

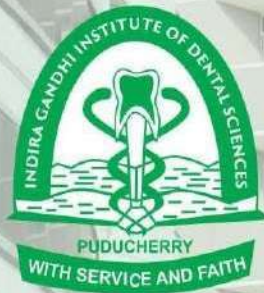
**SRI BALAJI**

ACCREDITED BY NAAC  
WITH A++ GRADE



**VIDYAPEETH**

DEEMED TO BE UNIVERSITY  
DECLARED U/S 3 OF THE UGC ACT, 1956

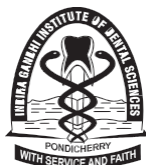


# **INDIRA GANDHI INSTITUTE OF DENTAL SCIENCES**

SBV Campus, Puducherry - 607 402

**MASTER OF DENTAL SURGERY  
(MDS)**

**SYLLABUS, RULES AND REGULATIONS  
2023-2024 ONWARDS**



# INDIRA GANDHI INSTITUTE OF DENTAL SCIENCES

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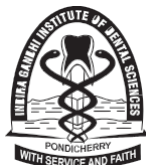
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## **SBV VISION & MISSION**

**Vision**

To be in the forefront of higher education and to give the country the high calibre man power

**Mission**

1. To provide collegiate education up to post-doctoral programs.
2. To ensure high standard of behavior and discipline amongst our student community.
3. To produce Medical Professionals who are concerned with determinants of disease, disability and premature death and the organization of appropriate health services including Health Education and policy.
4. To create a climate of joyful learning.
5. To serve in particular the poor and minority population irrespective of caste and creed, who suffer disproportionately from illness and disability.
6. To impart skills in students which will make them successful in their endeavours.
7. To provide meaningful industrial education, research and training at all levels.
8. To offer a wide range and flexibility of options especially in the areas of non-formal and continuing education.
9. To set a high standard of professional conduct and ethics for staff and students.

## **IGIDS - VISION & MISSION**

## **Vision**

To evolve as a centre of excellence in education, health care and research in dentistry.

## **Mission**

1. To provide progressive, relevant and robust academic and training environment for the students and staff to hone the necessary skills needed for a dental health professional.
2. To develop core competencies needed for the dentists of tomorrow and to be leaders in the field.
3. To stretch horizons of academic and clinical training and research to achieve and excel the global bench mark.
4. To reach out to the public, educate them in disease prevention and provide quality treatment.
5. To ensure high standards of discipline and professionalism among students.
6. To install ethical, humanistic and moral values in education, research and patient care.
7. To develop the spirit of inquiry and thirst for life-long learning in the profession to deliver quality of care.



## ANNEXURE

Rules, regulation and curriculum of Balaji Vidyapeeth have been placed before the Standing Academic Board on 26.10.2023 consisting of the following Internal & External Members.

### **Chair Person:**

Dr. Aruna Sharma, Principal, IGIDS

### **EXTERNAL MEMBERS**

1. Dr. Arvind Warriar. S,  
Prof & Head, Oral Medicine & Radiology,  
Saveetha Dental College & Hospital, Chennai
2. Dr. Anitha.V,  
Prof & Head, Periodontology,  
Chettinad dental College And Research institute, Kancheepuram
3. Dr. Kurinchikumaran,  
Prof& Head, Orthodontics,  
Cuddalore GDC, Chidambaram
4. Dr. Preetha Elizabeth Chaly,  
Prof & Head, Public Health Dentistry,  
Meenakshi Dental College, Chennai.
5. Dr. Seyed Ashraf Ali,  
Prof & Head, Prosthodontics  
Cuddalore GDC, Chidambaram
6. Dr. Arathi Rao,  
Professor, Pediatric and Preventive Dentistry,  
College of Dental Sciences, Mangalore
7. Dr. MadavanNirmal. R,  
Prof & Head, Oral pathology,  
Cuddalore GDC, Chidambaram
8. Dr. Maduram,  
Prof & Head, Conservative Dentistry,  
KIDS, Chennai

9. DR. Thiruneelakandan,  
Prof & Head, Oral Surgery  
Cuddalore GDC, CHIDAMBARAM

#### **INTERNAL MEMBERS**

1. Dr. Santhadevy. A, Prof. & Head,  
Department of Oral&Maxillofacial Pathology & Oral Microbiology, IGIDS
2. Dr. Jagat Reddy, Prof. & Head,  
Department of Oral Medicine and Radiology, IGIDS
3. Dr. Sathyanarayanan.R, Prof. & Head,  
Oral & Maxillofacial Surgery , IGIDS
4. Dr. R.Saravanakumar. R, Prof. & Head,  
Department of Periodontology, IGIDS
5. Dr. Prathima.G.S, Prof. & Head,  
Department of Pediatric and Preventive Dentistry
6. Dr. Dhanavel. C, Prof. & Head,  
Department of Conservative Dentistry and Endodontics
7. Dr. Manoharan.P.S, Prof. & Head  
Department of Prosthodontics and Crown & Bridge
8. Dr. Pavithranand. A, Prof.& Head,  
Department of Orthodontics & Dental Orthopaedics
9. Dr. Senthil .M, Professor & Head,  
Department of Public Health Dentistry
10. Dr. Rajkumar. E, Reader,  
Deputy Registrar, IGIDS

## **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 scope of the Deemed University Sri Balaji Vidyapeeth, the Standing Academic council here by 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 PROGRAMME OF INDIRA GANDHI INSTITUTE OF DENTAL SCIENCES OF SRI BALAJI VIDYAPEETH.

They shall come into force from the academic year 2023-24 sessions. The regulations and the syllabus are subject to modification by the Standing Academic Council from time to time.

#### **GENERAL CONDITIONS TO BE OBSERVED BY POST GRADUATE TEACHING INSTITUTIONS**

(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 post-graduate 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 pharma co-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.

#### **ELIGIBILITY FOR ADMISSION :**

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 CANDIDATE FOR POST-GRADUATE COURSES :**

There shall be a uniform NEET (National Eligibility –Cum Entrance Test) 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 the number of qualifying candidates in the respective categories on the basis of the above mentioned percentile are less than three times the number of vacancies, the cut-off percentile will be automatically lowered in such a manner that the number of eligible candidates shall be minimum three times the number of seats in each respective category.

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 or rural areas upto the maximum of 30% of the marks obtained in NEET. The remote, difficult and rural areas shall be as defined by State Government / competent authority from time to time.

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. 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 post-graduate 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 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 a shaving 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.

## GOALS

The goals of the post-graduate training in various specialities is to train the graduate in Dental Surgery who will,

- (I) Practice respective speciality efficiently and effectively, backed by scientific knowledge and skill;
- (ii) Exercise empathy and a caring attitude and maintain high ethical standards;
- (iii) Show Continuing interest in professional education in the speciality and allied specialities whether in teaching or practice;
- (iv) willing to share the knowledge and skills with any learner, junior or a colleague;
- (v) To develop the faculty for critical analysis and evaluation of various concepts and views and to adopt the most rational approach.

## OBJECTIVES

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

The objectives to be achieved by the candidate on completion of the course may be classified as under:–

- (a) Knowledge (Cognitive domain)
- (b) Skills (Psycho motor domain)
- (c) Human values, ethical practice and communication abilities

### (a) KNOWLEDGE

- (i) Demonstrate understanding of basic sciences relevant to speciality;
- (ii) Describe etiology, patho physiology, principles of diagnosis and management of common problems within the speciality in adults and children;
- (iii) Identify social, economic, environmental and emotional determinants in a given case and take them into account for planned treatment;
- (iv) Recognise conditions that may be outside the area of speciality or competence and to refer them to the concerned specialist;
- (v) Update knowledge by self study and by attending courses, conferences and seminars pertaining to speciality;
- (vi) Undertake audit, use information technology and carry out research in both basic and clinical with the aim of publishing or presenting the work at various scientific gathering;

### (b) SKILLS:

- (I) Take a proper clinical history, examine the patient, perform essential diagnostic procedures and order relevant tests and interpret them to arrive at the diagnosis about the condition;
- (ii) Acquire adequate skills and competence in performing various procedures as required in the speciality.

**(a) HUMAN VALUES, ETHICAL PRACTICE AND COMMUNICATION ABILITIES.**

- (i) Adopt ethical principles in all aspects of practice;
- (ii) Foster professional honesty and integrity;
- (iii) Deliver patient care irrespective of social status, caste, creed, or religion of the patient;
- (iv) Develop communication skills, to explain various options available and obtain a true informed consent from the patient;
- (v) Provide leadership and get the best out of his team in a congenial working atmosphere;
- (vi) Apply high moral and ethical standards while carrying out human or animal research;
- (vii) Be humble and accept the limitations in his knowledge and skill and to ask for help from colleagues when needed;
- (viii) Respect patient's rights and privileges including patient's right to information and right to seek a second opinion.

## **SPECIALITIES**



The following specialties for the post-graduate course to be followed by the university / institute are detailed as under:-

**(I) Prosthodontics and Crown & Bridge:**

Prosthodontics and Crown & Bridge is a branch of dental art and science pertaining to the restoration and maintenance of oral function, health, comfort and appearance by their placement of missing or lost natural teeth and associated tissues either by fixed or removable artificial substitutes.

**(ii) Periodontology:**

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

**(iii) Oral & Maxillofacial Surgery:**

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

**(iv) 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.

**(v) Orthodontics and Dentofacial Orthopedics:**

Orthodontics and Dentofacial Orthopedics deals with prevention and correction of oral anomalies and malocclusion and the harmonising of the structures involved, so that the dental mechanisms function in a normal way.

**(vi) 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.

**(vii) Public Health Dentistry**

Public Health Dentistry is the science and art of preventing and controlling dental diseases and promoting dental health through organised community efforts.

**(viii) Pediatric and Preventive Dentistry**

Pediatric and Preventive Dentistry deals with prevention and treatment of oral and dental ailments that may occur during childhood.

**(ix) Oral Medicine and Radiology**

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

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

## **SYLLABUS DISTRIBUTION IN VARIOUS SPECIALITIES:**

The syllabus for post-graduate course includes both Applied Basic Sciences and subjects of concerned speciality. The syllabus in Applied Basic Sciences shall vary according to the particular speciality, similarly the candidates shall also acquire adequate knowledge in other subjects related to their respective speciality.

### **(i) PROSTHODONTICS AND CROWN & BRIDGE**

#### **Part-I**

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

#### **Part-II**

Paper-I - Removable Prosthodontics and Implant supported 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**

PaperI - Normal Periodontal structure, Etiology and Pathogenesis of Periodontal diseases, epidemiology as related to Periodontics

PaperII - Periodontal diagnosis, therapy and Oral implantology

PaperIII - Descriptive and analysing type question

### **(i) ORAL & MAXILLOFACIALSURGERY**

#### **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

**Part-II** Dental Materials.

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) PUBLIC HEALTH DENTISTRY**

### Part-I

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

### Part-II:

Paper-I - Public Health

Paper-II - Dental Public Health

Paper-III - Descriptive and analysing type question

## **(viii) PEDIATRIC AND PREVENTIVE DENTISTRY**

### Part-I

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

## **(ix) ORAL MEDICINE AND RADIOLOGY**

### Part-I

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

### Part-II:

Paper-I - Oral and Maxillofacial Radiology

Paper-II - Oral Medicine, therapeutics and laboratory investigations

Paper-III - Descriptive and analysing type question.

**TEACHING & LEARNING ACTIVITIES  
&  
ASSESSMENT METHODS**

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.

During the period, each student shall take part actively in learning and teaching activities design of training, by the institution or the university. The teaching and learning activities in each speciality, shall be as under:-

**(a) 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.

**(b) JOURNAL REVIEW:**

The journal review meetings shall be held at least once a week. All trainees, associate and staff associated with the post-graduate programme are expected to participate actively and enter relevant details in the logbook. The trainee shall make presentations from the allotted journals of selected articles. A model check list for the evaluation of journal review presentation is annexed at Schedule-I of these regulations.

**(c) SEMINARS:**

The seminars shall be held at least twice a week in each department. All trainees are expected to participate actively and enter relevant details in logbook. A model check list for the evaluation of seminar presentation is annexed at Schedule-II of these regulations.

**(d) SYMPOSIUM:**

It is recommended to hold symposium on topics covering multiple disciplines.

**(e) CLINICAL POSTINGS:**

Each trainee shall work in the clinics on regular basis to acquire adequate professional skills and competency in managing various cases, A model check list for evaluation of clinical postings is annexed at Schedule-III of these regulations.

**(f) CLINICO- PATHOLOGICAL CONFERENCE:**

The clinico pathological conference shall be held once a month involving the faculties of Oral Medicine and Radiology, Oral Pathology and allied clinical departments. The trainees shall be encouraged to present the clinical details, radiological and histo-pathological interpretations and participation in the discussions.

**(g) INTER-DEPARTMENTAL MEETINGS:**

To encourage integration among various specialities, there shall be inter-departmental meeting chaired by the Dean with all heads of post-graduate departments at least once a month.

**(h) TEACHING SKILLS:**

All the trainees shall be encouraged to take part in undergraduate teaching programmes either in the form of lectures or group discussions. A model check list for evaluation of teaching skills is annexed at Schedule-IV of these regulations.

**(i) DENTAL EDUCATION PROGRAMMES:**

Each department shall organise dental education programmes on regular basis involving other institutions. The trainees shall also be encouraged to attend such programmes conducted outside their university or institute.

**(j) 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.

**(k) ROTATION AND POSTING IN OTHER DEPARTMENTS:**

To bring in more integration among the specialities and allied fields, each department shall workout a programme to rotate the trainees in related disciplines.

**(l) DISSERTATION / THESIS:**

The trainees shall prepare a dissertation based on the clinical or experimental work or any other study conducted by them under the supervision of the guide. A model check list for evaluation of dissertation presentation and continuous evaluation of dissertation work by guide / co-guide is annexed at Schedule-V of these regulations. A model overall assessment sheet to be filled by all the trainees undergoing post- graduate course is annexed at Schedule-VI of these regulations.

**Quota for Teaching Learning Activities**

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

**STIPEND :** The post-graduate students shall be paid stipend only for duration of three years of the course, as may be fixed by the Central Government/State Government/Union territory Administration or such authority as the respective government/administration may authorise. Where any dispute arises regarding any such stipend, including, quantum of 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.

**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.

## **EXAMINATIONS**

### **(a) ELIGIBILITY:**

- (i) Attendance: Every candidate shall secure (80% attendance during each academic year).
- (ii) Progress and conduct: Every candidate shall participate in seminars, journal review meetings, symposia, conferences, case presentations, clinics and didactic lectures during each year organised by the concerned department.
- (iii) Work diary and log book: Every candidate shall maintain a work diary and log book as per Annexure-I appended to these regulations for recording his or her

The following requirements shall be fulfilled by the candidate to become eligible for the final examination.

Participation in the training programmes conducted by the department.

The work diary and log book shall be verified and certified by the Head of the Department of the institution.

The certification of satisfactory progress is based on the work diary and log book.

### **(b) 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:–

- (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.

**( c ) DISSERTATION:** Every candidate appearing for the post-graduate degree examination shall at least six months prior to the examinations, submit with his form for examination, four typewritten copies of the dissertation undertaken by the candidate, prepared under the direction and guidance of his/her guide. The dissertation so submitted shall be referred to the examiners for their examination and acceptance of it shall be a condition precedent to allow the candidate to appear for the written part of the examination:

Provided that a candidate whose dissertation has been accepted by the examiner, but declared failed at the examination, shall be permitted to re-appear at the subsequent examination without a new dissertation:

Provided further that if the dissertation is rejected by the examiner, the examiner shall assign reasons therefor with suggestions for its improvement to the candidate and such candidate shall re-submit his/ her dissertation to the examiner who shall accept it before appearing in the examination.



