify seminar, journal club, presentation, UG teaching	Particulars

**TABLE - 2**  
**ACADEMIC PRESENTATIONS MADE BY THE TRAINEE**

Name :

College :

Admission year :

Date	Topic	Type of activity – specify seminar, journal club, presentation, UG teaching etc

**TABLE - 3**  
**DIAGNOSTIC AND OPERATIVE PROCEDURES PERFORMED**

Name :

College :

Admission year :

Date	Name	Op no	Procedure	Category O,A,PP,PI

**KEY :**

O – Washed up and observed - initial 6 months of admission

A – Assisted a more senior surgeon – I year MDS

PA – Performed procedure under the direct supervision of a senior surgeon II year MDS

PI – Performed independently – III year MDS



# **PROSTHODONTICS AND CROWN & BRIDGE**



## PROSTHODONTICS AND CROWN & BRIDGE

Prosthodontics is the dental specialty pertaining to the diagnosis, treatment planning, rehabilitation and maintenance of the oral function, comfort, appearance and health of patients with clinical conditions associated with missing or deficient teeth and / or Maxillofacial tissues using biocompatible substitute.

### OBJECTIVES :

- Training programme in Prosthetic 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, educational and environmental background of the society.
- To have acquired adequate knowledge and understanding of applied basic and systemic medical science, knowledge in general and particularly of 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 specialities, to demonstrate evaluative and judgment skills in making appropriate decisions regarding prevention, treatment, after care and referral to deliver comprehensive care to patients.

### 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.

### COMMUNICATIVE 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.

**SKILLS :**

- The candidate should be able to examine the patients requiring Prosthodontics 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 lost functions of stomatognathic system namely mastication, speech, appearance and psychological comforts. By understanding biological, biomedical, bioengineering principles and systemic condition of the patient to provide a quality health care of the craniofacial region.
- The candidate should be able to interact with other speciality including 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, maxillofacial, TMJ and esthetics Prosthodontics.
- Laboratory technique management based on skills and knowledge of Dental Materials and dental equipment and instrument management.
- To understand demographic distribution and target diseases of Cranio mandibular region related to Prosthodontics.

**KNOWLEDGE :**

The candidate should possess knowledge of applied basic and systemic medical sciences.

- On human anatomy, embryology, histology, applied in general and particularly 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 applications to Dental material science.
- Ability to diagnose and planned treatment for patients requiring a Prosthodontic therapy.
- Ability to read and interpret a radiograph and other investigations for the purpose of diagnosis and treatment plan. Tooth and tooth surface restorations, Complete denture Prosthodontics, removable partial denture Prosthodontics, fixed prosthodontics and maxillofacial and Craniofacial Prosthodontics, implants and



implant supported Prosthodontics, T.M.J. and occlusion, craniofacial esthetic, and biomaterials, craniofacial disorders, problems of psychogenic origin.

- Age changes and Prosthodontic Therapy for the 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 speciality/ competence and refer them to appropriate specialists.
- Advice regarding case management involving surgical, interim treatment etc.
- Competent specialization in team management of craniofacial design.
- To have acquired adequate knowledge and understanding of applied basic and systematic medical science knowledge in general and particular to head and neck.
- Should attend continuing education programmes, seminars and conferences related to Prosthodontics, thus updating himself.
- Teach and guide his/her team, colleague and other students.
- Should be able to use information technology tools and carry out research both 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, prevention of cross infection and safe disposal of waste, keeping in view the risks of transmission of Hepatitis and HIV.
- Should have an ability to plan to establish Prosthodontics clinic/hospital teaching department and practice management.
- Should have a sound knowledge for the application of pharmacology. Effects of drugs on oral tissue and systems of a body and for medically compromised patients.
- 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 specialities to demonstrate, evaluative and judgment skills in making appropriate decisions regarding prevention, treatment after care and referral to deliver comprehensive care to patients.



# **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, Prosthodontics including Crown and Bridge Implantology and Material Science.

#### **APPLIED BASIC SCIENCES :**

- A thorough knowledge on the applied aspects of Anatomy, Embryology, Histology particularly to head and neck, Physiology, Biochemistry, Pathology, Microbiology, Virology.
- Pharmacology, Health and systematic diseases 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 Bio-medical 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 and Neck in detail. Cranial and facial bones, TMJ and function, muscles of mastication and facial expression, muscles of neck and back 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 V cranial nerve. General consideration of the structure and function of the brain. Brief considerations of V, VII, XI, XII, cranial nerves and autonomic nervous system of the head and neck. The salivary glands, Pharynx, Larynx Trachea, Esophagus, Functional Anatomy of mastication, Deglutition, speech, respiration, and circulation, teeth eruption, morphology, occlusion and function. Anatomy of TMJ, its movements and myofascial 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 characteristic 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 Inter cellular 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 NUTRITION :**

General principles, balanced diet, effect of dietary deficiencies and starvation, Diet, digestion, absorption, transportation and utilization, diet for elderly patients.

#### **APPLIED BIOCHEMISTRY :**

General principles governing the various biological activities of the body, such as osmotic pressure, electrolytic dissociation, oxidation-reduction, etc. general composition of the body, intermediary metabolism, Carbohydrates, proteins, liquids and their metabolism, Enzymes, Vitamins, and minerals, Hormones, Blood and other body fluids, Metabolism of inorganic elements, Detoxication in the body, Anti metabolites.

#### **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

## **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.

## **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

## **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.

## **ROENTGENOGRAPHIC TECHNIQUES :**

Intra oral: Extra oral roentgenography, Methods of localization digital radiology and ultra sound, Normal anatomical landmarks of teeth and jaws in radiographs, Temporo mandibular joint radiograms, neck radiographs.

## **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, premaliation, inhibition, monitoring, extubalin, 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 includes honorable 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 material 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 waster 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.**

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 on 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, 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 tone, neuromuscular co-ordination, tongue, cheek and lips.

Interpreting diagnostic findings and treatment planning

- g) Pre prosthetic surgery - Improving the patients denture bearing areas and ridge relations: - non surgical methods - rest for the denture supporting tissues, occlusal 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.

- o) 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.

- p) 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.
- q) 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.
- r) 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.
- s) 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.
- t) 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.
- u) Implant supported prosthesis for partially edentulous patients - Clinical and laboratory protocol: Implant supported prosthesis, managing problems and complications
- Introduction and Historical Review
  - Biological, clinical and surgical aspects of oral implants
  - Diagnosis and treatment planning
  - Radiological interpretation for selection of fixtures
  - Radiological interpretation for selection of fixtures
  - Splints for guidance fort 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, extracoronal 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 rests, canine rests, continuous bar retainers and linguoplates, modification areas, rugae support, direct - indirect retention.

Principles of removable partial Denture design - bio mechanic considerations, and the factors influence after mouth preparations - Occlusal relationship of remaining teeth, orientation of Occlusal plane, available space for restoration, arch integrity, tooth morphology, response of oral structure to previous stress, periodontal conditions, abutment support, tooth supported and tooth and tissue supported, need for indirect retention, clasp design, need for rebasing, secondary impression, need for abutment tooth modification, type of major connector, type of teeth selection, patients past experience, method of replacing single teeth or missing anterior teeth.

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

- c. Education of patient
- d. Diagnosis and treatment planning
- e. Design, treatment sequencing and mouth preparation

- f. Surveying - Description of dental surveyor, purposes of surveying, Aims and objectives in surveying of diagnostic cast and master cast, Final path of placement, factors that determine path of placement and removal, Recording relation of cast to surveyor, measuring retention, Blocking of master cast – paralleled blockout, shaped blockout, arbitrary blockout and relief.
- g. Diagnosis and treatment planning - Infection control and cross infection barriers - clinical and laboratory and hospital waste management, Objectives of prosthodontic treatment, Records, systemic evaluation, Oral examination, preparation of diagnostic cast, interpretation of examination data, radiographic interpretation, periodontal considerations, caries activity, prospective surgical preparation, endodontic treatment, analysis of occlusal factors, fixed restorations, orthodontic treatment, need for determining the design of components, impression procedures and occlusion, need for reshaping remaining teeth, reduction of unfavorable tooth contours, differential diagnosis : fixed or removable partial dentures, choice between complete denture and removable partial dentures, choice of materials
- h. Preparation of Mouth for removable partial dentures - Oral surgical preparation, conditioning of abused and irritated tissues, periodontal preparation - objectives of periodontal therapy, periodontal diagnosis, control therapy, periodontal surgery.
- i. Preparation of Abutment teeth - Classification of abutment teeth, sequence of abutment preparations on sound enamel or existing restorations, conservative restoration using crowns, splinting abutment teeth, utilization, temporary crowns to be used as abutment.
- j. Impression Materials and Procedures for Removable Partial Dentures - Rigid materials, thermoplastic materials, Elastic materials, Impressions of the partially edentulous arch, Tooth supported, tooth tissue supported, Individual impression trays.
- k. Support for the Distal Extension Denture Base - Distal extension removable partial denture, Factors influencing the support of distal extension base, Methods for obtaining functional support for the distal extension base.
- l. Laboratory Procedures - Duplicating a stone cast, Waxing the partial denture framework, Anatomic replica patterns, Spruing, investing, burnout, casting and finishing of the partial denture framework, making record bases, occlusion rims, making a stone occlusal template from a functional occlusal record, arranging posterior teeth to an opposing cast or template, types of anterior teeth, waxing and investing the partial denture before processing acrylic resin bases, processing the denture, remounting and occlusal correction to an occlusal template, polishing the denture.
- 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 Rebased 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 and work authorization.

## **II. 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 defects 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.

## **III. 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, Pankeymann - 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.

#### IV. 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, selection 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, removal carious, 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, gingival / periodontal prosthesis, radiographic interpretations of Periodontia, intraoral, 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, fronional half, radicular 7/8, telescopic, pin - ledge, laminates, inlays, onlays and preparations for restoration of teeth - amalgam, glass Ionomer and composite resins, Resin Bond retainers, 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 restorations.
- Resins, Gold and gold alloys, glass Ionomer, restorations.

- Restorations of endodontically treated teeth, Stomatognathic Dysfunction and management
- **Management of failed restorations**

**Osseo integrated supported fixed Prosthodontics** – Osseo integrated supported and tooth supported fixed Prosthodontics

#### **V. 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 of 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.

#### **VI. AESTHETIC**

##### **SCOPE, DEFINITIONS :**

Morpho psychology and esthetics, structural esthetic rules – facial components, dental components, gingival components and 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 materials 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**



## 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 teaching and learning activities in each speciality.

Prosthodontic treatment should be practiced by developing skills by teaching various and more number of patients to establish skill for diagnose and treatment and after care with bio-mechanical, biological, bio-esthetics, Bio-phonetics and all treatment should be carried out in more number for developing clinical skill.

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. Each 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 teaching 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, radiological and histo-pathological interpretations and participation in the discussions.
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 atleast once a month.
9. **Rural oriented prosthodontics 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 enhance their 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 to attend conference / workshops / advanced courses and also to present at least two scientific papers and two posters at State / national level speciality and allied conferences / conventions during the training period.
- 14. Rotational 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.