### **(a) 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.

### **(b) VIVA-VOCE EXAMINATION:**

Viva voce examination aims at assessing the depth of knowledge, logical reasoning, confidence and communication skill of the students.

### **(c) 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 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.

### **(d) DISTRIBUTION OF MARKS:**

Theory : (Total 400 Marks)

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

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

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

- (i) Paper-I: 2 long essay questions of 25 marks each and 5 short essays of 10 marks each. (Total of 100 Marks)
- (ii) Paper-II: 2 long essay questions of 25 marks each and 5 short essays of 10 marks each. (Total of 100 Marks)
- (iii) Paper III: 2 out of 3 essay questions (50 x 2 = 100 Marks)

Practical and Clinical Examination : 200 Marks

Viva-voce and Pedagogy : 100 Marks

## **EXAMINERS:**

Part I: There shall be one internal and one external examiner for 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.

## **EXAMINATION CENTRE:**

- (1) In the event of university exam being conducted in the same city or town having more than one post-graduate institution under the same university, one central examination centre shall be fixed by the university and the students from all the institutions of the city shall take the examination in that center: Provided that the clinical and viva-voice shall be conducted at their institute.
- (2) Rotation of the institutions as center of examination shall be as per direction of the university.

## **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 PASS CERTIFICATE:**

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

**Checklist – 1**  
**Model check list for evaluation of journal review presentations:**

Name of the trainee :

Date :

Name of the faculty/observer :

S. 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 :

S. 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:**

Name of the trainee :

Date :

Name of the faculty/observer :

<b>S. No</b>	<b>Items for observation during presentation</b>	<b>Poor 0</b>	<b>Below average 1</b>	<b>Average 2</b>	<b>Good 3</b>	<b>Very good 4</b>
1	Regularity of attendance					
2	Punctuality					
3	Interacti`on 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 :

<b>S. No</b>	<b>Items for observation during presentation</b>	<b>Poor 0</b>	<b>Below average 1</b>	<b>Average 2</b>	<b>Good 3</b>	<b>Very good 4</b>
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	Strong point	Weak point
1	Communication of the purpose of the talk		
2	Evokes audience interest in the subject		
3	The introduction		
4	The sequence of ideas		
5	The use of practical examples and /or illustrations		
6	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 :

S. 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 :

<b>S. No</b>	<b>Items for observation during presentation</b>	<b>Poor 0</b>	<b>Below average 1</b>	<b>Average 2</b>	<b>Good 3</b>	<b>Very good 4</b>
1	Periodic consultation with guide/ co guide					
2	Regular collection of case material					
3	Depth of analysis/ Discussion					
4	Department presentation of findings					
5	Quality of final output					
6	others					
	<b>Total score</b>					

**Checklist – 8**  
**Overall assessment sheet**

Name of the trainee :

Date :

Name of the faculty/observer :

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

**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

**CONSERVATIVE DENTISTRY  
& ENDODONTICS**



## **DESCRIPTION OF THE PROGRAMME**

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 to them to come to a reasonable diagnosis about the dental condition in general and Conservative Dentistry – Endodontics in particular. And undertake complete patient monitoring including preoperative as well as post-operative care of the patient.
- Perform all levels of restorative work and surgical and non-surgical Endodontics including endodontic endosseous implants, as well as endodontic-periodontal surgical procedures as part of multi disciplinary approach to clinical condition.
- Provide basic life saving support in emergency situations.
- Manage acute pulpal and pulpo-periodontal situations.
- Have a thorough knowledge of infection control measures in the dental clinical environment and laboratories.

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

- Adopt ethical principles in all aspects of restorative and 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 Conservative Dentistry 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, patho physiology, 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 multi disciplinary approach or a clinical situation outside the realm of the speciality, which he or she should 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.

## **PROGRAM EDUCATIONAL OBJECTIVES(PEO)**

**At the end of the Dental postgraduate Programme the student is expected to be a competent specialist who is**

**PEO1.** Able to systematically diagnose and plan treatment for diseases of oral cavity and head & neck with systemic considerations and carry out the treatment with expected competency with patient centered approach

**PEO2.** Able to deliver preventive treatment and counseling to patients who are at risk of developing diseases affecting the tooth associated structures of head and neck

**PEO3.** is a community oral health educator & participates in the rural health care delivery programmes existing in the country & also participate in the implementation of the National Oral Health Program.

**PEO4.** is involved to practice evidence based dentistry, participate in dental research and contribute to the scientific community at large, develop continuous learning habit, in an aim to improve the standards of care to the society.

**PEO 5.** Provide a holistic care to the patient with utmost care including high standards of professionalism, ethics and good communication skills

**Competent** – One who exhibits behaviour of critical thinking, demonstrates high standards of patient care through quality delivery of treatment, interpersonal and communication skills, professionalism, maintenance of oral health and practice management skills.

## **PROGRAM OUTCOME (PO)**

**PO 1.** Ability to diagnose using routine clinical work up and appropriate investigations and referral, plan preventive, interceptive and therapeutic treatment for common diseases and conditions of teeth and oral cavity including carious lesions, premalignant lesions, developing malocclusions, growth and developmental disorders using patient centered approach

**PO 2.** Ability to effectively motivate the public towards good oral hygiene practices, educate them to follow oral hygiene measures and to abstain from habits that could prove detrimental to the health of the dental and oral tissues.

**PO 3.** Ability to routinely update state of art developments with regard to materials, techniques and instrumentation and be able to perform on patients with standards of care.

**PO 4.** Ability to prescribe the appropriate pain killers, antibiotics and other appropriate drugs for common infections, diseases or conditions of the oral cavity orally or by other routes like subcutaneous, intramuscular or intravenous wherever appropriate.

**PO 5.** Ability to deliver treatment to patients who are children, geriatric or with special needs or disabilities with utmost concern with sound underlying principles governing the Behavioral management of the general and special population.

**PO 6.** Ability to carry out a holistic integrated dental care through preventive, restorative, procedures, following optimal sterilisation disinfection and waste management protocols with high standards of professionalism and ethics.

**PO 7.** Ability to assess the outcomes to the prescribed objectives and optimal satisfaction of the patient

**PO 8.** Ability to perform extractions, minor oral surgical, preventive and restorative procedures and trauma care under local anesthesia.

**PO 9.** Ability to identify common medical emergencies in dental office like bleeding, syncope, seizure, hypoglycemic episode, hyperventilation and anaphylaxis, to manage the same within the scope of a dental surgeon and also realize the need for early medical intervention.

**PO 10.** Ability to realize the importance of laboratory support and be able to guide the technicians involved in fabrication of restoration and replacements.

**PO 11.** Ability to identify the community needs in prevention of a dental or oral disease and to carry out an action plan for prevention or management of the same which should be aligned with national and global objectives of health care [oral/general] and prevention.

**PO 12** Ability to perform simple research for assessment of demographic status, incidence or prevalence of a disease or condition and be able to correlate the pattern with national and global scenario.

## **COURSE OUTCOME (CO)**



**The student must demonstrate ability to:**

**CO 1:** Take relevant case history pertaining to the individual's chief complaint.

**CO 2:** Prevent the occurrence of carious lesions by providing proper diet counselling to the rural community and individual patients.

**CO 3:** Diagnose the carious and non carious lesions and perform vitality tests.

**CO 4:** Prevent the progression of incipient carious lesions with fluoride application and pit and fissure sealants.

**CO 5:** Manage dental emergencies due to trauma under appropriate aseptic condition.

**CO 6:** Proper interpretation of intra oral radiographs.

**CO 7:** Formulate treatment plan for various clinical findings including all age groups.

**CO 8:** Perform esthetic advanced restorations by smile designing and evaluate for the patient satisfaction.

**CO 9:** Treat the carious lesions with simple and complex, direct and indirect, metal and esthetic restorations.

**CO 10:** Manage deep carious lesions with restorative treatment.

**CO 11:** Perform endodontic treatment in anterior and posterior teeth.

**CO 12:** Provide appropriate post endodontic restorations including cast post .

**CO 13:** Perform researches in the field of speciality and formulate a result within the period of education

**CO 14:** Complete a library dissertation on a topic.

## **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–developmentandcomposition,physicalcharacteristics,chemicalproperties, 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, nucleo proteins, 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 – is chemia, 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 Paraoral structures, dental caries.
- Regressive changes of teeth, pulp, periapical pathology, pulp reaction to dental caries and dental procedures.
- Bacterial, viral, mycotic infection soft 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, bacterioids, fusobacteria, spirochetes, mycobacterium, virus and fungi.
- Cross infection, infection control, infection control procedure, sterilization and disinfection.
- Immunology–antigen anti body reaction, allergy, hypersensitivity and anaphylaxis, auto immunity, grafts, viral hepatitis, HIV infections and aids. Identification and isolation of microorganisms from infected root canals. Culture medium and culturing technique (Aerobic and anaerobic interpretation and antibiotic sensitivity test).

## **PHARMACOLOGY :**

- Dosage and route of administration of drugs, actions and fate of drug in body, drug addiction, tolerance of hypersensitivity reactions.
- Local anesthesia – agents and chemistry, pharmacological actions, fate and metabolism of anesthetic, ideal properties, techniques and complications.
- General anesthesia – premedications, neuro-muscular blocking agents, induction agents, inhalation anesthesia, and agents used, assessment of anesthetic problems in medically compromised patient
- Anesthetice mergencies
- Antihistamines, corticosteroids, chemotherapeutic and antibiotics, drug resistance, haemostasis, and haemostatic agents, anticoagulants, sympathomimetic drugs, vitamins and minerals (A,B,C,D,E,KIRON), antisialogogue, immune supressants, 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 bio compatibility.
- 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.
- Method soft testing bio compatibility 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, patho physiology, 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 reparation- recent developments(air abrasions, lasers etc)
- Infection control procedures in conservative dentistry, isolation equipment set c.
- Direct concepts in tooth preparation for amalgam, composite, GIC and restorative techniques, failures and management.
- Direct and indirect composite restorations.
- Indirect tooth colore drestorations - ceramic, inlays and on lays, 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, On lay 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 material 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 instrument set c.)
- 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.
- Multi disciplinary 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.
- Regenerative Endodontics

**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

Preclinical exercise	Quota
Metallic restorations	
a) Silver amalgam restorations	11
b) Indirect restorations Inlay	06
onlay	02
Full crown (Anterior)	03
Full crown (Posterior)	02
Pin retained amalgam	03
Esthetic restorations	
a) Glass Ionomer	10
b) composite restorations	10
Composite Inlay	03
Composite Onlay	01
Veneers	02
Rubber dam exercises	06
Cariology exercises	04
Transparent tooth	14
Radiographic interpretation	14
Root Canal Therapy	
Conventional Anterior	01
Crown down Anterior	01
Step back Anterior	00
Rotary Anterior	02
Posterior RCT	
Conventional Premolar RCT	02
Conventional Molar RCT	00
Rotary Posterior	06
Post endodontic restorations	
Cast post & Core Anterior	01
Cast post & Core Posterior	01
Prefabricated Post Anterior	02
Prefabricated Post Posterior	02
<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
- Angle Build up composite-5
- Diastema closure-5
- Composite veneers-5
- 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
- Undergraduate 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
- Angle Build up composite-5
- Diastema closure-5
- 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 (undergraduates)
- 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

## **ASSESSMENT METHODS**

## **UNIVERSITY EXAMINATION:**

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

### **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

### **PRACTICAL AND CLINICAL EXAMINATION**

**(I) VIVA-VOCE; AND**

**(II) 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 (100Marks):-

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

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

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

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

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

Practical and Clinical Examination : 200Marks

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.

### **DAY1**

**CLINICAL EXERCISE I** – Prefabricated post and core, tooth preparation, impression & temporization – **50 MARKS**

Step 1	Case selection and tooth preparation	10 marks
Step 2	Postselection 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 Matrixing 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

## **VIVA VOCE: 100MARKS**

### **I. VIVA –VOCE EXAMINATION : 80MARKS**

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

## **MODEL QUESTION PAPER**



**M.D.S DEGREE EXAMINATION PART -I  
CONSERVATIVE AND ENDODONTICS**

**APPLIED BASIC SCIENCES: APPLIED ANATOMY, PHYSIOLOGY, PATHOLOGY  
INCLUDING ORAL**

**MICROBIOLOGY, PHARMACOLOGY, BIostatISTICS AND RESEARCH METHODOLOGY  
AND APPLIED DENTAL**

**MATERIALS.**

Time: 3 Hours Maximum: 100 Marks

10X10=100

1. Enumerate the age changes in Enamel along with their clinical significance in Conservative Dentistry.
2. Enumerate the causes of pulpal necrosis and discuss the mechanism of the same.
3. Define Mean and Standard Deviation. Describe the methods of testing levels of significance. (5+5)
4. Describe the mechanism of blood clotting.
5. Describe the precautions adopted to handle mercury in dental clinic.
6. Discuss the management of pain in Conservative dentistry and endodontics.
7. Discuss Styptics and Obtundents.
8. Explain the role of oral microbial flora in Endodontics.
9. Define Adhesion. Write the mechanism of adhesion in glass ionomer cement. (3+7)
10. Classify Composites. Discuss the role of fillers in composite. (2+8)

**M.D.S DEGREE EXAMINATION PART -II**

**CONSERVATIVE AND ENDODONTICS PAPER I – CONSERVATIVE DENTISTRY AND  
AESTHETIC DENTISTRY**

Time: 3 Hours

Maximum: 100 Marks

I. Essays:

(2 x 25 = 50)

1. Classify direct filling gold. Write in detail the composition, properties, manipulation, cavity designs, advantages, uses and technical considerations of direct filling gold.
2. Retention and Resistance form in cavity designs.

II. Short Notes:

(5x 10 = 50)

1. Class V cavity designs.
2. Shade matching and selection.
3. Pit and fissure sealants.
4. Radiation Caries.
5. Deep caries management.

**M.D.S DEGREE EXAMINATION PART -II**  
**CONSERVATIVE AND ENDODONTICS PAPER II – ENDODONTICS**

Time: 3 Hours

Maximum: 100 Marks

I. Essays:

(2 x 25 = 50)

1. Regenerative endodontic procedures.
2. Define smear layer. Write in detail the formation and significance of the smear layer, methods of removal with emphasis on the current trends and advances in endodontic procedures.

II. Short Notes:

(5 x 10 = 50)

1. Management of Perforations.
2. Internal resorption.
3. Irrigant activation techniques.
4. Endodontic bio films.
5. Ramifications of root canal space.

**M.D.S DEGREE EXAMINATION PART -II**  
**CONSERVATIVE AND ENDODONTICS PAPER III – ESSAY**

Time: 3 Hours

Maximum: 100 Marks

I. Essays : Write any two question

(2 x 50 = 100)

1. Enumerate new concepts in initial caries management and discuss materials and techniques used.
2. Advancements in devices to manage the complexities of root canal systems.
3. Bio modification of dentine to improve adhesive restorations.

## **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

### vBOOKS 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

## **ORAL MEDICINE AND RADIOLOGY**

## **DESCRIPTION OF THE PROGRAMME**

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 of maxillofacial region, diagnostic procedures pertaining to them and latest information of imaging modules.



## **PROGRAM EDUCATIONAL OBJECTIVES(PEO)**

At the end of the Dental Post Graduate Programme the student is expected to be a competent practitioner who is

**PEO1.** To be approached for specialty related care owing to his established reputation in patient management and care

**PEO2.** To inculcate the spirit of continuous learning, professional development, seeking evidence and establish evidence through his practice

**PEO3.** To be sensitive to community needs of his specialty and also integrate other disciplines professions wherever required to render holistic oral health care.

**PEO4.** To inculcate the acumen to have an exploratory approach in all his professional endeavors including clinical and pedagogical areas and develop ethical practice in the same to improve the field of research

**PEO 5.** To be sensitive to global, local and institutional goals and develop the spirit to think globally and to act locally responsible health workers.