**All the students shall complete the minimum quota for the teaching and learning activities, as follows : -**

1	Journal Clubs	5 in a year
2	Seminars	5 in a year
3	Clinical Case Presentations	4 in a year
4	Lectures taken for undergraduates	1 in a year
5	Scientific Paper / Poster Presentations In State / National Level Conferences	4 papers/posters during three years of training workshop period
6	Clinico Pathological Conferences :	2 presentations during three years of training period
7	Scientific Publications (optional)	one publication in any indexed scientific journal
8	Submission of Synopsis	one synopsis within six months from the date of commencement of the course
9	Submission of Dissertation months	one dissertation within six before appearing for the university examination
10	Submission of Library Dissertation	one dissertation within eighteen months from the date of commencement of the course

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

- Theoretical exposure of all applied sciences of study
- Clinical and non-clinical exercises involved in Prosthodontics therapy for assessment and acquiring higher competence
- Commencement of Library Assignment within six months.
- Short epidemiological study can be done relevant to Prosthodontics.
- Geriatric psychology
- Acquaintance with books, journals and referrals to acquire knowledge of published books, journals 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 material in laboratory and clinics including testing methods for dental materials.
- Participation and presentation in seminars, didactic lectures
- Evaluation - Internal Assessment examinations on Applied subjects

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

- Acquiring confidence in obtaining various phases and techniques for providing Prosthodontic therapy.
- Acquiring confidence by clinical practice with sufficient numbers of patients requiring tooth and tooth surface restorations.
- Fabrication of Adequate number of complete denture prosthesis following, higher clinical approach by utilizing 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 partially edentulous situation
- Adequate number of Crowns, Inlays, laminates F.P.D. covering all clinical situation.
- Selection of cases and principles in treatment of partially or complete edentulous patients by implant supported prosthesis.
- Treating single edentulous arch situation by implant supported prosthesis.
- Diagnosis and treatment planning for implant prosthesis.
- Ist stage and IInd stage implant surgery
- Understanding the maxillofacial Prosthodontics
- Treating craniofacial defects

- Management of orofacial defects
- Prosthetic management of TMJ syndrome
- Occlusal rehabilitation
- Management of failed restoration
- Prosthodontics Management of patient with psychogenic disorder.
- 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
- Occlusion 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
- Partial crowns - 3/4 th, 4/5th, 7/8th, 1/2 crowns
- Pin-ledge
- Radicular crowns
- Full crowns

**3. Tooth replacements**

	<b>PARTIAL</b>	<b>COMPLETE</b>
• Tooth supported	Fixed partial denture	Overdenture
• Tissue supported	Interim partial denture	Complete denture
Intermediate partial denture	Immediate complete denture	Immediate denture
• Tooth and tissue Supported	Cast partial denture Precision attachment	Overdenture
• 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		
• Precision attachments		
• Intra coronal attachments		
• Extra coronal attachments		
• Bar – slide attachments		
• Joints and hinge joint attachments		

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

**A. Congenital Defects**

- a. Cleft lip and palate
- b. Pierre Robin Syndrome
- c. Ectodermal dysplasia
- d. Hemifacial microsomia cast partial dentures
- e. Anodontia implant supported prosthesis

- f. Oligodontia complete dentures
- g. Malformed teeth fixed partial 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 cast partial denture
- f. Maxillectomy implant supported dentures
- g. Lip and cheek support prosthesis complete dentures
- 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

## **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

## **6. Esthetic/Smile designing**

- a. Laminates / Veneers
- b. Tooth contouring (peg laterals, malformed teeth)
- c. Tooth replacements
- d. Team management

## **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

## 9. Preventive measures

- a. Diet and nutrition modulation and counseling
- b. Referrals

**The bench work should be completed before the clinical work starts during the first year of the MDS Course**

### I. Complete dentures

1. Arrangements in adjustable articulator for
  - Class I
  - Class II
  - Class III
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



1. Preparation in 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
  - Wax additive technique
  - 3-unit wax pattern (maxillary and Mandibular)
  - Full mouth
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
  - All ceramic crowns with characterisation
  - Metal ceramic crowns with characterisation
  - Full metal crown
  - Precious metal crown
  - Post and core
7. Laminates
  - Composites with characterisation
  - Ceramic with characterisation
  - Acrylic

8. Preparation for composites

- Laminates
- Crown
- Inlay
- Onlay
- Class I
- 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. Maxillectomy
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

O - Washes up and observes

A - Assists a senior

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

PI - Performs independently

PROCEDURE	CATEGORY			
	O	A	PA	PI
Tooth and tooth surface restoration				
a. Composites - fillings, laminates, inlay, onlay	2	2	2	10
b. Ceramics - laminates, inlays, onlays	2	2	2	10
c. Glass ionomer	1	1	1	10
<b>CROWNS</b>				
FVC for metal	1	2	2	10
FVC for ceramic	1	2	2	10
Precious metal crown	1		1	5
Galvanoformed crown			1	1
3/4 <sup>th</sup> crowns (premolars, canines and centrals)	1			5
7/8 <sup>th</sup> posterior crown	1			5
Proximal half crown	1			5
Pinledge and pinhole crowns	1			5
Telescopic crowns	1			5
Intradicular crowns (central, lateral, canine premolar and molar)	1			5
Crown as implant supported prosthesis	1		1	5
<b>FIXED PARTIAL DENTURES</b>				
Cast porcelain (3unit)	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 ready made precision joint or attachments	1	1	1	4
Adhesive bridge for anterior / posteriors	1		1	10
Metal fused to resin anterior FPD			1	5
Interim provisional restorations (crowns and FPDs)	1		1	10
Immediate fixed partial dentures Interim	1	1		5
Fixed prosthesis as a retention and rehabilitation for acquired and congenital defects – maxillofacial prosthetics	1		1	5
Implant supported prosthesis	1	1	1	1
Implant tooth prosthesis	1		1	1

<b>REMOVABLE PARTIAL DENTURE</b>				
Provisional partial denture prosthesis	1	1	1	10
Cast removable partial denture (for kennedy's applegate classification with modification)	1	1	1	6
Removable bridge with precision attachments and telescopic crowns for anterior and posterior	1	1	2	4
Immediate RPD	1	1	1	5
Partial denture for medically compromised and handicapped patients	1	1	1	5
<b>COMPLETE DENTURES</b>				
Neurocentric occlusion & characterized prosthesis			1	5
Anatomic characterized prosthesis (by using semi adjustable articulator)			1	25
Single dentures			1	5
Overlay dentures			1	5
Interim complete dentures as a treatment prosthesis for abused denture supporting tissues			1	5
Complete denture prosthesis (for abnormal ridge relation, ridge form and ridge size)			1	5
Complete denture for medically compromised and handicapped patients			1	5
<b>GERIATRIC PATIENTS</b>				
Tooth and tooth surface restorations, crowns fixed prosthesis, removable prosthesis			1	5
<b>IMPLANT SUPPORTED COMPLETE PROSTHESIS</b>				
Implant supported complete prosthesis (maxillary and mandibular)			1	1
<b>MAXILLOFACIAL PROSTHESIS</b>				
Guiding flange and obturators			1	4
Speech and palated lift prosthesis			1	2
Eye prosthesis			1	2
Ear prosthesis			1	2
Nose prosthesis			1	2

Face prosthesis				1
Macillectomy			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 appliance for maxilla and mandible with freedom to move from IP and 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 – 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



**LEARNING RESOURCE  
MATERIAL**



**Books Recommended**

S.No	Author	Title
1	Zarb & Bolender	Boucher's Treatment of Completely edentulous patients
2	Sheldon Winkler	Essentials of complete denture prosthodontics
3	Charles M Stewart	Removable partial denture prosthodontics
4	Mc Givney and Carr	Mc Cracken's Removable partial prosthodontics
5	Stephen Rosensteil	Contemporary fixed partial denture prosthodontics
6	Herbert T Schillingburg	Fundamentals of fixed partial denture prosthodontics
7	Peter E Dawson	Functional occlusion from TMJ to smile design
8	Carl E Mish	Contemporary implant dentistry
9	John Beumer and Thomas A Curtis	Maxillofacial Rehabilitation
10	Kenneth J Anusavice	Phillip's science of dental materials

**Books For Reference**

S.No	Author	Title
1.	Charles W Ellinger	Synopsis of complete denture
2.	Bernard Levin	Impressions for complete dentures
3.	Alexander M Halperin	Mastering the art of complete dentures
4.	Ernest L Miller	Removable partial prosthodontics
5.	Russel J Stratton	An Atlas of removable partial denture design
6.	Bernard M Smith	Planning and making crown and bridges
7.	John F Mc Lean	The science and art of dental ceramics - Bridge design and laboratory procedures in Dental ceramics
8.	Varoujan A Chalian	Maxillofacial Prosthetics – A multidisciplinary practice
9.	Herbert T Shillingburg	Fundamentals of tooth preparation
10.	Major M Ash, Sigurd Peder Ramfjord	Occlusion

**Journals recommended****Indian**

1. Journal of Indian Prosthodontic society
2. Indian Journal of Dental Research

**International**

1. Journal of Prosthetic Dentistry
2. Journal of Prosthodontics
3. Dental materials: official publication of academy of dental materials
4. Quintessence International
5. European Journal of Prosthodontics and restorative dentistry
6. International Journal of Prosthodontics
7. Geriatrics and gerodontology international
8. Implantologist
9. Practical procedures and aesthetic dentistry[PPAD]
10. Journal of esthetic dentistry
11. Journal of esthetic and restorative dentistry
12. Biomaterials





**SCHEME  
OF EXAMINATION**



### UNIVERSITY EXAMINATION :

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

**(i) Theory :**

**Part-I :** Shall consist of one paper

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 concerned Department Specialty.

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 :** Shall consist of three papers, namely- Paper-I, Paper-II & Paper-III

**(ii)** Practical and Clinical Examination;

**(iii)** Viva-voce; and

**(iv)** Pedagogy.

### SCHEME OF EXAMINATION :

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-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 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

**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 prosthesis(Implantology), Geriatric dentistry and Cranio facial Prosthodontics

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

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

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

**B. Practical / Clinical examination : 200 marks**

Examination shall be for 3 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 3 days, six hours per day including viva voce

**1. Presentation of treated patients and records during their 3 years training period - 25 marks**

- |  |   |         |
|--|---|---------|
| a. CD - 5 cases  | - | 2 marks |
| b. RPD-2 cases   | - | 1 marks |
| c. FPD incl. single tooth and surface restoration- 5 cases | - | 2 marks |
| d. Implant supported prosthesis – 4 cases                  | - | 5 marks |
| e. Occlusion- 3 cases                                      | - | 5 marks |
| f. TMJ- 3 cases  | - | 5 marks |
| g. Maxillofacial prosthesis - 3 cases                      | - | 5 marks |

**2. Present actual treated patients CD prosthesis and insertion – 90 marks**

- |  |   |          |
|--|---|----------|
| 1. Discussion of treatment plan and patient review                       | - | 10 marks |
| 2. Impression making   | - | 10 marks |
| 3. Tentative jaw relation records  | - | 10marks  |
| 4. Face bow transfer   | - | 5 marks  |
| 5. Transferring on articulators  | - | 5 marks  |
| 6. Extra oral tracing and securing centric and protrusive Lateral record | - | 20 marks |
| 7. Transfer on articulator   | - | 5 marks  |

- 8. Selection of teeth - 5 marks
- 9. Arrangement of teeth - 15 marks
- 10. Waxed denture trail - 5 marks
- 11. Fit, insertion and instruction of previously processed  
Characterized, anatomic complete denture prosthesis

All steps will include chairside, lab and viva voce

**3. Fixed partial denture – 50 marks**

- a. Case discussion and selection of patients for FPD - 5 marks
- b. Abutment preparation isolation and fluid control - 15 marks
- c. Gingival retraction and impression - 10 marks
- d. Wax-up - 10 marks
- e. Cementation of provisional restoration - 10 marks

**4. Removable partial denture – 35 marks**

- a. Surveying and designing of partial dentate cast - 20 marks
- b. Discussion on components and material selection  
Incl. occlusal scheme - 15 marks

**c. Viva voce examination : 100 marks**

- 1. Viva voce exams: 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

- 2. 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**



## PERIODONTOLOGY

Periodontics is a specialty of dentistry that studies the supporting structures and investing layers of the teeth, diseases and conditions that affect them. This specialty also studies the biology, diagnosis, clinical evaluation and the surgical techniques of dental implants.

### GOALS AND 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 objective may be considered as under :

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

### ATTITUDES :

1. Competent to educate and motivate the patient towards maintenance of oral hygiene.
2. To motivate patients for regular periodontal maintenance

### SKILLS :

1. Take a proper clinical history, thorough intraoral examination, extra oral, medical history evaluation, advice essential diagnostic procedures and interpret them to come to a reasonable diagnosis.
2. Effective motivation and education regarding periodontal disease maintenance after the treatment.
3. Perform both non surgical & education regarding periodontal disease, maintenance after the treatment.
4. Perform both non surgical and surgical procedure independently
5. Human values, Ethical practice to communication abilities.
6. Provide Basic life support service (BLS) recognise the need for and advance life support and does the immediate need for that.

### KNOWLEDGE :

1. Discuss historical perspective to advancement in the subject proper and related topics.
2. Describe aetiology, pathogenesis, diagnosis and management of common periodontal disease with emphasis on Indian population.
3. Familiarise with the biochemical, microbiological, immunological and genetic aspects of periodontal pathology.
4. Describe the various preventive periodontal measures.

5. Describe the various treatment modalities of periodontal disease from historical aspects to currently available ones.
6. Describe the interrelationship between periodontal disease and systemic conditions.
7. Describe periodontal hazards due to estrogenic causes and deleterious habits and prevention of it.
8. Identify rarities in periodontal diseases and environmental/emotional determinates in a given case.
9. Recognise conditions that may be outside the area of his specialty/ competence and refer them to an appropriate
10. Decide regarding non surgical or surgical management of the case.
11. Update them by attending courses, conferences and seminars relevant to Periodontics or by self learning process.
12. Plan out/ carry out research activity both basic and clinical aspect with the aim of publishing his work in scientific journals
13. Reach out to the public to motivate and educate regarding periodontal disease, its prevention and consequences if not treated.
14. Plan out epidemiological survey to assess prevalence and incidence of early onset periodontitis and adult periodontitis in an Indian population.
15. Shall develop knowledge, skill in the science and practice of oral implants. Shall develop teaching skills in the field of Periodontology and oral implants.



# **COURSE CONTENTS**





## PAPER-I

### APPLIED ANATOMY :

1. Development of the periodontium
2. Micro and macro structural anatomy and biology of the periodontal tissue
3. Age changes in the periodontal tissue.
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, maxilla and mandible
6. Nerves of the Periodontics
7. Tongue, oropharynx.
8. Muscles of mastication

### PHYSIOLOGY :

1. Blood
2. Respiratory system (Periodontal medicine)
3. Cardiovascular system-
  - a) Blood pressure
  - b) Shock
  - c) Normal ECG
4. Endocrinology- Hormonal influence on Periodontium
5. Gastrointestinal system
  - a. Salivary secretion - Composition, function, & regulation.
  - b. Reproductive physiology
  - c. Hormones- action and regulations, role in periodontal disease
  - d. 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, enzymes and minerals.
2. Diet and nutrition and periodontium
3. Biochemical tests and their significance
4. Calcium and phosphorous

### PATHOLOGY :

1. Cell structure and metabolism
2. Inflammation and repair, necrosis and regeneration
3. Immunity and hypersensitivity
4. Circulatory disturbances- oedema, haemorrhage, shock, thrombosis, embolism, infarction, and hypertension

5. Disturbances of nutrition
6. Diabetes mellitus
7. Cellular growth and differentiation, regulation
8. Lab investigations
9. Vascular system

**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
4. Virology
  - a. General properties of viruses
  - b. Herpes, hepatitis, HIV viruses
5. Mycology - Candidiasis
6. Applied microbiology
7. Diagnostic microbiology and immunology, hospital infection and management.
8. Current advances in Microbiology

**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. Dental pharmacology of
  - a. Analgesics- Opioid and non Opioid
  - b. Local anaesthetics
  - c. Haematinics and coagulants, Anticoagulants
  - d. Anti diabetic drugs
  - e. Steroids
  - f. Antibiotics
  - g. Antihypertensive
  - h. Immunosuppressive drugs and their effects on oral tissues
  - i. Anti epileptic drugs
3. Brief pharmacology, dental use and adverse effects of
  - a. General anaesthetics
  - b. Antipsychotics
  - c. Anti depressants
  - d. Anxiolytic drugs
  - e. Sedatives
  - f. Anti epileptics
  - g. Antihypertensive

- h. Antianginal drugs
- i. Diuretics
- j. Hormones
- k. Pre-anaesthetic medications

4. Drug used in Bronchial asthma and cough

5. Drug therapy of

- a. Emergencies
- b. Seizures
- c. Anaphylaxis
- d. Bleeding
- e. Shock
- f. Diabetic ketoacidosis
- g. Acute addison's crisis.

6. Dental pharmacology

- a. Antiseptics
- b. Astringents
- c. Sialogogues
- d. Disclosing agents
- e. Antiplaque 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 and variability
- Tests of significance (Chi square tests, t-test and Z-test)
- Null hypothesis

### **PAPER-II**

#### **ETIOPATHOGENESIS :**

1. Classifications of periodontal diseases and conditions
2. Epidemiology of gingival and periodontal diseases
3. Defense mechanism 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 & peri-implant diseases
8. Dental calculus
9. Role of iatrogenic and other local factors
10. Basics of genetics
11. Genetic factors associated with periodontal diseases
12. Influence of systemic diseases disorders of the periodontium
13. Role of environmental factors in the etiology of the periodontal diseases
14. Stress and periodontal diseases

15. Occlusion and periodontal diseases
16. Smoking and tobacco in the etiology of periodontal diseases
17. AIDS & periodontium
18. Periodontal medicine
19. Dentinal hypersensitivity

### **PAPER-III**

## **CLINICAL AND THERAPEUTIC PERIODONTOLOGY AND ORAL IMPLANTOLOGY**

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. Prosthodontic consideration in periodontal therapy

### **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. Rational for periodontal treatment
8. General principal 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. Principal of periodontal instrumentation
3. Instrument used in different parts of the mouth

### **C. Periodontal therapy**

1. Preparation of tooth surface
2. Plaque control
3. Antimicrobial and other drug used in periodontal therapy and wasting diseases of teeth
4. Periodontal management of HIV infected patient
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
10. Basics of LASER physics, dynamics, healing & therapy

### **D. Periodontal surgical phase-special emphasis on drug prescription**

1. General principal of periodontal surgery
2. Surgical anatomy of periodontium and related structures
3. Gingival curettage
4. Gingivectomy techniques
5. Treatment of gingival enlargements
6. Periodontal flaps
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 - principles & practice of Microsurgery

### **E. Future direction 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 in periodontal diseases

### **F. Periodontal maintenance phase**

1. Supportive periodontal treatment
2. Results of periodontal treatment

## **IV. ORAL IMPLANTOLOGY**

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

## **V. MANAGEMENT OF MEDICAL EMERGENCIES IN PERIODONTAL PRACTICE**



# **TEACHING AND LEARNING ACTIVITIES**



**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

**III Year**

Scientific paper / Poster presentation at the conferences

Submission of Dissertation – 6 months before completion of III year

**SKILLS :****First Year :**

Pre Clinical work (To be completed in first 3 months)

**Dental**

1. Practice of incisions and suturing techniques on the typhodont models (any simulation lab)
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 of sample, culture techniques. Current advances in Microbiology (hands on training)
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
6. ONE Epidemiological short study to be done

**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) (LASER gingivectomy/ gingivoplasty - 5 cases)
5. Gingivoplasty (10 cases)

### Second Year

1. Clinical Work (10 cases)
2. Case history and treatment planning (5 cases)
3. Local Drug Delivery techniques
4. Periodontal surgical procedures
  - a. Pocket therapy
  - b. Mucogingival surgeries
  - c. Implants – 10 cases in 3 years
  - d. Management of perio endo problems
5. Occlusal adjustments (10 cases)
6. Perio splints (10 cases)

### Third Year

#### Clinical work

1. Regenerative techniques
  - a. 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



**All the students shall complete the minimum quota for the teaching and learning activities, as follows :-**

1	Journal Clubs	5 in a year
2	Seminars	5 in a year
3	Clinical Case Presentations	4 in a year
4	Lectures taken for undergraduates	1 in a year
5	Scientific Paper / Poster Presentations In State / National Level Conferences	4 papers/posters during three years of training workshop period
6	Clinico Pathological Conferences:	2 presentations during three years of training period
7	Scientific Publications (optional)	one publication in any indexed scientific journal
8	Submission of Synopsis	one synopsis within six months from the date of commencement of the course
9	Submission of Dissertation months	one dissertation within six before appearing for the university examination
10	Submission of Library Dissertation	one dissertation within eighteen months from the date of commencement of the course

#### **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.



**LEARNING RESOURCE  
MATERIAL**



**RECOMMENDED BOOKS**

<b>S.No</b>	<b>AUTHOR</b>	<b>BOOK</b>
1	Jan lindhe	Clinical Periodontology and implant dentistry (Vol 1 & 2)
2	Newman, Takei, Klokevold, Carranza	Clinical Periodontology
3	Rose, Genco, Mealy, Cohen	Periodontal medicine
4	Pawlah.E	Essentials of Periodontology
5	Glickman, Irving	Periodontal disease: clinical radiographic and histopathologic features.
6	Kinoshita, Shiro	Color atlas of Periodontology
7	B.R.R. Varma, R.P.Nayak	Current Concept In Periodontics
8	Antony G.Sclar	Soft Tissue And Esthetic Considerations In Implant Therapy
9	Philip Worthington	Osseointegration in dentistry
10	Carl.E.Misch	Contemporary implant dentistry

**REFERENCE BOOKS**

<b>S.No</b>	<b>AUTHOR</b>	<b>BOOK</b>
1	Fermin Carranza, Gerald Shklar	History of periodontology
2	Serge sibart, Thomas Dietrich	Practical Periodontal Diagnosis And Treatment Planning
3	P.Mark Bartold, A.Sampath Narayanan	Biology Of Periodontal Connective Tissues
4	Hall	Critical decisions in periodontology
5	Edward Cohen	Atlas of cosmetic and reconstructive periodontal surgery
6	Serge Dibart	Practical advanced periodontal surgery
7	Robert.A.Convissan	Principles And Practice Of Laser Dentistry
8	Michael Cohen	Inter Disciplinary Treatment Planning, Principles, Design, Implantation
9	Stuart J.Forum	Dental Implant- Complications: Etiology, Prevention & treatment
10	Serge Dibart & Jeane Pierre Dibart	Practical osseous surgery in Periodontics and implant dentistry

## **Recommended Journals**

### **Indian**

1. Journal Of Indian Society Of Periodontology
2. Indian Journal Of Dental Research

### **International**

1. Periodontology 2000
2. Journal Of Periodontology
3. Journal Of Clinical Periodontology
4. International Journal Of Periodontology And Restorative Dentistry
5. Journal Of Periodontal Research
6. Clinical Applications In Periodontology
7. Journal Of Oral Implantology
8. Clinical Oral Implant Research



**SCHEME  
OF EXAMINATION**



## UNIVERSITY EXAMINATION :

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

### (i) Theory :

**Part-I** : Shall consist of one paper

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 concerned Department Specialty.

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** : Shall consist of three papers, namely- Paper-I, Paper-II & Paper-III

### (ii) Practical and Clinical Examination :

### (iii) Viva-voce; and

### (iv) Pedagogy

## SCHEME OF EXAMINATION :

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-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 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

### 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

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

### B. PRACTICAL/ CLINICAL EXAMINATION : 200 marks

The clinical examination shall be of two days duration

#### 1st Day

##### Case discussion

- Long case - one
- Periodontal surgery - Periodontal flap surgery on a previously prepared case in one quadrant of the mouth after getting approval from the examiners
- Interesting short case presentations – 5
- Pedagogy – topic given by examiner

#### 2nd Day

One Short case - discussion & Surgical demonstration (mucogingival surgery or implant placement)

Pedagogy presentation

Grand viva

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

Presentation of Dissertation & discussion

All the examiners shall participate in all the aspects of clinical examination /viva voce

**Distribution of Marks for clinical examination (recommended)**

1. Long case discussion	50
2. Periodontal surgery	75
3. Short case presentation - 5	25
4. Short case & surgery	50
Total	<b>200</b>

**C. VIVA VOCE : 80 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 will 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.





# **ORAL AND MAXILLOFACIAL SURGERY**



## ORAL AND MAXILLOFACIAL SURGERY

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

### OBJECTIVES

The training program in oral and maxillofacial surgery is structured to achieve the following 4 objectives

- Knowledge
- Skills
- Attitude (Communication skills and ability)
- Research

### ATTITUDE

- Develop attitude to adopt ethical principles in all aspect of surgical practice, professional honesty and integrity are to 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 right and privilege, including patient right to information and right to seek a 2nd 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 time
- Develop the ability to communicate with professional colleagues
- Develop ability to teach undergraduate

### SKILLS

- To obtain proper clinical history, methodical examination for the patient, perform essential diagnostic procedures and order relevant lab 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
- Capable of providing care for maxillofacial surgery patients

## KNOWLEDGE

- To have acquired adequate knowledge and understanding of the etiology, pathophysiology and diagnosis, treatment planning of various common oral and maxillofacial surgery 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 of 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 waster keeping in view the high prevalence of hepatitis and HIV



# **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 surgery competently and have the ability to intelligently pursue further apprenticeship towards advanced 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 particularly 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 and facial bones and its surrounding soft tissues, cranial nerves, tongue, temporal 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 function of brain and applied anatomy of intracranial venous sinuses; cavernous sinus and superior sagittal sinus, Brief consideration of autonomous nervous system of head and neck. Functional anatomy of mastication, deglutition, speech, respiration and circulation. Histology of skin, oral mucosa, connective tissue bone, cartilage cellular elements of blood vessels, lymphatic, nerves, muscles, tongue, tooth and its surrounding structures.