**COMPETENT** – One who exhibits behavior of critical thinking, demonstrates high standards of patient care through quality delivery of treatment, interpersonal and communication skills, professionalism, maintenance of oral health and practice management skills.

## **PROGRAM OUTCOMES(PO)**

At the end of the MDS programme in Oral Medicine and Radiology, the post graduate scholar is expected to

**PO 1:** Identify various forms of oral disease and develop a systematic protocol with problem list and possible solutions in order to provide a holistic care for the diagnosed problem.

**PO 2:** Use appropriate basic and advanced investigation and diagnostic aids in arriving at a confirmatory diagnosis through meticulous record and interpretation of the findings.

**PO 3:** Execute planned treatment with various options using best evidence based approaches with current state of art techniques and investigations. Ability to educate and council the patient.

**PO 4:** Deliver patient care using inter disciplinary, inter-professional approach and demonstrate astute communication skills, professionalism, team-player abilities and ethics.

**PO 5:** Communicate to laboratory for appropriate investigations and to be able to check and interpret the same to formulate a diagnosis.

**PO 6:** Ability in prescribing, obtaining radiographs along with proper interpretation and formulating a radio diagnosis.

**PO 7:** Use digital technology in investigative processes for both oral medicine and oral radiology.

**COURSE OUTCOMES (CO):**

The following are the course outcomes of a post graduate from the department of Oral Medicine & Radiology.

- CO 1.** Ability to execute a planned and detailed case evaluation of the patient.
- CO 2.** Ability to investigate with appropriate contemporary and relevant investigatory tools.
- CO 3.** Execute planned treatment on a patient after making a diagnosis of the condition.
- CO 4.** Execute a rationale differential diagnosis of conditions that present with similar clinical features.
- CO 5.** Execute planned diagnosis, investigations and treatment on a patient with temporomandibular disorder, myo-facial pain dysfunction or sleep disturbances.
- CO 6.** Evaluate the outcomes of executed treatment with clinical judgment, questionnaires, feedbacks and other objective strategies
- CO 7.** To medically manage patients with systemic disorders and formulate dental management protocol.
- CO 8.** Perform an educational counseling session with the patient on the importance life style related habits their effects and ill effects which influence their well being [models, charts, videos].
- CO 9.** Management of emergencies pertaining to allergy from materials, drugs etc. causing anaphylaxis [subject to availability of cases].

## **COURSE CONTENT**

## **PAPER I : APPLIED BASIC SCIENCES.**

### **APPLIED ANATOMY**

#### 1. Gross anatomy of the face:

- a. Muscles of Facial Expression and Muscles of Mastication.
- b. Facial nerves
- 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 venous system
  - Internal jugular Vein
  - External jugular Vein
- e. Lymphatic drainage
- f. Cervical Spine
- g. Muscles derived from Pharyngeal arches
- h. Infratemporal fossa in detail and Temporomandibular joint
- i. Pituitary
- j. Sympathetic chain
- k. Cranial nerves- V, VII, IX, XI, & XII
- L. Endocrine Glands
  - Thyroid
  - Parathyroid
  - Pancreas
- M. Exocrine glands
  - Parotid
  - Thyroid Parathyroid



3. Oral Cavity:
  - a. Oral cavity and its Organs
  - b. Tongue and teeth
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

## **1. PHYSIOLOGY:**

### **A. General Physiology:**

- Cell
- Body Fluid Compartments
  - ▶ Classification
  - ▶ Composition
- Cellular transport
- Resting Membrane Potential and action potential

### **B. 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 and Junctions
4. Mechanism of muscle contraction

### **C. 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

### **D. 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

### **E. CARDIO-VASCULAR SYSTEM:**

- Cardiac Cycle
- Regulation of heart rate/ Stroke volume / cardiac output / blood flow
- Regulation of blood pressure
- Shock, hypertension, cardiac failure

## **F. EXCRETORY SYSTEM:**

- Renal function tests

## **G. GASTRO – INTESTINAL TRACT:**

Composition, functions and regulation of:

- Saliva
- Gastric juice
- Pancreatic juice
- Bile and intestinal juice
- Mastication and deglutition

## **H. ENDOCRINE SYSTEM:**

- Hormones – classification and mechanism of action
- Hypothalamic and pituitary hormones
- Thyroid hormones
- Parathyroid hormones and calcium homeostasis
- Pancreatic hormones
- Adrenal hormones

## **I. CENTRAL NERVOUS SYSTEM:**

- Ascending tract with special references to pain pathway

## **J. SPECIAL SENSES:**

- Gustation and Olfaction

## **2. BIOCHEMISTRY:**

### **A. 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

### **B. 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

### **C. 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

### **D. 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

### **E. MINERALS**

- Calcium/Phosphorus metabolism specifically regulation of serum calcium levels
- Iron metabolism
- Iodine metabolism- Trace elements in nutrition

### **F. ENERGY METABOLISM**

- Basal metabolic rate
- Specific dynamic action (SDA) of foods

### **G. VITAMINS**

Mainly these vitamins and their metabolic role- specifically vitamin A, Vitamin C, Vitamin D, Thiamin, Riboflavin, Niacin, Pyridoxine

## **3. PATHOLOGY:**

### **A. 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 NSAID'S in inflammation
- Cellular changes in radiation injury and its manifestations

### **B. HOMEOSTASIS:**

- Role of Endothelium in thrombogenesis
- Arterial and venous thrombi
- Disseminated Intravascular Coagulation

### **C. SHOCK:**

- Pathogenesis of hemorrhagic, neurogenic, septic, cardiogenic shock, circulatory disturbances, ischemic hyperemia, venous congestion, edema, infarction

#### **D. CHROMOSOMAL ABNORMALITIES:**

- Marfan's syndrome
- Ehler's Danlos Syndrome
- Fragile X Syndrome

#### **E. HYPERSENSITIVITY:**

- Anaphylaxis
- Type II Hypersensitivity
- Type III Hypersensitivity
- Cell mediated Reaction and its clinical importance
- Systemic Lupus Erythematosus
- Infection and infective granulomas

#### **F. 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

#### **G. 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

#### **4. PHAMACOLOGY:**

- A. Definition of terminologies used
- B. Dosage and mode of administration of drugs
- C. Action and fate of drugs in the body
- D. Drugs acting on the CNS
- E. Drug addiction, tolerance and hypersensitive reactions
- F. General and local anesthetics, hypnotics, antiepileptics, and & tranquilizers
- G. Chemotherapeutics and antibiotics.
- H. Analgesics and antipyretics.
- I. Anti – tubercular and anti – syphilitic drugs.
- J. Antiseptics, sialogogues, and anti – sialogogues.
- K. Haematinics.
- L. Anti – diabetics.
- M. Vitamins – A, B Complex, C, D, E and K.
- N. Steroids.

## **PAPER – II: ORAL AND MAXILLOFACIAL RADIOLOGY**

Study includes Seminars / lectures / Demonstrations

1. History of radiology, structure of x ray tube, production of x ray, property of x rays.
2. Biological effects of radiation.
3. Filtration of collimation, grids and units of radiation
4. Films and recording media
5. Processing of image in radiology
6. Design of x –ray department, dark room and use of automatic processing units
7. Localization by radiographic techniques
8. Faults of dental radiographs and concept of ideal radiograph
9. Quality assurance and audit in dental radiology
10. Extra – oral-imaging techniques
11. OPG and other radiologic techniques
12. Advanced imaging technique like CT Scan, MRI, 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.

## **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**

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

1. Examination of Patient - Case history recordings - 100
  - FNAC - 50
  - Biopsy - 50Observe, Assist, & Perform under supervision
2. Intra – Oral radiographs:
  - Perform an interpretation - 500.
3. full mouth intra oral radiographic tracings - 03.
4. age estimation using radiographs - 10.

### **2<sup>nd</sup> YEAR**

1. Dental treatment to medically compromised patients - 02.
  - Observe, Assist and perform under supervision
2. Extra –oral radiographs, digital radiography - 20.
  - Observe, Assist and perform under supervision.
3. Extra oral radiographic tracings - 03.
4. CBCT Interpretations - 05.

## **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 or similar authorized organization.

### **3<sup>rd</sup> YEAR**

All the above

- Performed independently - Case history: Routine cases - 100
- Interesting Cases - 25
- Intra-oral Radiographs - 100
- OPG - 50
- Periapical view - 100
- Bitewing view - 50



- Occlusal view - 50
- Extra - oral radiographs of different views - 25
- CBCT - 10.
- Treatment of mucosal lesions with LASER - 03

### **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.

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

## **ASSESSMENT METHODS**

## **UNIVERSITY EXAMINATION:**

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

## **SCHEME OF EXAMINATION:**

### **(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-

- (i) Paper-I, Paper-II & Paper-III
- (ii) Practical and Clinical Examination;
- (iii) Viva-voce; and
- (iv) Pedagogy.

## **DISTRIBUTION OF MARKS:**

### **A. THEORY:**

(Total 400 Marks).

**PART-I :** Applied Basic Sciences Paper - 100 Marks.

**PART-II :** Paper-I, Paper-II & Paper-III

(100 Marks for each Paper).

(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 Each)

(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:** Applied Basic Sciences: Applied Basic Sciences: Applied Anatomy, Physiology, & 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 : Essays (descriptive and analyzing type questions)

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



## SYSTEMS WEIGHTAGE FOR MDS THEORY EXAMINATIONS

### Paper I: Oral and Maxillofacial Radiology

S.NO	COURSE CONTENTS	WEIGHTAGE (%)
	History of radiology, Radiation Physics, Radiation Biology and Protection guidelines	10%
	Intra Oral Radiography Including Image Receptors and Radiographic Techniques and Views	10%
	Processing of Radiographic films and faulty radiography	10%
	Extra – Radiography Including Image Receptors, Radiographic Techniques and Views	20%
	Advanced imaging technique like CT, CBCT, MRI, Ultras Sound& Thermography, Radio nucleotide techniques Digital radiology and its various types of advantages	20%
	Diagnostic Imaging of Teeth, Periodontium and Jaws	30%

## ORAL MEDICINE & RADIOLOGY

### Paper II: Oral Medicine, therapeutics and laboratory investigations

S.NO.	COURSE CONTENTS	WEIGHTAGE (%)
	Principles of Oral Medicine, Clinical Diagnosis, Laboratory and Advanced Diagnostic systems, Evidence based Practice.	10%
	Oral Mucosal lesions- Diagnosis and Management	15%
	Systemic Disorders- Oral Manifestations and Management	15%
	Oro - facial pain and Psychosomatic diseases	15%
	Medically compromised patients- Management of medical emergencies	10%
	Cysts and Tumours of Head and Neck region	10%
	Potentially Malignant Disorders and Oral Cancer	10%
	Therapeutics in oral medicine -clinical pharmacology	10%
	Forensic odontology	5%

### PAPER III - Descriptive and Analysing type question

	( ESSAY- . Three questions will be given and student has to answer any two questions. ( Each questions carry 50 marks )	100%
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## **MODEL QUESTION PAPER**

## M.D.S. DEGREE EXAMINATION MODEL QUESTION PAPER

[Time: 3 Hours]

[Max. Marks: 100]

### ORAL MEDICINE AND RADIOLOGY

#### PART -1.

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

Your answers should be specific to the questions asked.

Draw neat labeled diagrams wherever necessary. Answer all questions

QUESTIONS: 10\*10=100

1. Discuss the clotting cascade and drugs affecting the same?
2. Discuss carbohydrate metabolism?
3. Explain the course and relations of facial nerve and the clinical implications in bell's palsy?
4. Define necrosis and discuss acute inflammation in detail?
5. Discuss sterilization and its protocols in a dental operator?
6. Discuss in detail the medical management of dentoalveolar abscess in a diabetic patient?
7. Dental considerations in patients using anti platelet drugs?
8. Describe various study designs and add a note on p- value?
9. Detail out the various anaerobic infections of oral cavity and their lab investigations?
10. Discuss the functions and composition of saliva?

# MDS. DEGREE EXAMINATION MODEL QUESTION PAPER

[Time: 3 Hours]

[Max. Marks: 100]

## PART -11

### ORAL AND MAXILLOFACIAL RADIOLOGY - PAPER I.

Your answers should be specific to the questions asked.

Draw neat labeled diagrams wherever necessary. Answer all questions

#### ESSAY

2 X 25 = 50 Marks

1. Discuss the various radiographic techniques for maxillary sinus. Write about radiographic appearance of pathologies involving maxillary sinus.
2. Describe briefly the design of Radiology Operatory. Add a note on the measures for quality assurance.

#### SHORT NOTES

5 X 10 = 50 Marks

1. Lamina dura in health and disease.
2. Radiographic appearance of malignancies.
3. Ghost image.
4. Ultrasonography in diagnosis of orofacial lesions.
5. Brachytherapy.



**M.D.S. DEGREE EXAMINATION**

**MODEL QUESTION PAPER**

[Time: 3 Hours]

[Max. Marks: 100]

**PART 11**

**ORAL MEDICINE AND THERAPEUTIC AND LABORATORY INVESTIGATIONS - PAPER II**

Your answers should be specific to the questions asked.

Draw neat labeled diagrams wherever necessary. Answer all questions

**ESSAY**

2 X 25 = 50 Marks

1. Discuss differential diagnosis of Sialadenitis and write the investigation and management of patient with decreased salivary secretion.
2. Discuss the pigmented lesions of the oral cavity.

**SHORT NOTES**

5 X 10 = 50 Marks

1. Define leukoplakia. Write about non-tobacco related leukoplakia.
2. Write about paraneoplastic syndromes having oral manifestations.
3. A 55-year-old female complains of glossodynia. Write the differential diagnosis and investigations.
4. Laboratory evaluation of Iron deficiency anemia.
5. Chemoprevention of oral cancer.

**M.D.S. DEGREE EXAMINATION MODEL QUESTION PAPER**

[Time: 3 Hours]

[Max Marks: 100]

**PART - 11**

**RECENT ADVANCES IN ORAL MEDICINE AND RADIOLOGY DESCRIPTIVE AND  
ANALYZING TYPE QUESTIONS.**

**ESSAY-PAPER 111. (50\*2=100)**

Answer any two:

1. Describe various modalities of imaging the temporomandibular joint ?
2. Identification of an individual.
2. Discuss the differential diagnosis of viral infections affecting the maxillofacial region and syndromes associated with them.

## **LEARNING RESOURCE MATERIAL**

### LIST OF 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 – 11 <sup>th</sup> 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 – 5 <sup>th</sup> 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; 6 <sup>th</sup> edition, Publisher : Mosby
8	Eric Whaites	Essentials of Dental Radiography and Radiology; 4 <sup>th</sup> ed, Publisher: Churchill Livingston
9.	Olaf Langland	Principles and practice of Panoramic Radiology, 2 <sup>nd</sup> ed, Publisher: W B Saunders Co
10.	Joen I. Haring, Laura Jansen	Dental Radiography: Principles and Techniques, 2 <sup>nd</sup> edition, Publisher : WB Saunders

### LIST OF BOOKS FOR 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; 2 <sup>nd</sup> ed; BC Decker
3	Pindborg	Diseases of the Tongue; 1 <sup>st</sup> 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; 3 <sup>rd</sup> 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; 3 <sup>rd</sup> ed; Lippincott Williams & Wilkins
8	Charles McNeill	Temporomandibular disorders –guidelines for Classification , Management and Assessment, 2 <sup>nd</sup> ed; Elsevier Science
9	Robert.G.Gorlin	Syndromes of head and neck-4 <sup>th</sup> ed, Print 2001.Oxford University Press
10	Jeffrey P. Okeson	B ' O of i P i ; 6 <sup>th</sup> 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	Dentomaxillofacial radiology
6	Journal of dental research
7	Cancer
8	Oral Oncology
9	Journal of Orofacial pain
10	International journal of forensic dentistry

**ORAL & MAXILLOFACIAL PATHOLOGY  
AND ORAL MICROBIOLOGY**

## **DESCRIPTION OF THE PROGRAMME**

Oral and Maxillofacial Pathology and Oral Microbiology 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 and Maxillofacial Pathology and Oral 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 of Oral and Maxillofacial Pathology and Oral Microbiology
- 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 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 oral microbiology 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.

To acquire the knowledge to undertake audit, use information technology and carry out research 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.

## **PROGRAM EDUCATIONAL OBJECTIVES (PEO)**

At the end of the Dental Post Graduate Programme the student is expected to be a competent enough

**PEO1.** 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.

**PEO2.** 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.

**PEO3.** To have an understanding of current Research Methodology, collection and interpretation of data, ability to carry out research projects on clinical and epidemiological aspects, a working knowledge on current databases, automated data retrieval systems, referencing and skill in writing scientific papers.

**PEO4.** To inculcate to present scientific data pertaining to the field

## **PROGRAM OUTCOMES**

At the end of the MDS programme in Oral pathology and oral Microbiology , the post graduate scholar is expected to

**PO 1:** The post graduate is competent enough to diagnose the lesion and have the correlations with the clinical details

**PO 2:** To understand the routine and special techniques used for histopathology including principles of Histochemistry, Immunochemistry, applied and theoretical biochemical basis of Histochemistry as related to OralPathology

**PO 3:** 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.

**PO 4:** Study of special and applied pathology of oral tissues as well as relation of local pathologic and clinical findings to systemic conditions.

**PO 5 :**Oralmicrobiologyandtheirrelationshipptovariousbranchesofdentistry.

**PO 6:** Oral microbiology affecting hard and soft tissues. Study of clinical changes and their significance to dental and oral diseases as related to oral pathology.

**PO 7:** To understand the role of Forensic Odontology in Forensic sciences .

## **COURSE OUTCOMES (CO)**

The following are the course outcomes of a Post Graduate from the department of Oral & Maxillo facial Pathology and Oral Microbiology .

**CO 1.** Ability to understand the Normal Anatomy .Physiology , Biochemistry , and to correlate with the applied aspects of Pathology pertaining to the oral and maxillo facial structures .

**CO 2.** Ability to understand the correlation of normal cell biology and normal oral microbiota with that of oral infections .

**CO 3.** Ability to identify the histopathological diagnosis pertaining to pathologies of the oral and para oral structures in order to achieve the treatment plan .

**CO 4.** To have the ability to perform laboratory procedures so as to prepare the tissue specimens for histopathological diagnosis .

**CO 5.** Ability to perform Immuno histochemical staining techniques and its interpretation for advanced diagnostic histopathology .

**CO 6.** To understand the Principles and the of forensic odontology and how to associate it with in the field of Forensic science .

**CO 7.** To acquire the basic principles and perform the various cytological special stains and how to interpret in case of early diagnosis .

**CO 8.** To have an broad knowledge on the various chemicals used in the laboratory , its hazards and how to manage in areas of emergencies.

**CO 9.** To have an broad knowledge on the various advances techniques in the field of Oral Pathology and Oral Microbiology .

**CO 10.** To understand the basic principles of biostatistics and study as applied to dentistry and in the field research.

## **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 audio visual aids.

#### **2) APPLIED GROSS ANATOMY OF HEAD AND NECK INCLUDING HISTOLOGY:**

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

#### **GENETICS :**

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

#### **APPROACH :**

To be covered as didactic lectures.

- Posting in department of anatomy for dissection of head, face and neck

### **3) PHYSIOLOGY (GENERAL AND ORAL) :**

- Saliva
- Pain
- Mastication
- Taste
- Deglutition
- Wound healing
- Vitamins (Influence on growth, development and structure of oral soft and hard tissues and 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 paraoral tissues.)
- Blood and its constituents.

#### **APPROACH :**

To be covered as didactic lectures.

### **4) CELL BIOLOGY:**

- Cell-structure and function (ultra structural 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.

### **2) 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

### **3) GENERAL MICROBIOLOGY :**

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

### **APPROACH :**

- To be covered as seminars and didactic lectures.
- Record book to be maintained.

### **4) BASIC IMMUNOLOGY:**

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

### **APPROACH :**

To be covered as didactic lectures.

### **5) 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

## **1) 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.

## **2) 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.

## **1) BASIC HISTOTECHNIQUES & 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.
- Method soft issue 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 inter departmental 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 bacteria 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 Paraoral 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. Immuno histochemistry 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
- Tumor 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 Paraoral 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.
- Bitemarks, 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
- Immuno histochemistry
- 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 note book 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 of 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 Inter departmental meetings.

## **II YEAR:**

All topics to be revised with recent advances

The minimum quota for the teaching and learning activities, as follows:

- (a) Journal Clubs : 5 in a year
- (b) Seminars : 5 in a year
- (c) Clinical Case Presentations : 4 in a year
- (d) Lectures taken for undergraduates : 1 in a year
- (e) Scientific Paper / Poster Presentations In State / National Level Conferences :4 papers/posters during three years of training workshop period
- (f) Clinico Pathological Conferences : 2 presentations during three years of training period
- (g) Scientific Publications (optional) : one publication in any indexed scientific journal
- (h) Submission of Synopsis : one synopsis within six months from the date of commencement of the course .
- (i) Submission of Dissertation months : one dissertation within six before appearing for the university examination .
- (j) 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 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.

## **ASSESSMENT METHODS**

## **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;**

### **(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 carry 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 (100Marks):-

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

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

(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.

### **A. PRACTICAL/CLINICAL - 200 MARKS**

#### **1. CASE PRESENTATION**

Long case - 20 marks

Short case - 10marks

#### **2. CLINICAL HEMATOLOGY (ANY TWO INVESTIGATIONS) - 20 Marks**

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

#### **3. SMEAR PRESENTATION - 20marks**

Cytology or microbial smear and staining

#### **4. PARAFFIN SECTIONING AND H & E STAINING - 30 Marks**

#### **5. HISTOPATHOLOGY SLIDE DISCUSSION - 100 Marks**

### **B. 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 skill 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 8-10minutes

## **MODEL QUESTION PAPER**

**ORAL & MAXILLOFACIAL PATHOLOGY AND ORAL MICROBIOLOGY**

**INDIRA GANDHI INSTITUTE OF DENTAL SCIENCES**

**SRI BALAJI VIDYAPEETH**

**MDS MODEL QUESTION PAPER YEAR & MONTH**

**PART I**

**APPLIED BASIC SCIENCES, BIostatISTICS AND RESEARCH METHODOLOGY**

DURATION: 3 hrs

Maximum Marks: 100

(10 X 10=100Marks)

**ANSWER ALL QUESTIONS**

Draw diagrams wherever necessary.

1. Discuss on the cell cycle and add a note on its influence in carcinogenesis .
2. Discuss in detail on the development , structure and histology of tongue.
3. Write a note on carcinogenesis .
4. Write a note on Integrin and Cytokine.
5. Write a note on the structure of basement membrane and its influence in invasion.
6. Write a note on Student's t test .
7. Role of Homeobox genes in Odontogenesis.
8. Write a note on Oral Microbiota and add its significance to health and diseases.
9. Write note on Muscles of Mastication and deglutition.
10. Write a note on the histology of Osteoclast and add a note on its role in Physiology and Pathology .



**ORAL & MAXILLOFACIAL PATHOLOGY AND ORAL MICROBIOLOGY**

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**SRI BALAJI VIDYAPEETH**

**MDS - MODEL QUESTION PART II  
PAPER I**

**ORAL PATHOLOGY, ORAL MICROBIOLOGY & IMMUNOLOGY AND  
FORENSIC ODONTOLOGY**

DURATION: 3 hrs

Maximum Marks: 100

**ANSWER ALL QUESTIONS**

Draw diagrams wherever necessary.

**I. LONG ESSAY QUESTION: (2 x 25 = 50 marks )**

1. Classify odontogenic cyst . Write in detail on the developmental odontogenic cyst and add a note to Justify and substantiate the modification in the WHO classification of odontogenic cyst in 2005.
2. Discuss in detail on the fibro osseous lesion .

**II. SHORT ESSAY (Answer all): (5 x10 = 50 marks )**

1. Write a note on oral microflora .
2. Significance of Bite marks as forensic tool.
3. Discuss on the developmental disturbances of the structure of enamel.
4. Discuss on the pathogenesis , clinical features and histopathology of Pemphigus .
4. write a note on Immunological aspects of Periodontal diseases and dental caries

**ORAL AND MAXILLOFACIAL PATHOLOGY AND ORAL MICROBIOLOGY**

**INDIRA GANDHI INSTITUTE OF DENTAL SCIENCES**

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**MDS - MODEL QUESTION PART II  
PAPER II**

**LABORATORY TECHNIQUES AND DIAGNOSIS & ONCOLOGY**

DURATION: 3 hrs

Maximum Marks: 100

**ANSWER ALL QUESTIONS**

Draw diagrams wherever necessary.

**I. LONG ESSAY QUESTION: (2 x 25 = 50 marks )**

1. Discuss in detail on Light optics and describe the mechanics and parts of light microscopes .
2. Discuss in detail on the spindle cell tumors..

**II . SHORT ESSAY (Answer all): (5 x 10 = 50 marks )**

1. Write a note on the Proliferative verrucous leukoplakia .
2. Pathogenesis of Oral squamous cell carcinoma and oral sub mucous fibrosis .
3. Write a note on leukemia .
4. Write a about the frozen techniques add a note on the Frozen sections and its role in oral pathology.
5. Write a note on PCR and its the application of in oral pathology .

**ORAL & MAXILLOFACIAL PATHOLOGY AND ORAL MICROBIOLOGY**

**INDIRA GANDHI INSTITUTE OF DENTAL SCIENCES**

**SRI BALAJI VIDYAPEETH**

**MDS - MODEL QUESTION PART II**

**PAPER III ESSAY**

DURATION: 3 hrs

Maximum Marks: 100

**ANSWER ALL QUESTIONS**

Draw diagrams wherever necessary.

(2 x 50 = 100 marks )

1. Discuss on Genodermatosis
2. Classify salivary gland tumors and Discuss on the malignant tumors of salivary gland origin .
3. Discuss on the odontogenic tumors

## **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 Oralregion
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 Endodontics
10. Journal of Oral Pathology and Medicine

## **ORAL AND MAXILLOFACIAL SURGERY**

## **DESCRIPTION OF THE PROGRAMME**

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 areas onable 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, patho physiology 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



## **PROGRAMME EDUCATIONAL OBJECTIVES (PEO)**

At the end of the Oral and Maxillofacial Surgery Post Graduate programme, the student is expected to be a competent Maxillofacial Surgeon who is

**PEO1.** To be approached for specialty related care owing to his established reputation in patient management and care

**PEO2.** To inculcate the spirit of continuous learning, professional development, seeking evidence and establish evidence through his practice

**PEO3.** To be sensitive to community needs in Oral and Maxillofacial Surgery also integrate other disciplines, professions wherever required to render holistic oral health care.

**PEO4.** To inculcate the acumen to have an exploratory approach in all his professional endeavours including clinical and pedagogical areas and develop ethical practice in the same to improve the field of research in Oral and Maxillofacial Surgery .

**PEO5.** To be sensitive to global, local and institutional goals and develop the spirit to think globally and to act locally responsible health workers.

## **PROGRAM OUTCOME (PO)**

At the end of 5 years of MDS, a dental graduate will have the ability to

**PO1.** Early diagnosis and prevention of premalignant lesions, growth and developmental disorders, odontogenic or non odontogenic infections.

**PO2.** Identification of appropriate diagnosis & treatment from the available options for oral & maxillofacial conditions and to assist the patient in decision making by explaining the pros and cons of individual surgical procedures.

**PO3.** Prescribe the appropriate pain killers, antibiotics and other appropriate drugs for common infections, diseases or conditions of the oral cavity orally or by other routes like subcutaneous, intramuscular or intravenous wherever appropriate.

**PO4.** Carry out extractions and minor oral surgical procedures under local anesthesia.

**PO5.** Early management of traumatic injuries to head and neck, carry out emergency procedures, to prescribe appropriate investigations and carry out emergency referrals.

**PO6.** Early diagnosis & management of conditions involving the TMJ and associated structures.

**Po7.** Assess vital signs, evaluate the conscious state of the patient, identify patients needing emergency management like bleeding, syncope, seizure, hypoglycemic episode, hyperventilation and anaphylaxis and perform basic life support

**COURSE OUTCOME(CO)**

The student must demonstrate ability to:

Department abbreviation OMFS

**CO 1.** Have complete knowledge about the Surgical anatomy of head & neck region and its implications

**CO 2.** Identify, provide primary care and manage medical emergencies in the dental office.

**CO 3.** Evaluate the clinical condition, explain the patient about the broad treatment modalities, perform appropriate minor oral surgical procedure.

**CO 4.** Management of trauma patients in the peri-operative period efficiently.

**CO 5.** Assess and manage patients with maxillofacial conditions and treat them with utmost care and sought the required comprehensive treatment for the holistic well being of the patient in their peri- operative period.

## **COURSE CONTENT**

The speciality of Oral & Maxillofacial Surgery deals with the diagnosis and management of the diseases of stomatognathic system, jaw bones, cranio-maxillofacial region, salivary glands and temporomandibular joints etc. Within this framework it also supports many vital organs like eye, oropharynx, nasopharynx and major blood vessels and nerves. The traumatic injuries of maxillofacial skeleton are independently managed by Oral & Maxillofacial Surgeons. Whenever there are orbital injuries the ophthalmologists are trained only to tackle injuries of the eye ball (globe) but if there are associated injuries of the orbital skeleton, the Maxillofacial Surgeon is involved in its re-construction. Similarly, nasal bone fracture may be managed by ENT surgeons. Most of the time nasal bone fractures are associated with fractures of the maxilla, mandible and zygomatic bones which are being managed by Oral & Maxillofacial Surgeons.

The maxillofacial facial injuries at times are associated with head injuries also. The Oral & maxillofacial Surgeon is involved in the management of cleft lip & cleft palate, orthognathic surgery, micro vascular surgery, reconstructive and oncological surgical procedures of maxillofacial region. The speciality of Oral & Maxillofacial Surgery is a multi disciplinary speciality and needs close working in co-ordination with Neurosurgeons, Oncosurgeons, Ophthalmologists, ENT Surgeons and Plastic Surgeons. The Oral & Maxillofacial Surgeons, Ophthalmologist, ENT Surgeons, Plastic Surgeons, Neuro-Surgeons and Oncologists complement each other by performing Surgical Procedures with their respective expertise and knowledge thereby benefiting the patients and students of the respective specialities.

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:-**

- A) Applied Basic sciences
- B) Oral and Maxillofacial surgery
- C) Allied specialties

#### **A) APPLIED BASIC SCIENCES:**

Applied Anatomy, Physiology, Biochemistry, General and Oral Pathology and Microbiology, Pharmacology and Knowledge in Basic Statistics.