General gross anatomy regarding limb & graft anatomy

**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, enteral nutrition, routes of access to GI tract, Parenteral nutrition, Access to central veins, Nutritional support; Fluid and Electrolytic balance/Acid Base metabolism-body fluid compartment,

metabolism of water and electrolytes, factors maintaining hemostasis, causes & 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 - classification 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 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 pharmadynamic dosage and mode of administration of drugs, action and fate in the body, drug addiction, tolerance and hypersensitivity 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 technique, incisions, flap designs, tissue handling, hemostasis, dead space management, decontamination and debridement, suturing, edema control, patient general health and nutrition.
- Medical emergencies – Prevention and management of altered consciousness, hyper 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 involving their hard and soft tissues of the edentulous jaws.
- Temporomandibular joint disorders - TMJ disorders and their sequelae need expert evaluation, assessment and management. It is preferable to be familiar with diagnostic and therapeutic arthroscopic surgery procedures.
- Tissue grafting - Understanding of the biological mechanisms involved in autogenous and heterogeneous tissue grafting.
- Reconstructive oral and maxillofacial surgery - hard tissue and soft tissue reconstruction.
- Cyst and tumors of head and neck region and their management - including principles of tumor surgery, giant cell lesion of jaw bones, fibro osseous lesions of jaw.
- 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 patient, 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 face & 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 scaring, 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
- Endoscopic surgeries, Navigation system, computer assisted virtual surgeries & genetics in oncology
- Interpretation of CT & MRI, interventional radiology pertaining to head & neck
- Sleep medicine

**ALLIED SPECIALTIES :**

- General medicine : General assessment of the patient including children with special emphasis on cardiovascular diseases, endocrinal, metabolic respiratory and renal diseases, Blood dyscrasias
- General surgery : Principles of general surgery, exposure to common general surgical procedures.
- Neurosurgery : Evaluation of a patient with head injury, knowledge & exposure of various neurosurgical 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 ultrasound
- Anesthesia : Evaluation of patients for GA technique and management of emergencies, various IV sedation techniques



# **TEACHING AND LEARNING ACTIVITIES**



**Academic Clinical program (applicable for all three years) :**

- Every candidate shall maintain a logbook to record his/her work or participation in all activities such as journal clubs, seminars, CDE programs etc. This work shall be scrutinized and certified by the head of the department and head of the institution and presented to the university every year

**All the students shall complete the minimum quota for the teaching and learning activities, as follows:-**

1	Journal Clubs	5 in a year
2	Seminars	5 in a year
3	Clinical Case Presentations	4 in a year
4	Lectures taken for undergraduates	1 in a year
5	Scientific Paper / Poster Presentations In State / National Level Conferences	4 papers/posters during three years of training workshop period
6	Clinico Pathological Conferences:	2 presentations during three years of training period
7	Scientific Publications (optional)	one publication in any indexed scientific journal
8	Submission of Synopsis	one synopsis within six months from the date of commencement of the course
9	Submission of Dissertation months	one dissertation within six before appearing for the university examination
10	Submission of Library Dissertation	one dissertation within eighteen months from the date of commencement of the course

The following is the minimum requirement to be completed before the candidate can be considered eligible to appear for final MDS exam.

**YEAR BY YEAR PROGRAMME :**

**I Year**

**First term :**

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

Pre-clinical – to be completed in first 3 months

To undergo training in ATLS & ACLS

**Second term :**

Rotation postings in other departments:

- Oncology - 2 months (oncology, radiation & chemotherapy, reconstructive surgery (plastic surgery)
- EMS – 1 month (Including interpretation of CT, MRI)
- General medicine - 15 days
- General surgery/anesthesia - 15 days
- Ophthalmology - 15 days
- Neurology - 15 days
- ENT - 15 days
- Orthopedic - 15 days

**II Year**

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

**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 in the revised ordinance governing MDS degree course.

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

S.No	AUTHOR	Category	Year	Number
1	Injection IM and IV	PI	I, II	50,20
2	Minor suturing and removal of structures	PI	I	NA
3	Incision and draining of an abscess	PI	I	10
4	Surgical extraction	PI	I	15
5	Impacted teeth	PI, PA	I, II	20,10
6	Pre prosthetic surgery a. Corrective procedures b. Ridge extension c. Ridge reconstruction	PI PI PA A	I I,II II,III	15 3 3
7	OAF closure	PI,PA	I,II	3,2
8	Cyst enucleation	PI, PA	I, II	5,5
9	Mandibular fractures	PI, PA	I,II	10,10
10	Peri – apical surgery	PI, PA	I	5
11	Infection management	PI, PA	I,II	NA

12	Biopsy procedures	PI	I, II	NA
13	Removal of salivary calculi	PA	I, II	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
18	Skin grafts	PA	III	3,5
19	Orthognathic surgery	PA,A	II,III	3
20	Harvesting bone & cartilage grafts	PA	III	3,5
	a. Iliac crest	A	III	3
	b. Rib	A	III	2
	c. Calvarial	A,O	III	2
21	TM joint surgery	PA,A	II,I	1
22	Jaw resections	PA,A	III,II	3,3
23	Onco surgery	A,O	III,III	3,3
24	Micro vascular anastomosis	A,O	III	5,10
25	Cleft lip & palate	PA,A	II,III	10,15
26	Distraction osteogenesis	A,O	II,III	2,3
27	Rhinoplasty	A,O	III	3,5
28	Access osteotomies and base of skull surgeries	A,O	III	1,3

O – Washed up and observed – initial 6 months of admission

A – Assisted with a senior surgeon – I year MDS

PA – Procedure performed under the direct supervision of a senior surgeon – II year MDS

PI – Performed independently – III year MDS

**PART - 1**

**PAPER - 1**

**APPLIED BASIC SCIENCES** : Applied Anatomy, Physiology, Biochemistry, General and Oral Pathology and Microbiology and Pharmacology, Research Methodology and Biostatistics.

**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 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. Cardio Vascular 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 of a balanced diet, effect of dietary deficiency, protein energy 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, edema, infarction

## 4. Chromosomal abnormalities :

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

## 5. Hypersensitivity :

- Anaphylaxis, type 2 hypersensitivity, type 3 hyper 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 agammaglobulinemia.
- AIDS
- Management of immun deficiency patients requiring surgical procedures
- De George Syndrome
- 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 to 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 hypersensitivity reactions.
5. Drugs acting on the CNS
6. General and local anesthetics, hypnotics, analeptics, and tranquilizers.
7. Chemo therapeutics and antibiotics
8. Analgesics and antipyretics
9. Antitubercular and antisyphilitic drugs.
10. Antiseptics, sialogogues and antisialogogues
11. Haematinics
12. Antidiabetics
13. Vitamins A, B-complex, C, D, E, K

## PART II - PAPER 1 - Minor Oral Surgery and Trauma

### MINOR ORAL SURGERY :

- **PRINCIPLES OF SURGERY:** Developing a surgical diagnosis, basic necessities for 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.
- **EXAMINATION AND DIAGNOSIS:** clinical history, physical and radiographic, clinical and laboratory diagnosis, oral manifestations of systemic diseases, implications of systemic diseases in surgical patients.
- **HAEMORRHAGE AND SHOCK:** applied physiology, clinical abnormalities of coagulation, extra vascular hemorrhage, and hemorrhagic lesions, management of secondary hemorrhage, shock.
- **EXODONTIA :** principles of extraction, indications and contraindications, types

of extraction, complications and their management, principles of elevators and elevators used in oral surgery.

- **IMPACTION:** surgical anatomy, classification, indications and contraindications, diagnosis, procedures, complications and their management.
- **SURGICAL AIDS TO ERUPTION OF TEETH:** surgical exposure of unerupted teeth, surgical repositioning of partially erupted teeth.
- **TRANSPLANTATION OF TEETH**
- **SURGICAL ENDODONTICS:** indications and contraindications, diagnosis, procedures of periradicular surgery
- **PREPROSTHETIC SURGERY:** requirements, types (alveoloplasty, tuberosity reduction, mylohyoid ridge reduction, genial reduction, removal of exostosis, vestibuloplasty)
- **PROCEDURES TO IMPROVE ALVEOLAR SOFT TISSUES:** hypermobile tissues-operative/sclerosing method, epulis fissuratum, frenectomy and frenotomy
- **INFECTION OF HEAD AND NECK:** Odontogenic and non Odontogenic infections, factors affecting spread of infection, diagnosis and differential diagnosis, management of facial space infections, Ludwig angina, cavernous sinus thrombosis.
- **CHRONIC INFECTIONS OF THE JAWS :** Osteomyelitis (types, etiology, pathogenesis, management) osteoradionecrosis
- **MAXILLARY SINUS :** maxillary sinusitis - types, pathology, treatment, closure of Oro - antral fistula, Caldwell- luc operation
- **CYSTS OF THE OROFACIAL REGION :** classification, diagnosis, management of OKC, dentigerous, radicular, non Odontogenic, ranula
- **NEUROLOGICAL DISORDERS OF THE MAXILLOFACIAL REGION:** diagnosis and management of trigeminal neuralgia, MPDS, bell's palsy, Frey's syndrome, nerve injuries.
- **IMPLANTOLOGY:** definition, classification, indications and contraindications, advantages and disadvantages, surgical procedure.
- **ANESTHESIA**

#### **LOCAL ANESTHESIA :**

Classification of local anesthetic drugs, mode 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

#### **TRAUMA :**

- **SURGICAL ANATOMY OF HEAD AND NECK.**

- **ETIOLOGY OF INJURY.**
- **BASIC PRINCIPLES OF TREATMENT**
- **PRIMARY CARE** : resuscitation, establishment of airway, management of morrhage, management of head injuries and admission to hospital.
- **DIAGNOSIS** : clinical, radiological
- **SOFT TISSUE INJURY OF FACE AND SCALP**: classification and management of soft tissue wounds, injuries to structure requiring special treatment.
- **DENTO ALVEOLAR FRACTURES** : examination and diagnosis, classification, treatment, prevention.
- **MANDIBULAR FRACTURES**: classification, examination and diagnosis, general principles of treatment, complications and their management
- **FRACTURE OF ZYGOMATIC COMPLEX** : classification, examination and diagnosis, general principles of treatment, complications and their management.
- **ORBITAL FRACTURES** : blow out fractures
- **NASAL FRACTURES**
- **FRACTURES OF MIDDLE THIRD OF THE FACIAL SKELETON** : emergency care, fracture of maxilla, and treatment of le fort I, II, III, fractures of Naso orbito ethmoidal region.
- **OPHTHALMIC INJURIES** : minor injuries, non-perforating injuries, perforating injuries, retro bulbar hemorrhage, and traumatic optic neuropathy.
- **TRAUMATIC INJURIES TO FRONTAL SINUS** : diagnosis, classification, treatment
- **MAXILLOFACIAL INJURIES IN GERIATRIC AND PEDIATRIC PATIENTS.**
- **GUN SHOT WOUNDS AND WAR INJURIES**
- **OSSEOINTEGRATION IN MAXILLOFACIAL RECONSTRUCTION**
- **METABOLIC RESPONSE TO TRAUMA** : neuro endocrine responses, inflammatory mediators, clinical implications
- **HEALING OF TRAUMATIC INJURIES** : soft tissues, bone, cartilage, response of peripheral nerve to injury
- **NUTRITIONAL CONSIDERATION FOLLOWING TRAUMA.**
- **TRACHEOSTOMY** : indications and contraindications, procedure, complications and their management.

## **PART II - PAPER II : 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
- Radical 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 Cell 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

### **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 and 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



**LEARNING RESOURCE  
MATERIAL**



**BOOKS RECOMMENDED**

S.No	Author	Title
1	Cawson and Scully	Medical problems in dentistry
2	Rowe and Williams	Maxillofacial Trauma
3	Fonseca R. J	Oral and Maxillofacial Trauma
4	Ellis E, Zide M. F	Surgical approaches to facial skeleton
5	Topazian	Oral and Maxillofacial Infections
6	McArthy	Plastic and Reconstructive Surgery
7	Killey and Key	Outline of Oral and maxillofacial Surgery
8	Jatin P Shah	Head and Neck surgery
9	Peterson	Principles of Oral and Maxillofacial Surgery
10	Langdon and Patel	Operative Oral and Maxillofacial Surgery

**BOOKS AS REFERENCE**

S.No	Author	Title
1	Laskin D. M	Oral and Maxillofacial Surgery
2	Fonseca	Textbook of Oral and Maxillofacial Surgery
3	Peterson	Contemporary Oral and Maxillofacial Surgery
4	Booth P. W	Maxillofacial Trauma and Esthetic Reconstruction
5	Shear	Cysts of the jaws
6	Dimitroulis G	Impacted teeth
7	Misch C. E	Contemporary Implant Dentistry
8	McGregor	Cancer of Head and Neck
9	Howe G. L	Minor oral surgery
10	Bell and Proffit	Textbook of Orthognathic surgery

**RECOMMENDED JOURNALS**

1. Journal of Cranio-maxillofacial surgery
2. International journal of Oral and Maxillofacial Surgery
3. British journal of Oral and Maxillofacial Surgery
4. Journal of Oral and Maxillofacial Surgery

5. Journal of Plastic and Reconstructive Surgery
6. Journal of Maxillofacial and Oral Surgery
7. National journal of Oral and Maxillofacial Surgery
8. Clinical Implant Dentistry and related research
9. Cancer
10. Annals of Maxillofacial Surgery





**SCHEME OF  
EXAMINATION**



### UNIVERSITY EXAMINATION :

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

**(i) Theory :**

**Part-I :** Shall consist of one paper

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 concerned Department/ Specialty.