#### **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; chest, lower and upper extremities (in consideration to grafts/flaps)
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

#### **4. CARDIOVASCULAR SYSTEM**

- Cardiac cycle,
- Shock
- Heart sounds,
- Blood pressure,
- Hypertension:

#### **5. ENDOCRINOLOGY**

- General endocrinal activity and disorder relating to thyroid gland,
- Parathyroid gland, adrenal gland, pituitary gland, pancreas and gonads:
- Metabolism of calcium

#### **6. 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**

### **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 carcinogens- 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 immuno deficiency patients requiring surgical procedures
- De George Syndrome

## **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

### **MICROBIOLOGY:**

- Immunity
- Knowledge of organisms commonly associated with diseases of oral cavity.
- Morphology cultural characteristics of strepto, staphylo, pneumo, gono, meningo, clostridium group of organisms, 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

## A) 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 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 skin, underlying facial muscles, bone, eyelids, external ear etc., surgical management of post acne scarring, face lift, blepharoplasty, otoplasty, facial bone recountouring etc.
- Craniofacial surgery basic knowledge of developmental anomalies of face, head and neck, basics concept in the diagnosis and planning of various head and neck anomalies including facial cleft, craniosynostosis, syndromes, etc., Current concepts in the management of craniofacial anomalies.
- Head and neck oncology understanding of the principles of management of head and neck oncology including various pre cancerous lesions, Experience in the surgical techniques of reconstruction following ablative surgery.
- Micro vascular surgery.
- Implantology principles, surgical procedures for insertion of various types of implants.
- Maxillofacial radiology/ radio diagnosis
- Other diagnostic methods and imaging techniques

#### **B) 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.
- Neuro surgery: Evaluation of a patient with head injury, knowledge & exposure of various Neuro surgical procedures
- ENT/Ophthalmology: Examination of ear, nose, throat, exposure to ENT surgical procedures, ophthalmic examination and evaluation, exposure to ophthalmic surgical procedures.
- Orthopedic: basic principles of orthopedic surgery, bone diseases and trauma as relevant to Maxillofacial surgery, interpretation of radiographs, CT, MRI and ultrasound
- Anesthesiology: Evaluation of patients for GA technique, general anesthetic drugs use and complications, management of emergencies, various IV sedation techniques.
- Plastic Surgery- Basic Principles

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

### **YEAR BY YEAR PROGRAMME :**

The post graduate is expected to complete the following at the end of :

#### **I YEAR**

Study of applied basic sciences including practicals (wherever necessary), basic computer sciences, exodontia, seminars on basic topics, selection of dissertation topic, library assignment topic, attending O.T, ward rounds, Medical Record keeping, Pre-clinical exercises, preparation of synopsis and its submission within the six months after admission to the university as per calendar of events.

Rotation and postings in other departments:

General medicine	- 1 month
General surgery	- 1 month
Ophthalmology	- 15 days
Neuro Surgery	- 15 days
ENT	- 15 days
Orthopedic	- 15 days
Plastic Surgery	- 15 days
Casualty	- 15 days
Anesthesia (ICU)	- 15 days
Radiology (CT, MRI, USG)	- 15 days

## II YEAR

- Minor oral surgery and higher surgical training.
- Submission of library assignment
- Oncology posting - 1 month

## III YEAR

- Maxillofacial surgery
- Submission of dissertation to the university, six months before the final examination.

It is desirable to enter general surgical skills and operative procedures that are observed, assisted or performed in the log book in the format as given below:

S.No	PROCEDURE	Category	Number
1	Injection IM and IV	PI	50,20
2	Minor suturing and removal of structures	PI	NA
3	Incision and draining of an abscess	PI	10
4	Surgical extraction	PI	15
5	Impacted teeth	PI, PA	20,10
6	Pre prosthetic surgery	PI	
	a. Corrective procedures	PI	15
	b. Ridge extension	PA	3
	c. Ridge reconstruction	A	3
7	OAF closure	PI,PA	3,2
8	Cyst enucleation	PI, PA	5,5
9	Mandibular fractures	PI, PA	10,10
10	Peri – apical surgery	PI, PA	5
11	Infection management	PI, PA	NA
12	Biopsy procedures	PI	NA
13	Removal of salivary calculi	PA	3,5
14	Benign tumors	PA, A	3,3
15	Mid face fractures	PA, A	3,5
16	Implants	PA, A	5,5
17	Tracheotomy	PA,A	2,2
18	Skin grafts	PA	3,5
19	Orthognathic surgery	PA,A	3

20	Harvesting bone & cartilage grafts		
	a. Iliaccrest	PA	3,5
	b. Rib	A	3
	c. Calvarial	A	2
	d. Fibula	A,O	2
21	TM joint surgery	PA,A	1
22	Jaw resections	PA,A	3,3
23	Onco surgery	A,O	3,3
24	Micro vascular anastomosis	A,O	5,10
25	Cleft lip &palate	PA,A	10,15
26	Distraction osteogenesis	A,O	2,3
27	Rhinoplasty	A,O	3,5
28	Access osteotomies and base of skull surgeries	A,O	1,3
29	Emergency Management for OMFS Patients in Casualty / Accident & Emergency	PI,O	5,5

O - Observed

A - Assisted

PI - Performed independently

### **MONITORING LEARNING PROGRESS:**

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

Paper wise distribution of syllabus:

#### **PART- I :**

Applied Basic Sciences

#### **PART-II:**

Paper– I:Minor Oral Surgery and Maxillofacial 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 cons-ciousness (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: Hypermobility tissues- operative / sclerosing method, epulis fissuratum, frenectomy and frenotomy
- Infections 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

## **MAXILLOFACIAL TRAUMA:**

- Surgical Anatomy of Head and Neck.
- Etiology of Injury.
- Basic Principles of Treatment
- Primary Care: resuscitation, establishment of airway, management of hemorrhage, 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.

## **PAPER II :**

### **MAXILLOFACIAL SURGERY**

#### **A) 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

## **B) 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

## **C) 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

## **D) ORTHOGNATHIC SURGERY**

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

## **E) CYSTS AND TUMORS 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

## **F) LASER SURGERY**

- The application of laser technology in surgical treatment of lesions

## **G) CRYOSURGERY**

- Principles, applications of cryosurgery in surgical management

#### **H) 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 multi disciplinary team management.

#### **I) 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

#### **J) 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

#### **PAPER-III :**

Essays (descriptive and analyzing type questions)

## **ASSESSMENT METHODS**



## **SCHEME OF EXAMINATION:**

### **A. THEORY:**

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

**PART-II:** Paper-I, Paper-II & Paper-III - 300 Marks  
(100 Marks for each Paper)

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

#### **PART-I :**

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

#### **PART- II**

Paper I : Minor Oral Surgery and Maxillofacial Trauma

Paper II : Maxillofacial Surgery

Paper III : Essays (descriptive and analyzing type questions)

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

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

#### **1. MINOR ORAL SURGERY - 100 Marks**

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

#### **2. CASE PRESENTATION AND DISCUSSION: - 100 Marks**

- (a) One long case - 60 Marks
- (b) Two short cases - 40 Marks  
(20 marks each)

#### **C. VIVA VOCE - 100 Marks**

- i. Viva-Voce examination: - 80 Marks

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

- ii. Pedagogy: - 20 Marks

A topic 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

## **MODEL QUESTION PAPER**

## PART 1: APPLIED BASIC SCIENCES

Time: 3 hours

Maximum marks: 100

Answer all questions. Draw neat and labeled diagrams wherever necessary.

Essay:

10x10 = 100

1. Pharyngeal arches.
2. Role of steroids in oral surgery.
3. Regulation of electrolyte balance.
4. Hypersensitivity reactions.
5. Sterilization of surgical instruments & materials.
6. Discuss the role of anti-microbial agent in oro facial infections.
7. Pathogenesis of shock
8. Describe the course and branches of external carotid artery. Add a brief note on its ligation procedure
9. CPR
10. Write about coagulation mechanism & deficiency of factors which commonly occurs.

## PART 2: PAPER I :MINOR ORAL SURGERY AND TRAUMA

Time: 3 hours

Maximum marks: 100

1. Answer all questions.
2. Illustrate your answer with suitable diagram

Long essay question:

(2x25=50)

1. Classify orbital fractures. Describe in detail the clinical features, diagnosis and operative techniques for the management of blow-out fracture.
2. Explain in detail about Pederson's difficulty index and WHARFE Assessment. Describe about the various incisions used for the removal mandibular third molar.

Short essay question: (5x10=50)

- a) Anaphylactic shock.
- b) CSF Rhinorrhea.
- c) Ridge Augmentation.
- d) Use of surgical drains and catheters in OMFS.
- e) Cardiac arrest and cardiopulmonary resuscitation.

## **PART 2: PAPER II : MAXILLOFACIAL SURGERY**

Time: 3 hours

Maximum marks: 100

1. Answer all questions.
2. Illustrate your answer with suitable diagram Long essay question: (2x25=50)
  1. Classify dentofacial deformities and the management of mandibular prognathism.
  2. Describe the various giant lesions of the jaws. Write in detail about the clinical features , differential diagnosis and management of the lesions.

Short essay question: (5x10=50)

- a) Hyperbaric oxygen therapy.
- b) Management of recurrent TMJ dislocation.
- c) Pterygomandibular space infection
- d) Brachytherapy.
- e) functional neck dissection

## **PART 2: PAPER III : DESCRIPTIVE & ANALYZING TYPE OF QUESTION**

Time: 3 hours

Maximum marks: 100

- Answer any 2 questions (2X50=100)
1. Describe about the soft tissue changes associated with orthognathic surgery.
  2. Write in brief about the Controversies in management of orbital floor fractures.
  3. Discuss the role of access osteotomies in oral & maxillofacial surgery

## **LEARNING RESOURCE MATERIAL**

### BOOKS RECOMMENDED

S.NO.	AUTHOR	TITLE
1	Cawson and Scully	Medical problems indentistry
2	Rowe and Williams	Maxillofacial Trauma
3	Fonseca R. J	Oral and MaxillofacialTrauma
4	Ellis E, Zide M. F	Surgical approaches to facial skeleton
5	Topazian	Oral and MaxillofacialInfections
6	McArthy	Plastic and ReconstructiveSurgery
7	Killey and Key	Outline of Oral and maxillofacial Surgery
8	Jatin P Shah	Head and Necksurgery
9	Peterson	Principles of Oral and Maxillofacial Surgery
10	Langdon and Patel	Operative Oral and MaxillofacialSurgery

### BOOKS AS REFERENCES

S.NO.	AUTHOR	TITLE
1	Laskin D. M	Oral and MaxillofacialSurgery
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 andNeck
9	Howe G. L	Minor oral surgery
10	Bell and Proffit	Textbook of Orthognathicsurgery

### RECOMMENDED JOURNALS NATIONAL

1. Journal of Cranio-maxillofacialsurgery
2. InternationaljournalofOralandMaxillofacialSurgery
3. BritishjournalofOralandMaxillofacialSurgery
4. Journal of Oral and MaxillofacialSurgery
5. Journal of Plastic and ReconstructiveSurgery
6. Journal of Maxillofacial and OralSurgery
7. NationaljournalofOralandMaxillofacialSurgery
8. Clinical Implant Dentistry and relatedresearch
9. Cancer
10. Annals of MaxillofacialSurgery

**ORTHODONTICS AND  
DENTOFACIAL ORTHOPEDICS**

## **DESCRIPTION OF THE PROGRAMME**



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

### **KNOWLEDGE :**

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

### **SKILLS :**

1. To obtain proper clinical history, methodical examination of the patient, perform essential diagnostic procedures, and interpret them and arrive at a reasonable diagnosis about the Dentofacial deformities.
2. To be competent to fabricate and manage the most appropriate 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 multi disciplinary treatment of orofacial deformities.

### **ATTITUDES :**

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

## **COMMUNICATION SKILLS :**

1. Develop adequate communication skills particularly with the patients giving them 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, Video conference, etc. to render the best possible treatment.

## **PROGRAM EDUCATIONAL OBJECTIVES (PEO)**

At the end of the Orthodontic Post Graduate programme, the student is expected to be a competent Orthodontist who is

**PEO1.** To be approached for specialty related care owing to his established reputation in patient management and care

**PEO2.** To inculcate the spirit of continuous learning, professional development, seeking evidence and establish evidence through his practice

**PEO3.** To be sensitive to community needs in Orthodontics and Dentofacial Orthopaedics and also integrate other disciplines, professions wherever required to render holistic oral health care.

**PEO4.** To inculcate the acumen to have an exploratory approach in all his/her professional endeavours including clinical and pedagogical areas and develop ethical practice in the same to improve the field of research in Orthodontics

**PEO 5.** To be sensitive to global, local and institutional goals and develop the spirit to think globally and to act locally responsible health workers, Competent one who exhibits behaviour of critical thinking, demonstrates high standards of patient care through quality delivery of treatment, interpersonal and communication skills, professionalism, maintenance of oral health and practice management skills.

## **PROGRAM OUTCOMES(PO)**

At the end of the MDS programme in Orthodontics and Dentofacial Orthopaedics, the post graduate scholar is expected to

**PO 1:** Identify various forms of malocclusions and develop treatment options with problem list and possible solutions in order to provide a holistic care through ideal alignment of teeth in accordance with associated skeletal and soft tissues

**PO 2:** Use appropriate basic and advanced orthodontic diagnostic aids in arriving at a confirmatory diagnosis through meticulous record and interpretation of the findings with use of digital technology when conforming to the digital workflow.

**PO 3:** Execute planned treatment with various orthodontic mechanotherapy options using best evidence based approaches with current state of art techniques and materials.

**PO 4:** Perform regular orthodontic review and recall with adequate adherence to ideal requisites in alignment, levelling, spaceclosure, finishing and retention phases.

**PO 5:** Deliver orthodontic care using inter disciplinary, interprofessional approach and demonstrate astute communication skills, professionalism, team-player abilities and ethics

**PO 6:** Communicate to laboratory for various removable and functional appliances and to be able to check for the norms of acceptability and excellence in the appliance design and biomechanics for achieving ideal post treatment occlusion in harmony with esthetics and function.

## **COURSE OUTCOMES (CO)**

The following are the course outcomes of a post graduate from the department of Orthodontics and Dentofacial Orthopaedics

**CO 1.** Ability to gather a detailed orthodontic case history & performing relevant clinical and functional examination and provide a provisional diagnosis

**CO 2.** Ability to perform cephalometric analysis pre-, mid- and post treatment using both manual and digital software cephalometric tracing and model analysis for permanent dentition and mixed dentition, photographic analysis

**CO 3.** Formulate & implement an appropriate, comprehensive & evidence-based orthodontic treatment plan

**CO 4.** Perform laboratory procedures necessary for fabrication of removable or functional appliances with precision and accuracy and wire bending techniques needed for fixed appliances

**CO 5.** 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/malocclusion to be treated singly or as a part of multidisciplinary treatment of oro-facial deformities.

**CO 6.** Ability to use 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.

**CO 7.** Ability to communicate with professional colleagues, in Orthodontics or other specialties through various media like correspondence, Internet, Video conference, etc. to render the best possible treatment.



## **COURSE CONTENT**

The program outlined, addresses both the knowledge needed in Orthodontics and allied Medical specialities in its scope. A minimum of three years of formal training through a graded system of education as specifies, will equip the trainee with skill and knowledge at its completion to be able to practice basic Orthodontics and have the ability to intelligently pursue further apprenticeship towards advanced Orthodontics.

## **SPREAD OF THE CURRICULUM:**

### **PART-I:**

#### **A. APPLIED BASIC SCIENCES:-**

##### **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, roentgenographic 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: Zinc Phosphate, Zincsilicophosphate, Zincpolycarboxylate, 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 and concise 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**

Definitions & 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. Vitamins: A, D, B complex group, C & K etc.

## **PART-II:**

Paper-I:Basic Orthodontics

## **ORTHODONTIC HISTORY:**

- a. Historical perspective,
- b. Evolution of orthodontic appliances,
- c. Pencil sketch history of Orthodontic peers
- d. History of Orthodontics in India

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

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

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

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

### **DENTOFACIAL ANOMALIES:**

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

### **DIAGNOSTIC PROCEDURES AND TREATMENT PLANNING IN ORTHODONTICS:**

- a. Emphasis on the process of data gathering, synthesis and translating it into a treatment plan
- b. Analysis and management of compromised individuals.
- c. Adult patients and individuals with physical and/or mental disabilities.
- d. Critique of treated cases.

### **CEPHALOMETRICS**

- a. Instrumentation
- b. Image processing
- c. Tracing and analysis of errors and applications
- d. Radiation hazards
- e. Advanced Cephalometrics techniques including digital cephalometrics
- f. Comprehensive review of literature
- g. Video imaging principles and application.