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 :** Shall consist of three papers namely - Paper-I, Paper-II & Paper-III

**(ii) Practical and Clinical Examination;**

**(iii) Viva-voce; and**

**(iv) Pedagogy**

### SCHEME OF EXAMINATION :

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-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 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

**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

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

B. Practical / clinical examination : 200 marks

**1. Minor oral surgery**

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

2. (a) One long case - 60 marks
- (b) Two short cases - 20 marks each

**C. Viva voce**

**1. Viva voce examination : 80 marks**

All examiners will conduct viva voce conjointly on candidate 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

**2. Pedagogy exercise : 20 marks**

A topic will 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.



**CONSERVATIVE DENTISTRY  
AND ENDODONTICS**



## **CONSERVATIVE DENTISTRY AND ENDODONTICS**

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

### **OBJECTIVES:**

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

### **ATTITUDES :**

- To adopt ethical principles in conservative dentistry and endodontics
- To foster the professional honesty and integrity
- Willing to share the knowledge and clinical experience with professional colleagues
- Respect the patient rights and privileges , including patient rights to information and right to seek second opinion
- To adopt patient communication skills. The student should be able to guide the patient to various treatment options in a simple language.

### **SKILLS:**

- Take proper chair side history, exam the patient and perform medical and dental diagnostic procedures and order as well as perform relevant tests and interpret 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 lifesaving 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 contemporary 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

in 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 colleagues or seniors when required without hesitation
- Respect patient's rights and privileges including patient's right to information.

**KNOWLEDGE :**

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

- Describe etiology, pathophysiology, periapical diagnosis and management of common restorative situations, endodontic situations that will include contemporary management of dental caries, management of trauma and pulpal pathosis 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 multidisciplinary approach or a clinical situation outside the realm of the speciality, 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 his publishing his work and presenting the same at scientific platform.



# **COURSE CONTENT**



## 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.
- Eruption of teeth.

## 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,



vitamins 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 of 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 – streptococcus, staphylococci, lactobacilli, cornyebacterium, actinomycetes, clostridium, neisseria, vibrio, bacteriods, fusobacteria, spirochetes, mycobacterium, virus and fungi.
- Cross infection, infection control, infection control procedure, sterilization and disinfection.
- Immunology – antigen antibody reaction, allergy, hypersensitivity and anaphylaxis, autoimmunity, 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 anesthetic, 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 patient
- Anesthetic 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, Kruskal 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 and biocompatibility.
- Impression materials, detailed study of various restorative materials, restorative resin and recent advances in composite resins, bonding- recent developments, Glass Ionomer cements, 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.

#### **PART II - PAPER - I : CONSERVATIVE DENTISTRY**

- Examination, diagnosis and treatment plan
- Occlusion as related to conservative dentistry, contact, contour, its significance. Separation of teeth, matrices, used in conservative dentistry.
- Dental caries- epidemiology, recent concept of etiological factors, pathophysiology, Histopathology, diagnosis, caries activity tests, prevention of dental caries and management – recent methods.
- Hand and rotary cutting instruments, development of rotary equipment, speed ranges, hazards.
- Dental burs and other modalities of tooth preparation- recent developments (air abrasions, lasers etc)
- Infection control procedures in conservative dentistry, isolation equipments etc.
- Direct concepts in tooth preparation for amalgam, composite, GIC and restorative

techniques, failures and management.

- Direct and indirect composite restorations.
- Indirect tooth colored restorations- ceramic, inlays and onlays, veneers, crowns. Recent advances in fabrication and materials.
- Tissue management
- Impression procedures used for indirect restorations.
- Cast metal restorations, indications, contraindications, tooth preparation for class 2 inlay, Onlay full crown restorations. Restorative techniques, direct and indirect methods of fabrication including materials used for fabrication like inlay wax, investment materials and
- Direct gold restorations.
- Recent advances in restorative materials and procedures.
- Management of non-carious lesion.
- Advance knowledge of minimal intervention dentistry.
- Recent advances in restoration of endodontically treated teeth and grossly mutilated teeth
- Hypersensitivity, theories, causes and management.
- Lasers in Conservative Dentistry
- CAD-CAM & CAD-CIM in restorative dentistry
- Dental imaging and its applications in restorative dentistry (clinical photography)
- Principles of esthetics
  - Color
  - Facial analysis
  - Smile design
  - Principles of esthetic integration
  - Treatment planning in esthetic dentistry

## **PART II - PAPER II : ENDODONTICS**

- Rationale of Endodontics.
- Knowledge of internal anatomy of permanent teeth, anatomy of root apex and its implications in endodontic treatment.
- Dentin and pulp complex.
- Pulp and periapical pathology
- Pathobiology of periapex.
- Diagnostic procedure – recent advances and various aids used for diagnosis
- Oro-facial dental pain emergencies: endodontic diagnosis and management

- Case selection and treatment planning
- Infection control procedures used in Endodontics (aseptic techniques such as rubber dam, sterilization of instruments etc.)
- Access cavity preparation – objectives and principles
- Endodontic instruments and instrumentation – recent developments, detailed description of hand, rotary, sonic, ultra sonic etc...
- Working length determination / cleaning and shaping of root canal system and recent development in techniques of canal preparation.
- Root canal irrigants and intra canal medicaments used including non – surgical Endodontics by calcium hydroxide.
- Endodontic microbiology.
- Obturating materials, various obturation techniques and recent advances in obturation of root canal.
- Traumatic injuries and management – endodontic treatment for young permanent teeth.

Pediatric Endodontics – treatment of immature apex.

- Endodontic surgeries, recent developments in technique and devices, endosseous endodontic implants – biology of bone and wound healing.
- Endoperio interrelationship, endo + Perio lesion and management
- Drugs and chemicals used in Endodontics
- Endo emergencies and management.
- Restoration of endodontically treated teeth, recent advances.
- Geriatric Endodontics
- Endo emergencies and management.
- Biologic response of pulp to various restorative materials and operative procedures.
- Lasers in Endodontics.
- Multidisciplinary approach to endodontics situations.
- Endodontics radiology- digital technology in endodontics practice.
- Local anesthesia in endodontics.
- Procedural errors in endodontics and their management.
- Endodontics failures and retreatment.
- Resorptions and its management.
- Microscopes in endodontics.
- Single visit endodontics, current concepts and controversies.



# **TEACHING AND LEARNING ACTIVITIES**



**TEACHING / LEARNING ACTIVITIES :**

The following is the minimum required to be completed before the candidate can be considered eligible to appear for final MDS exam.

**First Year**

**Pre Clinical Work – Operative and Endodontics**

<b>Preclinical exercise</b>	<b>Quota</b>
Metallic restorations	
a) Silver amalgam restorations	<b>11</b>
b) Indirect restorations Inlay	<b>06</b>
onlay	<b>02</b>
Full crown (Anterior)	<b>03</b>
Full crown (Posterior)	<b>02</b>
Pin retained amalgam	<b>03</b>
Esthetic restorations	
a) Glass Ionomer	<b>10</b>
b) composite restorations	<b>10</b>
Composite Inlay	<b>03</b>
Composite Onlay	<b>01</b>
Veneers	<b>02</b>
Rubber dam exercises	<b>06</b>
Cariology exercises	<b>04</b>
Transparent tooth	<b>14</b>
Radiographic interpretation	<b>14</b>
Root Canal Therapy	
Conventional Anterior	<b>01</b>
Crown down Anterior	<b>01</b>
Step back Anterior	<b>00</b>
Rotary Anterior	<b>02</b>
Posterior RCT	
Conventional Premolar RCT	<b>02</b>
Conventional Molar RCT	<b>00</b>
Rotary Posterior	<b>06</b>

<b>Post endodontic restorations</b>	
Cast post & Core Anterior	<b>01</b>
Cast post & Core Posterior	<b>01</b>
Prefabricated Post Anterior	<b>02</b>
Prefabricated Post Posterior	<b>02</b>
<b>Total</b>	<b>109</b>

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

**CLINICAL WORK :**

- Composite restorations - 30
- GIC Restorations - 30
- Complex amalgam restorations - 05
- Composite inlay + veneers (direct and indirect) - 05
- Ceramic jacket crowns - 05
- Post and core for anterior teeth - 05
- Bleaching vital - 05
- Non vital - 05
- RCT Anterior - 20
- Endo surgery - observation and assisting - 05

**Presentation of :**

- Seminars – 5 seminars by each student – should include topics in dental materials, 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**

- Ceramic jacket crowns- 10
- Post and core for anterior teeth- 10
- Post and core for posterior teeth- 05
- Composite restoration- 05
- Full crown for posterior teeth- 15
- Cast gold inlay- 05
- Other special types of work such as splinting and
- Reattachment of fractured teeth etc - 05
- Anterior RCT- 20
- Posterior RCT- 30
- Endo surgery performed independently- 05
- 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 lengthening, perioesthetics, hemi sectioning, splinting, replantation, endodontic implants.

### **Presentation of :**

- Seminars
- Journal club
- Teaching – lecture (under graduates)
- Internal assessment – theory and clinic

**All the students shall complete the minimum quota for the teaching and learning activities, as follows :-**

1	Journal Clubs	5 in a year
2	Seminars	5 in a year
3	Clinical Case Presentations	4 in a year
4	Lectures taken for undergraduates	1 in a year
5	Scientific Paper / Poster Presentations In State / National Level Conferences	4 papers/posters during three years of training workshop period
6	Clinico Pathological Conferences:	2 presentations during three years of training period
7	Scientific Publications (optional)	one publication in any indexed scientific journal
8	Submission of Synopsis	one synopsis within six months from the date of commencement of the course
9	Submission of Dissertation months	one dissertation within six before appearing for the university examination
10	Submission of Library Dissertation	one dissertation within eighteen months from the date of commencement of the course





**LEARNING RESOURCE  
MATERIAL**



**BOOKS RECOMMENDED**

S.No	Author	Title
1	Stephen Cohen	Pathways of Pulp
2	Grossman	Endodontics practice
3	Ingles	Endodontics
4	FS Weine	Endodontic Therapy
5	Castellucci	Endodontics Vol 1 and 2
6	Sturdevant	Art and Science of Operative Dentistry
7	Marzouck	Operative Dentistry
8	Kidd EAM	Pickard's manual
9	GJ Mount	Conservative dentistry
10	Anusavice	Philips Science of Dental Materials

**BOOKS AS REFERENCE**

S.No	Author	Title
1	Shanaon Patel, Henry F Duncan	Pittford's problem based learning in endodontology
2	James L Gutman	Problem solving in endodontics
3	Pitt ford TB	Harty's Endodontics in clinical practice
4	Walton and Torabinajad	Endodontic Therapy
5	James B. Summit	Fundamentals of Operative Dentistry
6	Robert G Craig	Dental materials – Properties and manipulation
7	Gilmore	Operative Dentistry
8	James B Summit	Fundamentals of Operative Dentistry
9	Seltzer, Samuel	Dental pulp; Biologic consideration in dental procedure
10	Stock, C.J	Endodontics

## **Recommended Journals**

### **Indian**

1. Indian Journal of Dental Research
2. Journal of Conservative Dentistry
3. Endodontology

### **International**

1. Operative Dentistry
2. Dental Materials
3. European Journal of Esthetic Dentistry
4. Caries Research
5. Journal of Endodontics
6. OOO and Endodontics
7. International Endodontic Journal
8. Journal of Dental Research
9. Advanced Dental Research
10. Dental Traumatology
11. Australian Endodontic Journal
12. Endodontic Topics



**SCHEME OF  
EXAMINATION**



**UNIVERSITY EXAMINATION:**

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

**(i) Theory:**

**Part-I :** Shall consist of one paper

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 concerned Department / Specialty.

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:** Shall consist of three papers, namely - Paper-I, Paper-II & Paper-III

**(ii) Practical and Clinical Examination****(iii) Viva-voce; and****(iv) Pedagogy****SCHEME OF EXAMINATION :**

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-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 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

**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

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

**B. Clinicals: 200 Marks**

The duration of Clinical and Viva Voce examination will be 2 days for a batch of four students. If the number of candidates exceeds 4, the program can be extended to 3<sup>rd</sup> day.