### **PRACTICE MANAGEMENT IN ORTHODONTICS:**

- a. Economics and dynamics of solo and group practices
- b. Personal management
- c. Materials management
- d. Public relations
- e. Professional relationship
- f. Dental ethics and jurisprudence
- g. Office sterilization procedures
- h. Community based Orthodontics.

### **PAPER-II:CLINICAL ORTHODONTICS MYOFUNCTIONAL ORTHODONTICS:**

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

### **DENTOFACIAL ORTHOPEDICS:**

- a. Principles
- b. Biomechanics
- c. Appliance design and manipulation
- d. Review of contemporary literature

### **CLEFT LIP AND PALATE REHABILITATION:**

- a. Diagnosis and treatment planning
- b. Mechano therapy
- c. Special growth problems of cleft cases
- d. Speech physiology, pathology and elements of therapy as applied to orthodontics
- e. Team rehabilitative procedures.

### **BIOLOGY OF TOOTH MOVEMENT:**

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

### **ORTHODONTIC / ORTHOGNATHIC SURGERY:**

- a. Orthodontist's role in conjoint diagnosis and treatment planning
- b. Pre and post-surgical Orthodontics
- c. Participation in actual clinical cases, progress evaluation and post retention study
- d. Review of current literature

### **ORTHO / PERIO / PROSTHO/ENDO INTER RELATIONSHIP:**

- a. Principles of interdisciplinary patient treatment
- b. Common problems and their management

### **BASIC PRINCIPLES OF MECHANOTHERAPY INCLUDES REMOVABLE APPLIANCES AND FIXED APPLIANCES:**

- a. Design
- b. Construction
- c. Fabrication
- d. Management
- e. Review of current literature on treatment methods and results

### **APPLIED PREVENTIVE ASPECTS IN ORTHODONTICS:**

- a. Caries and periodontal disease prevention
- b. Oral hygiene measures
- c. Clinical procedures

## **INTERCEPTIVE ORTHODONTICS:**

- a. Principles
- b. Growth guidance
- c. Diagnosis and treatment planning
- d. Therapy emphasis on:

## **DENTO-FACIAL PROBLEMS**

- Tooth material discrepancies
- Minor surgery for Orthodontics

## **EVIDENCE BASED ORTHODONTICS:**

Different types of fixed Mechanotherapy:

Orthodontic Management of TMJ problems, sleep-apnoea etc.:

## **RETENTION AND RELAPSE:**

- a. Mechanotherapy special reference to stability of results with various procedures
- b. Post retention analysis
- c. Review of contemporary literature

## **RECENT ADVANCES :**

- a. Use of implants
- b. Lasers
- c. Application of F.E.M.
- d. Distraction Osteogenesis
- e. Invisible Orthodontics
- f. 3D imaging Digital Orthodontics, Virtual Treatment Planning
- g. CAD-CAM bracket Customization
- h. Robotic Wire Bending
- i. Accelerated Orthodontics
  - Surgical
  - Device assisted or mechanical stimulation
  - Biochemical Mediators
- j. Lingual Orthodontics

## PAPER-III: ESSAYS (DESCRIPTIVE AND ANALYZING TYPE QUESTIONS)

### SKILLS :

#### PRE – CLINICAL EXERCISES

(Should be completed within 3 months)

#### A GENERAL OUTLINE OF THE TYPE OF EXERCISES IS GIVEN HERE:

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.
7. Cephalometric tracing and various Analyses, also superimposition methods –
8. Fixed appliance typodont 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) Typodont exercise
    - Band making
    - Bracket positioning and placement
    - Different stages in treatment appropriate to technique taught
9. Clinical photography
10. Computerized imaging
11. Preparation of surgical splints, and splints for TMJ problems.
12. Handling of equipment like vacuum forming appliances and hydro solder etc.

#### BASIC PRE-CLINICAL EXERCISE WORK FOR THE MDS STUDENTS:

##### 1. CLASPS:

Sl.No	Exercise	No.
1	3/4 Clasps	1
2.	Triangular Clasps	1
3.	Adam's clasp	2
4.	Modification of Adam's – With Helix	2
5.	Southend Clasp	1



## 2. LABIAL BOWS:

Sl.No	Exercise	No.
1	Short labial bow (upper & lower)	1
2	Long labial bow (upper & lower)	1
3.	Split labial bow	1
4.	High labial bow	1

## 3. SPRINGS:

Sl.No	Exercise	No.
1	Double cantilever spring	1
2	Coffin spring	1
3	T spring	1

## 4. APPLIANCES:

Sl.No	Exercise	No.
1	Hawley's retention appliance with anterior bite plane	1
2	Upper Hawley's appliance with posterior bite plane	1
3	Upper expansion appliance with expansion screw	1
4	Habit breaking appliance with tongue crib	1
5	Oral screen and double oral screen	1
6	Lip bumper	1
7	Splint for Bruxism	1
8	Catalans appliance	1
9	Activator	1
10	Bionator	1
11	Frankel-FR 1& 2 appliance	2
12	Twin block	1
13	Lingual arch	1
14	TPA	1

## 5. SOLDERING EXERCISES:

Sl.No	Exercise	No.
1	Star/Comb/Christmas tree	1

## 6. STUDY MODEL PREPARATION:

## 7. MODEL ANALYSIS – MIXED AND PERMANENT DENTITION:

## 8. CEPHALOMETRICS:

Sl.No	Exercise
1	Lateral cephalogram to be traced in different colors and super imposed to see the accuracy of tracing
2	Vertical and Anterio-Posterior Cephalometric analysis
3	Soft tissue analysis – Holdaway and Burstone
4	Various superimposition methods

## 9. BASICS OF CLINICAL PHOTOGRAPHY INCLUDING DIGITAL PHOTOGRAPHY:

### 10. TYPODONT EXERCISES: BEGG OR P.E.A. METHOD/BASIC EDGEWISE:

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	Different Stages dependent on the applied technique

## CLINICAL WORK:

Once the basic pre-clinical work is completed in three months, the students can take up clinical cases and the clinical training.

Each postgraduate student should start with a minimum of 50 fixed orthodontics cases and 20 removable including myofunctional cases of his/her own. Additionally he/she should handle a minimum of 25 transferred cases.

### THE TYPE OF CASES CAN BE AS FOLLOWS:

- Removable active appliances
- Class-I malocclusion with Crowding
- Class-I malocclusion with bi-maxillary protrusion
- Class-II division – 1
- Class-II division – 2
- Class-III (Orthopedic, Surgical, Orthodontic cases)
- Inter disciplinary cases
- Removable functional appliance cases like activator, Bionator, functional regulator, twin block and new developments
- Fixed functional appliances – Herbst appliance, jasper jumper etc
- Dento-facial orthopedic appliances like head gears, rapid maxillary expansion, NiTi expander etc.,
- Appliance for arch development such as molar distalization
- Fixed mechano therapy cases (Begg, PEA, Tip edge, Edgewise, lingual)
- Retention procedures of above treated cases.

## **TEACHING AND LEARNING ACTIVITIES**

## **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. Fieldvisits: 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 forundergraduates	1 in a year
5	Scientific Paper / PosterPresentations InState/NationalLevelConferences	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 LibraryDissertation	one dissertation within eighteen months from the date of commencement of the course
10	Submission of Dissertation months	one dissertation within six before appearing for the university examination

### **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 shall be done by the department faculty based on the participation of the students in various teaching/ learning activities.It may be structured and assessment be done using checklists that assess various aspects

## **ASSESSMENT METHODS**

## 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 50marks.

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	(100Marks)
There shall be 10 questions of 10 marks each	(Total of 100 Marks)
2) Part II (3 papers of 100Marks)	
i) Paper-I: 2 long essay questions of 25 marks each and 5 short essays of 10 marks each.	(Total of100Marks)
ii) Paper-II: 2 long essay questions of 25 marks each and 5 short essays of 10 marks each.	(Total of100Marks)
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.

A. 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 archwire.

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 30min
3	Display of case records of the treated cases (minimum of selfstarted 5 cases & 2 transferredcases)	75	2 hour
4	Long case	25	2 hours

### B. VIVA VOCE : 100Marks

#### 1. VIVA-VOCE EXAMINATION : 80marks

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.

## **MODEL QUESTION PAPER**

## **MDS I YEAR MODEL QUESTION PAPER**

There shall be 10 questions of 10 marks each (10x10=100 marks total)

- 1) Describe the muscles of mastication and its role in influencing growth of mandible.
- 2) Write in detail about growth hormone and its implication in orthodontics.
- 3) What is AJ Wilcock wire? Classify and mention its properties.
- 4) Discuss the various generation of bonding agents and mention the recent advances in orthodontics
- 5) Write in detail about evolution of TMJ? Write a note on craniofacial anomalies in relation with mandible.
- 6) Enumerate the various theories of growth and mention in detail servo system theory.
- 7) Classify various sampling technique. Write a note on chi square test.
- 8) Write a note on drugs accelerating and impeding orthodontic tooth movement? Describe bone metabolism with illustration?
- 9) Discuss about genetic polymorphism and mapping. Write a note on homeobox genes.
- 10) Write about various skeletal maturity indicators.

## **MODEL EXAMINATION III MDS PAPER I**

Illustrate with figures/tables wherever necessary

**PART 1 (2X25 = 50 MARKS)**

Essay on

1. Discuss in detail the various assessment techniques for skeletal maturity. Describe any 2 hand wrist radiographic indicators.
2. Enumerate the various theories of child psychology and behaviour management. Write in detail about Erik Erikson theory.

**PART 2 (5X10 = 50 MARKS)**

Short notes on:

1. IOTN and PAR index
2. Ackermann and Proffit classification of malocclusion
3. Teratogens
4. Digigraph
5. Grummon's analysis

### **MODEL EXAMINATION III MDS PAPER II**

Illustrate with figures/tables wherever necessary PART 1 (2X25=50MARKS)

Essay on

1. Write in detail on biology of tooth movement with emphasis on histologic and molecular changes. Add a note on drugs influencing orthodontic movement.
2. Describe the diagnostic criteria, treatment planning and management for patients with skeletal Class III malocclusions.

PART 2 (5X10 = 50 MARKS)

Short notes on:

1. Tandem technique
2. PG spring
3. MARA
4. Cephalometric superimposition
5. Orthodontic management of periodontally comprised patients.

### **MODEL EXAMINATION III MDS PAPER III**

Illustrate with figures/tables wherever necessary Essay on any two: (2x50=100marks)

1. Lingual orthodontics
2. Accelerated orthodontics
3. Self ligating bracket system

## **LEARNING RESOURCES & MATERIAL**

## 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
5	Orthodontics Current Principles and Technique	Graber And Vanarsdall
6	Systemized Orthodontic Treatment Mechanics	McLaughlin, Bennet and Trevisi
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

S.NO	TITLE	AUTHOR
1	Orthodontic Management of Uncrowded Class II Division I Malocclusion 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	Self-Ligation in Orthodontics	Eliades, Pandes
6	Orthodontic Treatment of Impacted Teeth	Becker
7	Temporary Anchorage Devices in Orthodontics	Ravindra Nanda
8	Facial and Dental Planning for Orthodontist and Oral Surgeons	Arnett, McLaughlin
9	Dentofacial Orthopedics with Functional Appliances	Graber, Rakosi and Petrovic
10	Orthodontic Miniscrew Implants	Cheol Ho Paik, Park
11	Essentials of Facial Growth	Enlow and Hans
12	Orthodontic Materials – Scientific and Clinical Aspects	Brantley and Eliades

## **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
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

**PEDIATRIC & PREVENTIVE  
DENTISTRY**



## **DESCRIPTION OF THE PROGRAMME**

Pediatric Dentistry is an age defined specialty that provides primary and comprehensive, preventive and the 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. In still 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 patient's 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 Pediatric 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 Pediatric Dentistry . 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 Pediatric Dentistry .
5. Knowledge of various disease states, congenital defects, and hereditary conditions. Familiarity with specific orofacial defects or their manifestations and traumatic consequences.
6. Understand the etiology, clinical features and management of children with special healthcare needs
7. 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.
8. Ability to establish an approach to learning which utilizes aspects of continual inquiry and critical thinking. The development of a life long attitude of study and advancement.
9. 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.

## **PROGRAMME EDUCATIONAL OBJECTIVES (PEO)**

**At the end of the Post Graduate Programme on Pediatric & Preventive Dentistry, the student is expected to be a competent practitioner who**

**PEO1.** Is child care Dentist who provides good oral care for the child community including those with special healthcare needs and enables them to develop into good citizens

**PEO2.** Places prevention as the cornerstone of pediatric dental care.

**PEO3.** Is a community oral health educator who strives to guide and counsel parents, teachers and caretakers on the various preventive and treatment aspects of oral diseases occurring in children.

**PEO4.** Adopts ethical principles, displays professional honesty and integrity, respects child's rights and privileges in all aspects of child dental care.

**PEO 5.** Is committed to practice evidence based dentistry, develop pedagogical skills, be a life-long learner and display superior skills in seeking and responding to requests from other dental and medical colleagues.

**Competent**– One who exhibits behaviour of critical thinking, demonstrates high standards of patient care through quality delivery of treatment, interpersonal and communication skills, professionalism, maintenance of oral health and practice management skills.

## **PROGRAMME OUTCOME (PO)**

**At the end of 3 years of MDS, a dental graduate will have the ....**

**PO 1.** Competency to diagnose oral diseases occurring in children from infancy through adolescence including those with special healthcare needs

**PO 2.** Ability to provide comprehensive preventive and therapeutic oral health care for children with high levels of professionalism and ethics and at the same time instill positive attitude and behavior in them.

**PO 3.** Ability to establish a preventively oriented dental care for child community at both the individual and community levels.

**PO 4.** Ability to evaluate published research, conduct independent scientific research and thus adopt, after a critical assessment, new methods and techniques of Pedodontic management which will be in the best interest of the child patient.

**PO 5.** Ability to deliver oral health care to the child community through an inter-diciplinary and inter professional approach

## **COURSE OUTCOME(CO)**



*The post graduate student must demonstrate ability to :*

**CO 1.** Understand basic medical sciences, growth and development and child psychology as relevant to Pediatric Dentistry.

**CO2.** Obtain proper clinical history, perform methodological examination and essential diagnostic procedures, interpret them and arrive at a reasonable diagnosis and design a comprehensive, patient centered treatment plan taking into consideration the 1:2 type of Dentist-Child/Parent/Family/Society relationship which is unique to Pediatric Dentistry.

**Co3:** Acquire high levels of professional and ethical conduct and essential skills needed to seek and respond to referrals from allied medical and dental specialities in all aspects of Pediatric Dental care.

**CO4.** Initiate early establishment of comprehensive preventive practices among children by providing developmentally oriented counseling and guidance to parents/caregivers, school teachers and children.

**CO5.** Provide a comprehensive therapeutic dental care that includes restoration/endodontic/surgical management of decayed & traumatized teeth, prevention and interception of malocclusion, management of hard and soft tissue pathology and performance of minor surgical procedures by employing appropriate non-pharmacological & pharmacological techniques of behavior guidance and universal precautions.

**CO6.** Be familiar with various congenital/acquired defects, hereditary conditions common in children and effectively and efficiently manage children with special health care needs and provide them with both primary & comprehensive oral health care tailored to the needs of individual requirement and conditions.

**CO7.** Acquire skills in efficiently managing life threatening conditions with emphasis on basic life support

**Co8.** Evaluate original dental research articles for methodology, results, statistical interpretation, conclusions, and implications, ability to conduct independent research and judiciously use current best evidence in clinical decision making in the care of child patients.