**Day 1**

**Clinical Exercise I – Prefabricated post and core, tooth preparation, impression & temporization – 50 Marks**

Step 1	Case selection and tooth preparation	10 marks
Step 2	Post selection and fit with radiograph	10 marks
Step 3	Core build up and crown preparation	10 marks
Step 4	Impression	10 marks
Step 5	Temporary Crown fabrication and luting	10 marks

**Clinical Exercise II : Class II gold inlay cavity preparation fabrication & cementation - 50 marks**

Step 1	Case presentation and tooth preparation	20 Marks
Step 2	Fabrication of Direct wax pattern Matricing and direct wax pattern	10 marks
Step 3	Casting and try in	10 marks
Step 4	Cementation and radiograph	10 marks

**Day 2****Clinical Exercise III- RCT till master cone selection (100 marks)**

Step 1	Diagnosis & treatment planning	10 Marks
Step 2	LA and Rubber Dam application Local anesthesia, pre-endo management, rubber dam	20 marks
Step 3	Access cavity preparation	20 marks
Step 4	Working length determination	20 marks
Step 5	Canal preparation Cleaning & shaping	20 marks
Step 6	Master cone selection	10 marks

**C. Viva voce: 100 marks****i. Viva –voce examination : 80 marks**

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

**ii. Pedagogy Exercise : 20 marks**

A topic will 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.



**ORTHODONTICS &  
DENTOFACIAL ORTHOPEDICS**





## ORTHODONTICS & DENTOFACIAL ORTHOPAEDICS

Orthodontics 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.

### OBJECTIVES :

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

### 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

### SKILLS : (ORDER CHANGED IN ASK FORMAT)

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.

### COMMUNICATION SKILLS :

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

**KNOWLEDGE :**

1. The dynamic interaction of biologic processes and mechanical forces acting on the stomatognathic system during orthodontic treatment
2. The etiology, pathophysiology, diagnosis and treatment planning of various common Orthodontic problems
3. Various treatment modalities in Orthodontics preventive interceptive and corrective.
4. Basic sciences relevant to the practice of Orthodontics
5. Interaction of social, cultural, economic, genetic and environmental factors and their relevance to management of oro-facial deformities
6. Factors affecting the long-range stability of orthodontic correction and their management
7. Personal hygiene and infection control, prevention of cross infection and safe disposal of hospital waste, keeping in view the high prevalence of Hepatitis and HIV and other highly contagious diseases.



# **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 of basic subjects including completion of pre – clinical exercises 2½ years of coverage of all the relevant topics in Orthodontics, clinical training involving 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 growth.
- Muscles of mastication :  
  
Development of muscles, muscle change during growth, muscle function and 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 (PO<sub>4</sub>)<sub>2</sub>, 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 :**

- Historical perspective
- Evolution of orthodontic appliances,
- Pencil sketch history of Orthodontic peers
- History of Orthodontics in India

## **XI. CONCEPTS OF OCCLUSION AND ESTHETICS :**

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

## **XII. ETIOLOGY AND CLASSIFICATION OF MALOCCLUSION :**

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

## **XIII. DENTOFACIAL ANOMALIES :**

- Anatomical, physiological and pathological characteristics of major groups of

developmental defects of the orofacial structures.

#### **XIV. CHILD AND ADULT PSYCHOLOGY :**

- Stages of child development.
- Theories of psychological development.
- Management of child in orthodontic treatment.
- Management of 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.

**Management of medically compromised patients in orthodontics**

**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 / Prosthodontics 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
- Long term effect of orthodontics, iatrogenic effects of orthodontics

### XIX. RECENT ADVANCES LIKE :

- Use of implants
- Lasers
- Application of F.E.M.
- Distraction Osteogenesis
- Recent advances in imaging sciences

### 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 typhodont 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



# **TEACHING AND LEARNING ACTIVITIES**



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

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

#### 2. CLASPS

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

#### 3. LABIAL BOWS

Sl.No.	Exercise	No.
1	Short labial bow (upper & lower)	1
2	Long labial bow (upper & lower)	1
3	Robert's retractor	1
4	High labial bow-with apron spring's	1
5	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	1
9	Fitted labial bow	1
10	Split high labial bow	1

#### 4. SPRINGS

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

### 5. CANINE RETRACTORS

<b>Sl.No.</b>	<b>Exercise</b>	<b>No.</b>
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

### 6. APPLIANCES

<b>Sl.No.</b>	<b>Exercise</b>
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

### 7. Soldering exercises

<b>Sl.No.</b>	<b>Exercise</b>	<b>No.</b>
1	Star	1
2	Comb	1
3	Christmas tree	1
4	Soldering buccal tube on molar bands	1

### 8. Welding exercises

<b>Sl.No.</b>	<b>Exercise</b>
---------------	-----------------

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

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

### 10. Study model preparation

### 11. Model analysis

Sl.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.

### 12. Cephalometrics

Sl.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 Burstone

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

### 14. Light wire bending exercises for the Begg technique

Sl.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

**15. Typhodont exercises: (Begg and P.E.A. method)**

Sl.No	Exercise
1	Teeth setting in Class-II division I malocclusion with maxillary anterior Proclination and mandibular anterior crowding
2	Band pinching, welding brackets and buccal tubes to the bands
3	Stage-I
4	Stage-II
5	Pre Stage-III
6	Stage-III

**CLINICAL WORK :**

Once the basic pre-clinical work is completed the students can take up clinical cases and the 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 to be taken**
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. **Basic subjects classes**
9. **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 to be taken**
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. 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. A minimum of five seminars should be presented by each student each year
3. **Under graduate classes to be taken**
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 :**

The dissertation should not be just a repetition of a previously undertaken study but it should try to explore some new aspects.

**All the students shall complete the minimum quota for the teaching and learning activities, as follows:-**

1	Journal Clubs	5 in a year
2	Seminars	5 in a year
3	Clinical Case Presentations	4 in a year
4	Lectures taken for undergraduates	1 in a year
5	Scientific Paper / Poster Presentations In State / National Level Conferences	4 papers/posters during three years of training workshop period
6	Clinico Pathological Conferences:	2 presentations during three years of training period
7	Scientific Publications (optional)	one publication in any indexed scientific journal
8	Submission of Synopsis	one synopsis within six months from the date of commencement of the course

**MONITORING LEARNING PROGRESS :**

It is essential to monitor the learning progress of each candidate through continuous appraisal a 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 students in various teaching / learning activities. It may be structured and assessment be done using checklists that assess various aspects.





**LEARNING RESOURCE  
MATERIAL**



9	Submission of Dissertation months	one dissertation within six before appearing for the university examination
10	Submission of Library Dissertation	one dissertation within eighteen months from the date of commencement of the course

**LIST OF RECOMMENDED BOOKS**

S.NO	TITLE	AUTHOR
1	Contemporary Orthodontics	Proffit
2	Begg Philosophy	Raymond Begg
3	Current Therapy In Orthodontics	Ravindra Nanda
4	Functional Appliance	Petrovik

S.NO	TITLE	AUTHOR
1	Orthodontic Management Of Uncrowded Class Ii Div I Mo In Children	Bennett
2	Cleft Lip And Palate Lesions Pathophysiology and Primary Treatment	Malek
3	Principles And Practice Of Laser Dentistry	A.Convissar
4	Biological Mechanism Of Tooth Movement	Davidovitch
5	Selh Ligation In Orthodontics	Eliades, Pandes
6	Orthodontic Treatment Of Impacted Teeth	Becker
7	Temporery Anchorage Deices In Orthodontics	Ravindra Nanda
8	Facial And Ental Planing For Orthodontist and Oral Surgeons	Arnett, Mclaughlin
9	Systemised Orthodontic Treatment Mechanics	Mclaughlin, Bennett
10	Orthodontic Miniscrew Implants	Cheol Ho Paik, Park

5	Orthodontics Current Principles And Technique	Graber And Venesdrall
6	Systemized Orthodontic Treatment Mechanics	Mbt
7	Orthodontic Cephalometrics	Jacobson
8	Orthodontic Diagnosis	Rakosi
9	Orthognathic Surgery	Proffit And Sarver
10	Orthodontics Current Principle And Technique	Gaber And Swain

**BOOKS FOR REFERENCES**

**LIST OF RECOMMENDED JOURNALS**

**NATIONAL**

1. Journal of Indian Orthodontic Society
2. Indian Journal of Dental Research
3. Journal of Forensic Dental Sciences
4. Contemporary Clinical Dentistry



**SCHEME OF  
EXAMINATION**



5. Indian Journal of Multidisciplinary Dentistry
6. Indian Journal of Dentistry

#### **INTERNATIONAL**

1. American Journal of Orthodontics and Dentofacial Orthopaedics
2. Seminars in Orthodontics
3. Orthodontics and Craniofacial Research
4. European Journal of Orthodontics
5. Journal of Orthodontics
6. Journal of Orthodontics and Orthopaedics
7. Angle Orthodontics
8. Journal of Clinical Orthodontics

#### **UNIVERSITY EXAMINATION :**

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

##### **(i) Theory :**

**Part-I:** Shall consist of one paper

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 concerned Department/Specialty.

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 :** Shall consist of three papers, namely - Paper-I, Paper-II & Paper-III

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

#### **SCHEME OF EXAMINATION :**

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-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 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

**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 Orthodontics

**Paper II** : Clinical Orthodontics

**Paper III** : Descriptive and analysing type question

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

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

**DAY 1 :**

**Display of all pre-clinical work & ALL clinical case's records**

**Exercise No: 1 Functional Case : 50 Marks (1 HOUR)**

Selection of case for functional appliance and recording of construction bite. Fabrication and delivery of the appliance the next day.

**Exercise No: 2 Multiband exercise : 50 Marks (1.5 HOURS)**

1. III stage with auxiliary springs

OR

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

**Exercise No.3 Display of records of the treated cases (minimum of self started 5 cases & 2 transferred cases)- – 2 HOURS**

**5 cases X 12 marks & 2 cases X 7.5 = 75 Marks**

**Long case – records distribution**

**DAY 2**

**Functional case – 1 HOUR**

**Exercise No. 4 : Long case discussion (2 HOURS): 25 Marks**

No.	Exercise	Marks allotted	Approximate Time
1	Functional appliance	50	1 hour 1 hour
2	III stage mechanics/Bonding and arch wire fabrication	50	1 hr 30 min
3	Display of case records of the treated cases (minimum of self started 5 cases & 2 transferred cases)	75	2 hour
4	Long case	25	2 hours

**C. Viva Voce : 100 Marks**

**1. 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.

**i. 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.



**ORAL AND MAXILLOFACIAL  
PATHOLOGY AND ORAL  
MICROBIOLOGY**





## ORAL AND MAXILLOFACIAL PATHOLOGY AND ORAL MICROBIOLOGY

Oral and maxillofacial pathology is the specialty of dentistry and the discipline of pathology that addresses the nature, identification, and management of diseases affecting the oral and maxillofacial regions.

### AIMS :

Oral pathology and microbiology deals with 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 the disease.

The goals of the education program are to provide the student and produce a graduate.

- With the skills and knowledge for a productive, competent and compassionate practice or oral and maxillofacial pathology
- With the foundational knowledge necessary for scientific inquiry, critical thinking and problem solving
- With an understanding of the scientific method and the technological advances which are available for scientific inquiry
- Who has the confidence, independence and motivation for life long learning and the skills to communicate that knowledge

### 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 ultra structural 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.

### ATTITUDES :

- Willingness to share the knowledge and clinical experience with professional colleagues.
- Develop attitude to seek opinion from allied medical and dental specialities when required.

**SKILLS :**

A high level of competency and judgement in the practical microscopical diagnosis of common and significant oral pathological lesions and conditions and initiative in determining the steps necessary to resolve a diagnosis for specimens beyond their immediate capabilities

Knowledge and understanding of the roles of other members of the health care team in the execution of procedures involved in achieving successful outcome in the diagnostic process.

A high level of competency and self direction in obtaining relevant information speedily to assist in the establishment or confirmation of a diagnosis

Knowledge and understanding of the common laboratory methods used to prepare oral diagnostic material for histopathological examination and the main research tools and methods used to advance the practice of diagnostic oral pathology

Critical awareness of current problems in oral pathology and knowledge of the sources of upto date information on oral pathological conditions and related scientific disciplines.

Broad knowledge and understanding of the principles under pinning scientific presentations. Competencies at carrying out a short original research project involving the ability to identify problems, gather information, think analytically, resolve difficulties, critically analyse source material, choose appropriate methodologies, construct a hypothesis, sustain a logical argument and present the results of these processes clearly in both oral and written form.

**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.
2. 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.
3. Study of special and applied pathology of oral tissues as well as relation of local pathologic and clinical findings to systemic conditions.
4. Oral microbiology and their relationship to various branches of dentistry.
5. Oral microbiology affecting hard and soft tissues. Study of clinical changes and their significance to dental and oral diseases as related to oral pathology.
6. Forensic Odontology.
7. Inter institutional postings such as cancer hospital, dermatology clinics, regional HIV detection centers, sophisticated instrumentation centers for electron microscopy and other techniques.
8. Maintenance of records of all postgraduate's activities.
9. Library assignment.
10. University Dissertation

**KNOWLEDGE :**

1. The candidate should possess knowledge of understanding the applied and theoretical knowledge in basic and systemic medical sciences and to relate to various pathologies pertaining to oral cavity. The candidate should update knowledge by self study and by attending courses, conference, seminars relevant to speciality.
2. To acquire the knowledge to undertake audit, use information technology and carryout research I with the aim of publishing or presenting the work at various scientific forums and to Teach and guide his / her team, colleague and other students.



# **COURSE CONTENT**



## 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 Orofacial 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 paraoral 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, endocrine system

#### 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, Electrophoresis, 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 prevention, collection and transport of specimen, for laboratory diagnosis, staining methods, common culture media, interpretation of laboratory reports and antibiotic sensitivity tests.

- Staphylococci
- Streptococci
- Corynebacterium diphtheria
- Mycobacteria
- Clostridia, bacteroides and fusobacteria
- Actinomycetales
- 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 & 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 & 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 & 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



# **TEACHING AND LEARNING ACTIVITIES**



### **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.

### **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 HISTOTECHNIQUES &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 CLINICO-PATHOLOGICAL DISCUSSIONS :**

##### **Approach**

Postings in the Department of Oral Medicine, Diagnosis and Radiology and Oral and Maxillofacial Surgery

- Record of case History to be maintained.

## **DERMATOLOGY:**

Study of selected Mucocutaneous Lesion- Etiopathogenesis, Pathology, Clinical presentation and Diagnosis.

### **Approach:**

Posting to the dept of Dermatology in 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 paraoral tissues
- Tumour markers

### **Approach**

To be covered as seminars

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

## **ORAL MICROBIOLOGY & 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

- Biopsy procedure for oral lesions
- Processing of tissue for paraffin sections
- Microtome and principles of microtomy
- Biopsy procedure for oral lesions
- 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 techniques, 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
- Commencement of dissertation work
- Journal clubs and seminars to be presented by every PG student
- Clinico - pathological 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.
- 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
- Clinico-pathological discussions by every student once in a month
- To attend Interdepartmental meetings.

### **III YEAR :**

All topics to be revised with recent advances

### **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 is 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.



**LEARNING RESOURCE  
MATERIAL**



**Books recommended**

S.No.	Author	Title
1.	Roderick A Cawson	Lucas Pathology of Tumor of the Oral tissue
2.	Pindborg	Atlas of diseases of Oral Pathology
3.	Gary L Ellis	Surgical Pathology of Salivary Gland
4.	Mervyn Shear	Cysts of Oral region
5.	Franz M Enzinger	Enzinger Weiss Soft Tissue Tumors
6.	Irving Dardick	Colour atlas /Text of salivary gland tumor pathology
7.	Howard D Dorffman	Bone Tumor
8.	Peter A Reichert, Hans P Philipsen	Odontogenic Tumors and allied lesions
9.	John D Bancroft, Marilyn Gamble	Theory & Practice of Histology Techniques
10.	Gabriejela Kocjan	Clinical Cytopathology of Head and Neck – A text and atlas

**Books as references**

S.No.	Author	Title
1.	Ivan Maurice Roitt	Immunology
2.	Vincent T Devitta	Cancer: Principles and Practice of Oncology
3.	Stedman	Medical Dictionary
4.	Frank Frikin	De Gruchy’s Clinical Hematology in Medical Practice
5.	B K B Berkovitz, G R Holland, B J Moxham	Colour Atlas Textbook of Oral anatomy, Histology and Embryology
6.	J. Philip Sapp	Contemporary Oral and Facial Pathology
7.	Awatif Ial Nafusi	Tumor Diagnosis – Practical Approach & Pattern analysis
8.	Svante R Orell	Fine Needle Aspiration Cytology
9.	Sook – Bin Woo	Oral Pathology Comprehensive Atlas and Text
10.	Robert A Robinson	Head and Neck Pathology - -Atlas for Histologic and Cytologic Diagnosis

**Recommended Journals**

**National**

1. Journal of Oral and Maxillofacial Pathology
2. Indian Journal of Dental Research
3. Journal of Forensic Dentistry



**International**

1. Journal of Clinical Pathology
2. Acta Cytologica
3. Oral Diseases
4. Cellular Oncology
5. Arch Dermatology
6. International Journal of Dermatology
7. Journal of Cytology
8. Oral Oncology
9. Oral Surg Oral Med Oral Pathol Oral Radiol Endod
10. Journal of Oral Pathology and Medicine



**SCHEME OF  
EXAMINATION**



## UNIVERSITY EXAMINATION:

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

### (i) Theory:

**Part-I:** Shall consist of one paper

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 concerned Department/Specialty.

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:** Shall consist of three papers, namely- Paper-I, Paper-II & Paper-III

### (ii) Practical and Clinical Examination;

### (iii) Viva-voce; and

### (iv) Pedagogy.

## SCHEME OF EXAMINATION :

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-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 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

### **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 analysing type question

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

## **B. Practical/Clinical - 200 Marks**

### **1. Case Presentation**

Long case - **20** marks

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**

Cytology or microbial smear and staining

**4. Paraffin sectioning and H&E Staining** - 30 Marks

**5. Histopathology slide discussion** - 100 Marks

## **C. Viva Voce - 100 Marks**

**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.

**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



**PAEDODONTICS AND  
PREVENTIVE DENTISTRY**



## PAEDODONTICS AND PREVENTIVE DENTISTRY

Pediatric Dentistry is an age defined specialty that provides primary and comprehensive, preventive and therapeutic oral care for infants and children through adolescents including those with special health care needs.

### **OBJECTIVES :**

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

### **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 is 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.

### **SKILLS :**

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

5. To acquire skills in managing efficiency life threatening condition with emphasis on basic life support measure.

**KNOWLEDGE :**

1. Understand the motto of Paedodontics and Preventive Dentistry ,that prevention of oral diseases through early intervention and initiation of comprehensive preventive practices is better than cure.
2. Understanding of basic sciences as relevant to Paedodontics . Recognise the consequences of hormonal and nutritional deficiencies. Speech problems associated with oral or dental problems should be discriminated from other causes.
3. Understand child psychology & Behavior Guidance. The student should have superior abilities to guide the behavior of children and parents. Detail knowledge about various non pharmacological and pharmacological techniques of behaviour management.
4. Understand growth & development & be able to identify malocclusions & manage them.
5. Understand concepts of prevention of dental diseases and their management including restoration & replacement of teeth, management of soft and hard tissue pathology, vital and non-vital pulpal tissues, traumatized primary and permanent teeth & knowledge about various dental materials.
6. Management of minor oral surgical procedures pertaining to Paedodontics
7. Knowledge of various disease states, congenital defects, and hereditary conditions. Familiarity with specific orofacial defects, disease states, or their manifestations and traumatic consequences.
8. Understand the etiology, clinical features and management of children with special healthcare needs
9. Able to evaluate original dental research articles for methodology, results, statistical interpretation, conclusions, and implications. Ability to conduct research may be developed from the required research project, however, the major research goal is an understanding and appreciation of published research.
10. Ability to establish an approach to learning which utilizes aspects of continual inquiry and critical thinking. The development of a lifelong attitude of study and advancement.
11. Develop considerable skill in establishing rapport and cooperation with dental and medical colleagues. Referrals to appropriate professionals or from other professionals occur frequently and the resident should be familiar with the courtesy and importance of these activities. The resident should be able to make, or respond to, all appropriate consultation requests.



# **COURSE CONTENTS**





1. Applied Anatomy & genetics
2. Applied Physiology
3. Applied Pathology
4. Nutrition and Dietics
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 & its management
7. Behavior Management: Non- pharmacological & Pharmacological methods.
8. Child Abuse & Dental Neglect
9. Conscious Sedation, Deep Sedation & General Anesthesia in Pediatric Dentistry: (Including Other Drugs, Synergic & Antagonistic Actions of Various Drugs Used in Children
10. Preventive Pedodontics: Concepts, Anticipatory guidance, dental home & first dental visit, chair side preventive measures for dental diseases, highrisk 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 & 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 & 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 & 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 & 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 (Cephalometrics, Image processing, Tracing, Radiation hygiene, Video imaging & 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, IQ tests, 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, Aetiology & Pathogenesis
  - Caries pattern in primary, young permanent and permanent teeth in children.
  - Rampant caries, early childhood caries and extensive caries. Definition, aetiology, 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 & Management.
27. Dental Emergencies in Children and their Management.
28. Dental Materials used in Pediatric Dentistry.
29. Preventive Dentistry :
- Definition
  - Principles & Scope
  - Types of prevention
  - Different preventive measures used in Pediatric Dentistry including fissure sealants and caries vaccine.
30. Dental Health Education & 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 Padeiatric 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. LASER/minimum invasive procedures



# **TEACHING AND LEARNING ACTIVITIES**



## First 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
    - i. Removable type
    - ii. Fixed type
    - iii. Partially fixed and removable
  - e. Two Myofunctional appliance
  - 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 Dumbell 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
    - Gerber space regainer
    - Distal shoe appliance
  - a. Active space maintainers
  - b. For guiding the eruption of first permanent molar

- c. Arch holding device
- d. Functional space maintainer
6. Basics for spot welding exercise
7. Collection of extracted deciduous and permanent teeth
  - a. Drawing of section and shapes of pulp
  - b. Phantom Head Exercises : Performing ideal cavity preparation for various restorative materials for both Deciduous and permanent teeth
  - c. 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 :
  - a. Caries index and performing various caries activity test.
  - b. Oral Hygiene Index
  - c. Periodontal Index
  - d. Fluoride Index
10. Caries risk assessment, use of chairside tests
11. Surgical Exercises : a. Fabrication of splints b. Type of Wiring c. Suturing, various pivot system, pricing & perm. tuli
11. 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. Interpretation of panoramic radiographs
  - d. Mixed dentition cast analysis
12. Library assignment
13. 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	4	6	5
	(c ) Aesthetic Restorations	25	5	10	10
	(d). Pediatric Endodontic Procedures				
	• Deciduous teeth Pulpotomy/Pulpectomy	120	30	45	45
	• Permanent Molars	20	3	7	10
	• Permanent Incisor	15	2	3	10
	• Apexification & Apexogenesis	20	2	8	10
6	Stainless Steel Crowns	75	15	30	30
7	Other Crowns	5	1	2	2
8	Fixed : Space Maintainers Habit breaking appliances	30	8	12	10
9	Removable : Space Maintainers Habit brceking appliances	20	5	7	8
10	Functional Appliances	10	4	4	2



11	Preventive measures like fluoride applications & Pit & Fissure Sealants applications with complete followup and diet counseling	20	8	8	4
12	Special Assignments (i) School Dental Health Programmes	3	1	1	1
	(ii) Camps etc.,	2	1	1	-

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)

**All the students shall complete the minimum quota for the teaching and learning activities, as follows :-**

1	Journal Clubs	5 in a year
2	Seminars	5 in a year
3	Clinical Case Presentations	4 in a year
4	Lectures taken for undergraduates	1 in a year
5	Scientific Paper / Poster Presentations In State / National Level Conferences	4 papers/posters during three years of training workshop period
6	Clinico Pathological Conferences:	2 presentations during three years of training period
7	Scientific Publications (optional)	one publication in any indexed scientific journal
8	Submission of Synopsis	one synopsis within six months from the date of commencement of the course
9	Submission of Dissertation months	one dissertation within six before appearing for the university examination
10	Submission of Library Dissertation	one dissertation within eighteen months from the date of commencement of the course

### **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 check list that assess various aspects.



**LEARNING RESOURCE  
MATERIAL**



**BOOKS RECOMMENDED :**

S.NO	AUTHOR	TITLE
1	Mc. Donald R. E. & David R. Avery.	Dentistry for the Child Adolescent : 7th Edition
2	Sydney B. Finn.	Clinical Paedodontics
3	Mathewson R. J. and Primosch R. E.	Fundamentals of Paediatric Dentistry
4	Kennedy and Curzon.	Kennedy's Paediatric Operative Dentistry
5	Stephen H. Y. Wei.	Clinical Use of Fluorides
6	Wright	Child Management in Dentistry
7	Forrester D. J.	Paediatric Dental Medicine
8	Stewart, Barber, Trautman and Wei.	Paediatric Dentistry
9	Pinkham JR	Paediatric Dentistry : Infancy through Adolescence
10	Andreasen.	Traumatic Injuries of Anterior Teeth

**BOOKS AS REFERENCE :**

S.NO	AUTHOR	TITLE
1	Proffit.	Contemporary Orthodontics
2	Fejerskov, Ekstrand and Burt	Fluoride in Dentistry
3	Andlaw and Rock	Manual of Paedodontics
4	Cripien and Scully.	A Colour Atlas of Oral Diseases in Children and Adolescents
5	Minoru Nakata & Stephan H. Y. Wei.	Occlusal Guidance in Paediatric Dentistry
6	Gordon Nikiforuk.	Understanding Dental Caries
7	Braham and Morris.	Text Book of Paediatric Dentistry
8	Goran Kuch.	Pedodontics : A Clinical Approach
9	Kaban.	Paediatric Oral and Maxillofacial Surgery
10	Nizel.	Nutrition in Preventive Dentistry: Science and Practice

**RECOMMENDED JOURNALS :****Indian**

1. Journal of Indian Society of Pedodontist and Preventive Dentistry.
2. International Journal of Clinical Pediatric Dentistry

**International**

1. ASDC Journal of Dentistry for Children.
2. International Journal of Paediatric Dentistry.
3. Paediatric Dentistry.
4. Journal of Clinical Pediatric Dentistry.
5. Dental Clinics of North America.
6. Journal of Dental Research.
7. Journal of the American Dental Association.
8. Quintessence International.