## **COURSE CONTENT**

## **A) APPLIED BASIC SCIENCES:**

### **1. APPLIED ANATOMY OF HEAD AND NECK:**

- Anatomy of the scalp, temple and face
- Anatomy of the triangles of neck and deep structures of the neck
- Cranial and facial bones and its surrounding soft tissues with its applied aspects
- Muscles of head and neck
- Arterial supply, venous drainage and lymphatics of head and neck
- Congenital abnormalities of the head and neck
- Anatomy of the cranial nerves Anatomy of the tongue and its applied aspects
- Anatomy and its applied aspects of salivary glands, pharynx, thyroid and parathyroid gland, larynx, trachea, esophagus
- Autonomous nervous system of head and neck
- Functional anatomy of mastication, deglutition, speech, respiration and circulation
- TMJ: anatomy and function

### **2. APPLIED PHYSIOLOGY:**

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, Normal ECG, 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, swallowing and deglutition mechanism, salivary glands and Saliva

### **3. APPLIED PATHOLOGY:**

Inflammation and chemical mediators, Thrombosis, Embolism, Necrosis, Repair, Degeneration , Shock, Hemorrhage , Blood dyscrasias, Pathogenesis of Dental Caries, Periodontal diseases, tumors, oral mucosal lesions etc. in children

### **4. APPLIED MICROBIOLOGY:**

Microbiology & Immunology as related to Oral Diseases in Children: Basic concepts, immune system in human body, Auto Immune diseases and Immunology of Dental caries.

### **5. APPLIED NUTRITION & DIETICS:**

- General principles, balanced diet, effect of dietary deficiencies and starvation, protein energy, malnutrition, Kwashiorkor, Marasmus.
- Fluid and Electrolytic balance in maintaining haemostasis
- Diet, digestion, absorption, transportation and utilization

### **6. GENETICS:**

- Introduction to genetics
- Cell structure, DNA, RNA, protein synthesis, cell division
- Modes of inheritance
- Chromosomal anomalies of oral tissues & single gene disorders

1. 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.

## **B. Pediatric Dentistry**

1. Child Psychology: Development & Classification of behavior, personality, intelligence in children, theories of child psychology, stages of psychological child development, fear anxiety, apprehension & its management
2. Behavior Management: Non-pharmacological & Pharmacological methods.
3. Child Abuse & Dental Neglect
4. Conscious Sedation, Deep Sedation & General Anesthesia in Pediatric Dentistry: (Including Other Drugs, Synergic & Antagonistic Actions of Various Drugs Used in Children
5. 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
6. Dental Plaque : Definition, Initiation, Pathogenesis, Biochemistry, and Morphology & Metabolism.
7. 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.
8. Gingival & Periodontal diseases in Children:
  - Normal Gingiva & Periodontium in children.
  - Gingival&PeriodontaldiseasesEtiology,Pathogenesis,Prevention& Management
9. 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.
10. 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.
11. Prosthetic consideration in Pediatric Dentistry.

## 12. 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.

## 13. 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 neuro muscular 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.

## 14. 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

## 15. 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

## 16. Oral manifestations of Systemic Conditions in Children & their Management

## 17. Management of Minor Oral Surgical Procedures in Children

## 18. Dental Radiology as related to Pediatric Dentistry

## 19. 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

20. Pediatric Oral Medicine & Clinical Pathology: Recognition & Management of developmental dental anomalies, teething disorders, stomatological conditions, mucosal lesions, viral infections etc.
21. Congenital Abnormalities in Children: Definition, Classification, Clinical features & Management.
22. Dental Emergencies in Children and their Management.
23. Dental Materials used in Pediatric Dentistry.

### **C. Preventive Dentistry**

1. Preventive Dentistry
  - Definition
  - Principles & Scope
  - Types of prevention
  - Different preventive measures used in Pediatric Dentistry including fissure sealants and caries vaccine.
2. Dental Health Education & School Dental Health Programmes
3. 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
4. Fluorides:
  - Historical background
  - Systemic & Topical fluorides
  - Mechanism of action
  - Toxicity & Management.
  - Defluoridation techniques.
5. Medicological aspects in Pediatric Dentistry with emphasis on informed concept.
6. Counseling in Pediatric Dentistry
7. Case History Recording, Outline of principles of examination, diagnosis & treatment planning.
8. Epidemiology: Concepts, Methods of recording & evaluation of various oral diseases Various national & global trends of epidemiology of oral diseases.
9. Comprehensive Infant Oral Health Care.
10. Principles of Bio-Statistics & Research Methodology & Understanding of Computers and Photography
11. Comprehensive cleft care management with emphasis on counseling, feeding, nasoalveolar bone remodeling, speech rehabilitation.
12. Setting up of Pedodontics & Preventive Dentistry Clinic.
13. 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 (Clasps, Bows, Retractors and Springs, etc., on patient models)
3. Basics for Spot welding exercises
4. Fabrication of
  - a. Maxillary bite plate /Hawley's
  - b. Maxillary expansion screw appliance
  - c. Canine retractor appliance
  - d. All habit breaking appliances
    - Removable type
    - Fixed type
    - Partially fixed and removable
  - e. Myofunctional appliances Twin block, Activator, Lip bumper, Oral Screen
  - f. Making of inclined plane appliance
  - g. Feeding appliances
5. Basic soldering exercises making of a lamppost of stainless steel wire pieces of different gauges soldered on either side of heavy gauge main post.
6. Fabrication of space maintainers
  - a. Removable type-
    - Unilateral Non Functional space maintainer
    - Bilateral Non-Functional space maintainer
  - b. Space Regainers
    - Gerber or Open coil space regainer
  - c. Fixed Space maintainers
    - Band & loop space maintainer
    - Transpalatal arch space maintainer
    - Nance Palatal holding arch
    - Distal shoe appliance
7. Basics for spot welding exercise



8. Collection of extracted deciduous and permanent teeth
  - a. Sectioning of the teeth at various levels and planes
  - b. Drawing of section and shapes of pulp
  - c. Phantom Head Exercises : Performing ideal cavity preparation for various restorative materials for both Deciduous and permanent teeth
  - d. Performing pulpotomy, root canal treatment and Apexification procedure
  - i) Tooth preparation and fabrication of various temporary and permanent restorations on fractured anterior teeth.
  - ii) Preparation of teeth for various types of crowns
  - iii) Laminates/veneers
  - iv) Bonding & banding exercise
9. Performing of behavioral rating and IQ tests for children.
10. Computation of:-
  - a. Caries index and performing various caries activity tests.
  - b. Oral Hygiene Index
  - c. Fluorosis Index
11. Surgical Exercises:
  - a. Fabrication of splints
  - b. Type of Wiring
  - c. Suturing
12. 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.
  - d. Mixed dentition cast analysis
13. Library assignment
14. 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:

S.NO	CLINICAL WORKS	TOTAL	7 TO 12	13 TO 24	25 TO 36
1.	Behavior Management of different age groups children with complete records.	17	2	10	5
2.	Detailed Case evaluation with complete records, treatment planning and presentation of cases with chair side and discussion	17	2	10	5
3.	Step-by-step chair side preventive dentistry scheduled for high risk children with gingival and periodontal diseases & Dental Caries	11	1	5	5
4.	Practical application of Preventive dentistry concepts in a class of 35-50 children & Dental Health Education & Motivation.	7	1	4	2
5.	Pediatric Operative Dentistry with application of recent concepts. (a). Management of Dental Caries				
	(I) Class I	50	30	10	10
	(II) Class II	100	40	50	10
	(III) Other Restorations	100	20	50	30
	(b). Management of traumatized anterior teeth	15	04	06	05
	(c ) Aesthetic Restorations	25	05	10	10
	(d). Pediatric Endodontic Procedures				
	• Deciduous teeth Pulpotomy / Pulpectomy	150	30	50	70
	• Permanent Molars	20	3	7	10
	• Permanent Incisor	15	2	3	10
	• Apexification & Apexogenesis	20	02	08	10
6.	Stainless Steel Crowns	50	10	20	20
7.	Other Crowns	05	01	02	02
8.	Fixed : Space Maintainers Habit breaking appliances	30	08	12	10
9.	Removable : Space Maintainers Habit breaking appliances	20	05	07	08
10.	Functional Appliances	05	01	02	02
11.	Preventive measures like fluoride applications & Pit & Fissure Sealants applications with complete follow-up and diet counseling	20	08	08	04

12.	Special Assignments (i) School Dental Health Programmes	03	01	01	01
	(ii) Camps etc.,	02	01	01	-
13	Library usage				
14	Laboratory usage				
15	Continuing Dental Health Programmes				

(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 under graduates	1 in a year
5	Scientific Paper / Poster Presentations InState / 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	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 checklist that assess various aspects.

## **ASSESSMENT METHODS**

## **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 (100Marks):-

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

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

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

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

(iii) PaperIII: 2 out of 3 essay questions (50x2=100Marks)

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 analyzing type question

PART I - PAPER - I : Applied Basic Sciences : Applied Anatomy, Physiology, and Bio chemistry, 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

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

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

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

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

The clinical/practical and viva-voce examination sare conducted for a minimum of two days First Day:

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

Case Discussion	: 20 marks
Rubber Dam application	: 10marks
Working length X-ray	: 20marks
Obturation	: 20marks
Total	: 70marks

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

Case discussion	: 10marks
Crown Preparation	: 20 marks
Crown selection and Cementation	: 20marks
Total	: 50marks

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

Case discussion	: 20marks
Band adaptation	: 20marks
Impression	: 20marks
Total	: 60marks

Second day :

Evaluation of fixed space maintainer and cementation : 20marks

**B. Viva Voce : 100MARKS**

i. Viva-Voce examination : 80marks

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.

## **MODEL QUESTION PAPER**



**PEDIATRIC AND PREVENTIVE DENTISTRY**  
**MDS DEGREE MOCK EXAMINATION**  
**APPLIED BASIC SCIENCES (PAPER I)**

Applied Anatomy , Physiology , Pathology , Microbiology , Nutrition and Dietics

Time: 3 hours

Max marks: 100

Your answer should be specific to the questions asked, Draw neat diagram labelled wherever necessary.  
Answer all questions

**SHORT ANSWER QUESTIONS : MARKS : 10 x 10 = 100**

1. Vitamin D and calcium haemostasis
2. Wound healing following extraction
3. Active immunity versus passive immunity
4. Micro nutrients and its role in dental health
5. Importance of growth of Condyle
6. Development of mandible with applied aspects
7. Explain Parotid gland and its applied aspects
8. Role of saliva in health and disease
9. Regulation of temperature
10. Muscles of mastication

**PEDIATRIC AND PREVENTIVE DENTISTRY**  
**MDS DEGREE EXAMINATION**  
**CLINICAL PEDODONTICS (PART 11 - PAPER I)**

Time: 3 hours

Max marks: 100

Your answer should be specific to the questions asked, Draw neat diagram wherever necessary. Answer all questions

**LONG ESSAYS:** 2 x 25 = 50 Marks

1. Discuss in detail recent advances in caries diagnosis , caries risk assessment and caries management in Pediatric Dentistry
2. Discuss in detail the management of a 5 year old child with Hemophilia , who requires extraction of left second primary molar

**SHORT ESSAYS:** 5 X 10 =50 Marks

1. Radiographic surveys in Pediatric dentistry , add a note on radiation hazards and safety
2. Drugs in Pediatric Dentistry
3. Gingival diseases in children
4. Diet and early childhood caries
5. Anterior aesthetic restoration in Pediatric Dentistry

**PEDIATRIC AND PREVENTIVE DENTISTRY**  
**MDS DEGREE EXAMINATION**

**PREVENTIVE AND COMMUNITY DENTISTRY AS APPLIED TO PEDIATRIC DENTISTRY**  
**(PART II - PAPER II)**

Time: 3 hours

Max marks: 100

Your answer should be specific to the questions asked, Draw neat diagram wherever necessary. Answer all questions

**LONG ESSAYS:** 2 x 25 = 50 Marks

1. Define Fluoride Toxicity . explain the etiology , clinical features and management of Fluoride Toxicity
2. Discuss the importance of school dental health programme and their application in the Indian scenario

**SHORT ESSAYS:** 5 X 10 = 50 Marks

1. Anticipatory guidance
2. Defluoridation in India
3. Molar incisor hypomineralisation and its management with possible etiological factors
4. Case control study and cohort study
5. School dental nurse

**PEDIATRIC AND PREVENTIVE DENTISTRY**

**MDS DEGREE EXAMINATION**

**ESSAY - PART II - PAPER III**

Time: 3 hours

Max marks: 100

Your answer should be specific to the questions asked, Draw neat diagram wherever necessary. Answer all questions

**LONG ESSAYS: (ANSWER ANY TWO) 2 x 50 = 100 Marks**

1. Special care dentistry in children and adolescence
2. Silver Diamine Fluoride: A Successful Anticariogenic Solution with Limits?
3. Interceptive orthodontics in Paediatric Dentistry

## **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	Crippian 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 Pedodontics and Preventive Dentistry.
2. International Journal of Clinical Pediatric Dentistry

### **INTERNATIONAL :**

#### **ASDC JOURNAL OF DENTISTRY FOR CHILDREN.**

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

## **PERIODONTOLOGY**

## **DESCRIPTION OF THE PROGRAMME**



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 nonsurgical and surgical procedure independently
4. Human values, Ethical practice to communication abilities.
5. Provide Basic life support service (BLS) and 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 inter relationship 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 nonsurgical 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 epidemiological survey to assess prevalence and incidence of periodontitis on 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.

## **PROGRAM EDUCATIONAL OBJECTIVES (PEO)**

PEO1. To be approached for specialty related care owing to his established reputation in patient management and care.

PEO2. To inculcate the spirit of continuous learning, professional development, seeking evidence and establish evidence through his practice.

PEO3. To be sensitive to community needs and also integrate other disciplines, professions wherever required to render holistic oral health care.

PEO4. To inculcate the acumen to have an exploratory approach in all his professional endeavors including clinical and pedagogical areas and develop ethical practice in the same to improve the field of research .

PEO 5. To be sensitive to global, local and institutional goals and develop the spirit to think globally and to act locally responsible health workers.

## **PROGRAM OUTCOME (PO)**

**PO1:** To identify various forms of gingival and periodontal diseases and develop a systematic protocol with problem list and possible solutions in order to provide a holistic care for restoration of periodontal health including oral Implantology

**PO2:** To Use appropriate basic and advanced investigation and diagnostic aids in arriving at a confirmatory diagnosis through meticulous record and interpretation of the findings.

**PO3:** Execute planned treatment with various options using best evidence based approaches with current state of art techniques.

**PO4:** Care for maintenance, longevity of the treatment procedure through regular checkup and recall.

**PO5:** Adopt ethical principles in all aspects of treatment modalities; Professional honesty & integrity are to be fostered. Develop Communication skills to make awareness regarding periodontal disease Apply high moral and ethical standards while carrying out human or animal research, Be humble, accept the limitations in his/her knowledge and skill, and ask for help from colleagues when needed, Respect patients' rights and privileges, including patients right to information and right to seek a second opinion.

**COURSE OUTCOME (CO)**

The post graduate student must demonstrate ability to:

**CO 1:** Perform a thorough diagnostic work up including periodontal examination for identification of aetiology and pathogenesis of the periodontal diseases, prescribe appropriate investigations, correlate results with diagnostic findings and arrive at a diagnosis.

**CO 2:** Devise a comprehensive treatment plan for the disease taking into consideration the interrelationship between periodontal disease and various systemic conditions and available literature evidence

**CO 3:** Perform periodontal non-surgical and surgical treatment (pocket therapy, laser therapy and periodontal plastic surgeries) including implants independently, including management of cases with systemic diseases and prescribe necessary drugs according to the periodontal and systemic health conditions

**CO 4:** Counsel patient about importance of periodontal maintenance and provide proper periodontal care instructions

**CO 5:** Management of emergencies pertaining to periodontal procedures

**CO 6:** Ability to assess the outcomes to the prescribed objectives and optimal satisfaction of the patient

**CO 7:** Plan out/ carry out research activity both basic and clinical aspects with the aim of publishing his/her work in scientific journals.