**SCHEME OF  
EXAMINATION**



## UNIVERSITY EXAMINATION :

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

### A. Theory :

**Part-I:** Shall consist of one paper

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 concerned Department/ Specialty.

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:** Shall consist of three papers, namely- Paper-I, Paper-II & Paper-III

(ii) **Practical and Clinical Examination;**

(iii) **Viva-voce; and**

(iv) **Pedagogy**

## SCHEME OF EXAMINATION :

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-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 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

**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 analysing type question

**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

1. Conscious sedation, Deep Sedation & General Anesthesia in Pediatric Dentistry
2. Gingival & Periodontal Diseases in Children
3. Pediatric Operative Dentistry
4. Pediatric Endodontics
5. Traumatic Injuries in Children
6. Interceptive Orthodontics
7. Oral Habits in children
8. Dental Care of Children with special needs
9. Oral Manifestations of Systemic Conditions in Children & their Management
10. Management of Minor Oral Surgical Procedures in Children
11. Dental Radiology as Related to Pediatric Dentistry
12. Pediatric Oral Medicine & Clinical Pathology
13. Congenital Abnormalities in Children
14. Dental Emergencies in Children & Their Management
15. Dental Materials Used in Pediatric Dentistry
16. Case History Recording
17. Setting up of Pedodontic & Preventive Dentistry Clinic

**PART II - PAPER - II :** Preventive and community dentistry as applied to pediatric dentistry.

1. Child Psychology
2. Behavior Management
3. Child Abuse & Dental Neglect
4. Preventive Pedodontics
5. Cariology
6. Preventive Dentistry
7. Dental Health Education & School Dental Health Programmes:
8. Fluorides
9. Epidemiology

10. Comprehensive Infant Oral Health Care/Comprehensive cleft care
11. Principles of Bio-Statistics & Research Methodology & Understanding of Computers and Photography

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

**B. PRACTICAL EXAMINATION: 200 MARKS**

The clinical / practical and viva-voce examinations are conducted for a minimum of two days.

**First day:**

1. Long Case discussion, pulp therapy i.e. pulpectomy on a primary molar  

Long Case discussion	:	20 marks
Rubber dam application	:	10marks
Working length X-ray	:	20 marks
Obturation	:	20 marks
<b>Total :</b>		<b>70 marks</b>
  
2. Case discussion, crown preparation on a primary molar for stainless steel crown and cementation of the same.  

Case discussion	:	10marks
Tooth preparation	:	20marks
Crown selection and cementation	:	20marks
<b>Total</b>	:	<b>50marks</b>
  
3. Case discussion, band adaptation for fixed type of space maintainer & impression making  

Case discussion	:	20marks
Band adaptation	:	20marks
Impression	:	20marks
<b>Total</b>	:	<b>60marks</b>

**Second day :**

- |  |   |                 |
|--|---|-----------------|
| Evaluation of fixed space maintainer and cementation | : | <b>20 marks</b> |
|--|---|-----------------|

**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 will 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.





**ORAL MEDICINE AND  
RADIOLOGY**



## ORAL MEDICINE AND RADIOLOGY

Oral Medicine is a speciality within Dentistry that focuses on the Diagnosis and Management of complex Diagnostic and Medical Disorders affecting the Mouth and Jaws.

MaxilloFacial Imaging is a branch of Dental science that deals with use of X Rays , Radioactive substances and other forms of Radiant energy in the Diagnosis and Treatment of Disease.

### OBJECTIVES :

At the end of 3 years of training the candidate should be able to acquire adequate knowledge of the discipline.

### ATTITUDES :

The positive mental attitude and the persistence of continued learning need to be inculcated.

### SKILLS AND ATTITUDE :

Three important skills need to be impart and maxillo-facial diseases

1. Diagnostic skill in recognition of oral with radiographic diagnosis 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

### KNOWLEDGE :

Theoretical, Clinical and practical knowledge of all oral mucosal lesions, skeletal involvement in maxillo-facial region, diagnostic procedures pertaining to them and latest information of imaging modules.



# **COURSE CONTENT**



## **PART I - 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 :
  - a. Vestibule and oral cavity proper
  - b. Tongue and teeth
  - c. Palate – soft and hard
4. Nasal Cavity
  - a. Nasal septum
  - b. Lateral wall of nasal cavity
  - c. 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 :**

1. Development of face, palate, nasal septum and nasal cavity, paranasal air sinuses
2. Pharyngeal apparatus in detail including the floor of the primitive pharynx
3. Development of tooth in detail and the age changes
4. Development of salivary glands
5. Congenital anomalies of face must be dealt in detail.

**HISTOLOGY :**

1. Study of epithelium of oral cavity and the respiratory tract
2. Connective tissue
3. Muscular tissue
4. Nervous tissue
5. Blood vessels
6. Cartilage
7. Bone and tooth
8. Tongue
9. Salivary glands
10. Tonsil, thymus, lymph nodes

**PHYSIOLOGY :**

1. General Physiology :
  - Cell
  - Body Fluid Compartments
    - Classification
    - Composition
  - Cellular transport
  - RMP and action potential

**MUSCLE NERVE PHYSIOLOGY :**

1. Structure of a neuron and properties of nerve fibers
2. Structure of muscle fibers and properties of muscle fibers
3. Neuromuscular transmission
4. Mechanism of muscle contraction

**BLOOD :**

1. RBC and Hb
2. WBC – Structure and functions
3. Platelets – functions and applied aspects
4. Plasma proteins
5. Blood Coagulation with applied aspects

6. Blood groups
7. 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 :**

**1. 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 of 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
2. Dosage and mode of administration of drugs
3. Action and fate of drugs in the body
4. Drugs acting on the CNS
5. Drug addiction, tolerance and hypersensitive reactions
6. General and local anesthetics, hypnotics, antiepileptics, and & tranquilizers



7. Chemotherapeutics and antibiotics
8. Analgesics and anti – pyretics
9. 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

**PART - II - PAPER - I : 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, Ultrasound & 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

**PART-II - PAPER-II :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 oro – 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
25. Molecular Biology



**TEACHING AND  
LEARNING ACTIVITIES**



## ESSENTIAL KNOWLEDGE

Basic medical subjects, Oral medicine ,clinical dentistry, Management of Medical emergencies, Oral radiology Techniques and interpretation, Diagnosis of oro-facial Disorders.

## PROCEDURAL AND OPERATIVE SKILLS

### I st year

1. Examination of Patient - Case history recordings - 100

- FNAC - 50
- Biopsy - 50

Observe, Assist, & Perform under supervision

2. Intra – Oral radiographs :

- Perform an interpretation -500

### 2<sup>nd</sup> year

1. Dental treatment to medically compromised patients - 25  
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 patient
3. Performing basic CPR and certification by red cross

### 3rd Year

All the above

- Performed independently - Case history: Routine cases - 100
- Interesting Cases – 25
- Intra-oral Radiographs - 100
- Periapical view - 100
- Bitewing view - 50
- Occlusal view - 50
- Extra - oral radiographs of different views – 100

**All the students shall complete the minimum quota for the teaching and learning activities, as follows:-**

1	Journal Clubs	5 in a year
2	Seminars	5 in a year
3	Clinical Case Presentations	4 in a year
4	Lectures taken for undergraduates	1 in a year
5	Scientific Paper / Poster Presentations In State / National Level Conferences	4 papers/posters during three years of training workshop period
6	Clinico Pathological Conferences:	2 presentations during three years of training period
7	Scientific Publications (optional)	one publication in any indexed scientific journal
8	Submission of Synopsis	one synopsis within six months from the date of commencement of the course
9	Submission of Dissertation months	one dissertation within six before appearing for the university examination
10	Submission of Library Dissertation	one dissertation within eighteen months from the date of commencement of the course

### **MONITORING LEARNING PROGRESS**

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



**LEARNING RESOURCE  
MATERIAL**



**BOOKS RECOMMENDED :**

S.NO	AUTHOR	TITLE
1	Richard G. Topazian, Morton H. Goldberg	Management of Infections of the Oral And Maxillofacial region; W. B. Saunders
2	Greenberg	Burkets Oral Medicine – 11th edition, BC Decker Inc
3	Crispian Scully, Lakshman P. Samaranayake	Clinical Virology in Oral Medicine and Dentistry; Cambridge University Press, Cambridge, UK
4	Sol Silverman, L. Roy Eversole, Edmond L. Truelove	Essentials of Oral Medicine, BC Decker (with CD)
5	Norman K. Wood, Paul W. Goaz	Differential Diagnosis of Oral and Maxillofacial lesions – 5th edition, Mosby
6	Som PM	Head and Neck Imaging, Vol 2, 5th Edition, Publisher: Mosby Elsevier 2011
7	Stuart C. White, DDS, PhD and Michael J. Pharoah, DDS	Oral Radiology: Principles and Interpretation; 6th edition, Publisher : Mosby
8	Eric Whaites	Essentials of Dental Radiography and Radiology; 4th ed, Publisher : Churchill Livingston
9	Olaf Langland	Principles and practice of Panoramic Radiology, 2nd ed, Publisher: W B Saunders Co
10	Joen I. Haring, Laura Jansen	Dental Radiography: Principles and Techniques, 2nd edition, Publisher : WB Saunders

**BOOKS AS REFERENCE :**

S.NO	AUTHOR	TITLE
1	Newell W. Johnson	Risk Markers For Oral Disease –Oral Cancer; Cambridge University Press
2	Sol Silverman	Colour atlas of Oral Manifestations of AIDS; 2nd ed; BC Decker
3	Isaïc van der Waal, Jens J. Pindborg	Diseases of the Tongue; 1st ed; Quintessence Pub. Co.
4	Waal IVD	Diseases of Salivary glands including dry mouth and Sjogrens syndrome

5	WHO	Application of International Classification Of Diseases to dentistry and stomatology -ICA – DA; 3rd ed, WHO Geneva
6	Raymond F. Zambito, Dennis J. Cleri	Immunology and infectious diseases of the mouth head and neck; Mosby Year Book
7	K Kian Ang; Adam S. Garden	Radiotherapy for head and neck cancers-indications and techniques; 3rd ed; Lippincott Williams & Wilkins
8	Charles McNeill	Temporomandibular disorders – guidelines for Classification, Management and Assessment, 2nd ed; Elsevier Science
9	Robert.G.Gorlin	Syndromes of head and neck-4th ed, Print 2001.Oxford University Press
10	Jeffrey P. Okeson	Bell’s Orofacial Pain; 6th edition; Quintessence Publishing

**RECOMMENDED JOURNALS.**

**Indian**

- 1 Journal of Indian Academy of Oral Medicine & Radiology
- 2 Indian Journal of Dental Research
- 3 Indian Journal Of Forensic Odontology

**International**

- 1 Oral diseases
- 2 Oral microbiology and immunology
- 3 Oral surgery,oral medicine, oral pathology, oral radiology and endodontology
- 4 Oral pathology and medicine
- 5 Dentomaxillofacialradiology
- 6 Journal of dental research
- 7 Cancer
- 8 Oral Oncology
- 9 Journal of Orofacial pain
- 10 International journal of forensic dentistry





**SCHEME OF  
EXAMINATION**



### UNIVERSITY EXAMINATION :

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

#### (i) Theory :

**Part-I:** Shall consist of one paper

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 concerned Department/ Specialty.

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:** Shall consist of three papers, namely- Paper-I, Paper-II & Paper-III

#### (ii) Practical and Clinical Examination;

#### (iii) Viva-voce; and

#### (iv) Pedagogy.

### SCHEME OF EXAMINATION :

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-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 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

**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 analysing type question

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

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

**Day 1**

**Clinical Case Presentation**

2 Spotters	2x10	=	20 Marks
2 Short Cases	2 x 15	=	30 Marks
1 Long Case	1 x 50	=	50 Marks
Total		=	<b>100 Marks</b>

**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

**Day 2**

**C. Viva Voce : 100 Marks**

**Viva-Voce examination : 80 marks**

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

**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.