**CO 8:** Reach to the public to motivate and educate regarding periodontal diseases, its prevention and consequences if not treated

## **COURSE CONTENT**



## **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 periodontium
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 path ways
  - b. Taste-Tastebuds, primary taste sensation & path ways.

### **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. Anti hypertensive
  - h. Immuno suppressive drugs and their effects on oral tissues
  - i. Anti epileptic drugs
3. Brief pharmacology, dental use and adverse effects of
  - a. General anaesthetics
  - b. Anti psychotics
  - c. Anti depressants
  - d. Anxiolytic drugs
  - e. Sedatives
  - f. Anti epileptics
  - g. Anti hypertensive
  - h. Anti anginal 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 keto acidosis
  - g. Acute addison's crisis.

## 6. Dental pharmacology

- a. Antiseptics
- b. Astringents
- c. Sialogogues
- d. Disclosingagents
- e. Antiplaqueagents

## 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
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. Inter disciplinary 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 period ontal 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**

## TEACHING / LEARNING ACTIVITIES:

The post graduate is expected to complete the following at the end of :

S.NO	YEAR WISE	ACTIVITIES WORKS TO BE DONE
1.	Module 1 (First Year)	<p>Orientation to the PG program</p> <p>Pre-clinical work (4 months)</p> <p>a. Dental</p> <ol style="list-style-type: none"><li>1. Practice of incisions and suturing techniques on the typodont models.</li><li>2. Fabrication of bite guards and splints.</li><li>3. Occlusal adjustment on the casts mounted on the articulator</li><li>4. X-ray techniques and interpretation.</li><li>5. Local anaesthetic techniques.</li><li>6. Identification of Common Periodontal Instruments.</li><li>7. To learn science of Periodontal Instruments maintenance (Sharpening, Sterilization and Storage)</li><li>8. Concept of Biological width</li></ol> <p>a. Typodont Exercise</p> <ol style="list-style-type: none"><li>(i) Class II Filling with Band and Wedge Application</li><li>(ii) Crown cuttings</li></ol> <p>b. Medical</p> <ol style="list-style-type: none"><li>1. Basic diagnostic microbiology and immunology, collection and handling of sample and culture techniques.</li><li>2. Introduction to genetics, bioinformatics.</li><li>3. Basic understanding of cell biology and immunological diseases.</li></ol> <p>Clinical work</p> <ol style="list-style-type: none"><li>1. Applied periodontal indices 10 cases</li><li>2. Scaling and root planning:- with Proper written history<ol style="list-style-type: none"><li>a. Manual 20 Cases</li><li>b. Ultrasonic 20 Cases</li></ol></li></ol> <p>Observation / assessment of all periodontal procedures including implants</p>
2.	Module 2 (First Year)	<ol style="list-style-type: none"><li>1. Interpretation of various bio-chemical investigations.</li><li>2. Practical training and handling medical emergencies and basic life support devices.</li><li>3. Basic biostatistics – Surveying and data analysis.</li></ol>



		<p>Clinical</p> <ol style="list-style-type: none"> <li>1. Case history and treatment planning 10 cases</li> <li>2. Root planning 50 cases</li> <li>3. Observation / assessment of all periodontal procedures including implant.</li> <li>4. Selection of topic for Library dissertation and submission of Dissertation Synopsis.</li> </ol>
3.	Module 3 (First Year)	<p>Minor surgical cases 20 cases</p> <ol style="list-style-type: none"> <li>(i) Gingival Depigmentation 3 Cases</li> <li>(ii) Gingival Curettage no limits</li> <li>(iii) ENAP 1 Case</li> <li>(iv) Gingivectomy/ Gingivoplasty 5 cases</li> <li>(v) Operculectomy 3 cases</li> </ol> <p>Poster Presentation at the Speciality conference</p>
4.	Module 4 (Second Year)	<p>Clinical work</p> <ol style="list-style-type: none"> <li>1. Case history and treatment planning 10 cases</li> <li>2. Occlusal adjustments 10 cases</li> <li>3. Perio splints 10 cases</li> <li>4. Local drug delivery techniques 5 cases</li> <li>5. Screening cases for dissertation</li> </ol>
5.	Module 5 (Second Year)	<ol style="list-style-type: none"> <li>1. Periodontal surgical procedures. <ol style="list-style-type: none"> <li>a. Basic flap procedures 20 cases</li> </ol> </li> <li>2. Periodontal plastic and esthetic 10 cases <ol style="list-style-type: none"> <li>a. Increasing width of attached gingival 5 cases</li> <li>b. Root coverage procedures / Papilla Preservation and Reconstruction 5 cases</li> <li>c. Crown lengthening procedures 5 cases</li> <li>d. Frenectomy 5 cases</li> <li>e. Vestibuloplasty 5 cases</li> </ol> </li> <li>3. Furcation treatment (Hemisection, Rootsection, Tunelling) 5 cases</li> </ol> <p>Surgical closure of diastema. 2 cases</p>

6.	Module 6 (Third Year)	<ol style="list-style-type: none"> <li>1. Ridge augmentation procedures 5 cases</li> <li>2. Implants Placements and monitoring 5 cases</li> <li>3. Sinus lift procedures 2 cases</li> <li>4. Case selection, preparation and investigation of implants.</li> <li>5. Interdisciplinary Periodontics 2 each <ol style="list-style-type: none"> <li>(i) Ortho – Perio</li> <li>(ii) Endo – Perio</li> <li>(iii) Restorative Perio</li> <li>(iv) Preprosthetic</li> <li>(v) Crown Prep</li> </ol> </li> <li>6. Osseous Surgery 2 each <ol style="list-style-type: none"> <li>(i) Resective</li> <li>(ii) Regenerative</li> </ol> </li> <li>7. Scientific paper/ poster presentation at the conference.</li> </ol>
7.	Module 7 (Third Year)	<p>Clinical work</p> <ol style="list-style-type: none"> <li>1. Flap surgeries &amp; regenerative techniques 25 cases (using various grafts &amp; barrier membranes)</li> <li>2. Assistance / observation of advanced surgical procedure 5 each</li> <li>3. Micro Surgery 5 each</li> <li>4. Record maintenance &amp; follow-up of all treated cases including implants.</li> <li>5. Submission of dissertation – 6 months before completion of III year.</li> <li>6. Scientific paper presentation at conferences.</li> </ol>
8.	Module 8 (Third Year)	<ol style="list-style-type: none"> <li>1. Refining of surgical skills.</li> <li>2. Publication of an article in a scientific journal.</li> <li>3. Preparation for final exams.</li> </ol>
9.	Module 9 (Third Year)	<ol style="list-style-type: none"> <li>1. Preparation for final exams.</li> <li>2. University exam</li> </ol>

#### **ASSESSMENT EXAMINATION:**

In addition to regular evaluation, log book etc., Assessment examination should be conducted after every 3 modules & progress of the student monitored.

#### **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 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.

Note: Maintenance of Work Diary / Check list / Log books as prescribed.

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

## **ASSESSMENT METHODS**

## **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 (100Marks):-

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

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

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

(Total of 100Marks)

(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: 200Marks

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 analytical 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 : 200marks The clinical examination shall be of two days duration

### 1st Day

#### Case discussion

- Longcase -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
C. Total	200

VIVA VOCE : 80marks

i) Viva- Voce examination : 80marks

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.

## **MODEL QUESTION PAPER**

**DEPARTMENT OF PERIODONTOLOGY**  
**INDIRA GANDHI INSTITUTE OF DENTAL SCIENCES, SBV**

**PART- I**

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

Answer the following short essays:

Time: 3hrs

10x10 = 100 marks

1. Facial artery.
2. Haemostasis
3. Anatomical considerations during Implant Placement
4. Write a note on Bias and confounding
5. Anaerobic culture methods
6. Antibiotics usage in Periodontics
7. Biochemical investigations for periodontal surgery
8. Biosynthesis of collagen
9. Write in detail on inflammation, proinflammatory mediators in relation to periodontal inflammation.
10. Periodontal indices

**DEPARTMENT OF PERIODONTOLOGY**  
**INDIRA GANDHI INSTITUTE OF DENTAL SCIENCES, SBV**

**PART- II**  
**PAPER I**

Normal Periodontal structure, Etiology & Pathogenesis of Periodontal diseases, epidemiology as related to Periodontics

Time: 3hrs

- I. Essay questions : (2 x 25 = 50marks)
  1. Define biofilm? Describe the properties of biofilm? Describe the role of same in etiology of periodontal disease?
  2. Discuss the role of stress in periodontal disease.
- II. Write short notes on: (5 x 10 = 50 marks)
  1. Critically evaluate the role of gingival crevicular fluid in health and disease
  2. Discuss the inter relationship between diabetes and periodontal disease
  3. Discuss plaque hypothesis.
  4. Discuss Gingipains.
  5. Discuss role of Lipoxins



**DEPARTMENT OF PERIODONTOLOGY**  
**INDIRA GANDHI INSTITUTE OF DENTAL SCIENCES, SBV**  
**PART- II**  
**PAPER II**

Periodontal diagnosis, therapy & Oral Implantology

Time: 3hrs

2 x 25= 50 marks

I. Essay questions :

1. Current concepts in aggressive periodontitis
2. Discuss biologic aspects of dental implants.

II. Write short notes on: 5x10=50 marks

1. Significance of biologic width
2. Guided bone regeneration
3. Suture materials.
4. Root biomodification.
5. Periodontally accelerated osteogenic orthodontics

**DEPARTMENT OF PERIODONTOLOGY**  
**INDIRA GANDHI INSTITUTE OF DENTAL SCIENCES, SBV**  
**PART- II**  
**PAPER III**

Essays (descriptive and analyzing type questions)

Time: 3hrs (50 x 2 = 100marks)

Write any 2 of the following Essays

1. Discuss viral etiology in periodontal disease?
2. Discuss the effectiveness of LASER therapy with literature evidence?
3. Discuss Host modulation therapy

## **LEARNING RESOURCE MATERIAL**

**BOOKS RECOMMENDED :**

S.NO	AUTHOR	TITLE
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

**BOOKS AS REFERENCE :**

S.NO	AUTHOR	TITLE
1	Fermin Carranza, Gerald Shklar	History of periodontology
2	Serge sibart, ThomasDietrich	Practical Periodontal Diagnosis And Treatment Planning
3	P.Mark Bartold, A.Sampath Narayanan	Biology Of Periodontal Connective Tissues
4	Hall	Critical decisions inperiodontology
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 :**

### **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

## **PUBLIC HEALTH DENTISTRY**

## **DESCRIPTION OF THE PROGRAMME**

Public Health Dentistry is defined as the art & science of preventing and controlling oral diseases, promoting oral health and prolonging the function of all oral tissues through organized community efforts.

## **1. GOAL**

To provide critical knowledge and understanding of public health

To develop students understanding of the major oral health problems of community

To equip students with the ability to critically analyze dental public health problems and develop practical solutions to protect and promote the oral health for the community

To enable students to understand and undertake health services research and to apply key findings into dental public health practice.

## **2. OBJECTIVES:**

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

### **KNOWLEDGE:**

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

### **SKILLS:**

The candidate should be able to

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

**VALUES:**

1. Adopt ethical principles in all aspects of Community Oral Health Activities.
2. To apply ethical and moral standards while carrying out epidemiological researches.
3. Develop communication skills, in particular to explain the causes and prevention of oral diseases to the patient.
4. Be humble and accept the limitations in his knowledge and skill and to ask for help from colleagues when needed and promote teamwork approach.
5. Respect patient's rights and privileges including patients right to information and right to seek a second opinion.



## **PROGRAM EDUCATIONAL OBJECTIVES (PEO)**

At the end of the Public Health Dentistry Post Graduate programme, the student is expected to be a competent Public Health Dentist who is

**PEO1.** To be approached for specialty related care owing to his established reputation in patient management and care

**PEO2.** To inculcate the spirit of continuous learning, professional development, seeking evidence and establish evidence through his practice

**PEO3.** To be sensitive to community needs and also integrate other disciplines professions wherever required to render holistic oral health care.

**PEO4.** To inculcate the acumen to have an exploratory approach in all his professional endeavors including clinical and pedagogical areas and develop ethical practice in the same to improve the field of research in dental public health

**PEO 5.** To be sensitive to global, local and institutional goals and develop the spirit to think globally and to act locally responsible health workers

## **PROGRAM OUTCOMES (PO)**

**PO 1:** Plan and perform all necessary treatment, prevention and promotion of Oral Health at the individual and community level.

**PO 2:** Plan appropriate Community Oral Health Program, conduct the program and evaluate, at the community level.

**PO 3:** Develop ways of helping the community towards easy payment plan, and followed by evaluation for their oral health care needs.

**PO 4:** Develop the planning, implementation, evaluation and administrative skills to carry out successful community Oral Health Programs.

**PO 5:** Conduct survey and use appropriate methods to impart Oral Health Education

## **COURSE OUTCOMES (CO)**

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

**CO 2:** Ability to make use of knowledge of epidemiology to identify causes and plan appropriate preventive and control measures.

**CO 3:** Practice basic principles of asepsis and sterilization both at community level and as well as in the hospital settings.

**CO 4.** Provide primary and palliative dental care to population with special health care needs

**CO 5.** Understand the importance of dental ethics and jurisprudence and knowledge of maintaining dental records.

**CO 6.** Understand the various etiological factors of common oral diseases & Measure the oral diseases using epidemiological principles, dental indices and apply basic statistics.

**CO 7.** Apply the principles of Health economics and anthropology for understanding the effectiveness of oral health programs.

**CO 8.** Conduct oral health survey to document the oral disease levels

**CO 9.** Handle biomedical waste appropriately

**CO 10.** Communicate effectively to educate about the treatment options and guide patients in choosing the appropriate services.

**CO 11.** Practice based on evidence and updates their knowledge and skills and possesses leadership qualities

**CO 12.** Educate patients about adoption of healthy lifestyle practices to prevent common oral diseases

## **COURSE CONTENT**

## PAPER I

### A) APPLIED BASIC SCIENCES AND RESEARCH METHODOLOGY

SUBJECT	CONTENT
<b>ANATOMY</b>	<ul style="list-style-type: none"><li>• Development of face</li><li>• Bronchial arches</li><li>• Muscles of facial expression</li><li>• Muscles of mastication</li><li>• TMJ</li><li>• Salivary gland</li><li>• Tongue</li><li>• Hard and soft palate</li><li>• Infratemporal fossa</li><li>• Paranasal air sinuses</li><li>• Pharynx and larynx</li><li>• Cranial and spinal nerves- with emphasis on trigeminal, facial, glossopharyngeal and hypoglossal nerve</li><li>• Osteology of maxilla and mandible</li><li>• Blood supply, venous and lymphatic drainage of head and neck • Lymph nodes of head and neck</li><li>• Structure and relations of alveolar process and edentulous mouth</li><li>• Genetics-fundamentals</li></ul>
<b>ORAL HISTOLOGY</b>	<ul style="list-style-type: none"><li>• Development of dentition, innervations of dentin and pulp, Periodontium- development, histology, blood supply and lymphatic drainage</li><li>• Oral mucous membrane</li><li>• Pulp – periodontal complex</li></ul>
<b>PHYSIOLOGY AND BIO CHEMISTRY</b>	<ul style="list-style-type: none"><li>• Mastication and deglutition</li><li>• Food and nutrition Blood composition and functions, clotting mechanism and erythropoiesis, blood groups and transfusions, pulse and blood pressure,</li><li>• Pain pathway and mechanism – types, properties</li><li>• Metabolism of carbohydrates, proteins and fats Vitamins and minerals</li><li>• Fluid and electrolyte balance</li><li>• Cell</li><li>• Dynamics of blood flow Cardiovascular homeostasis and heart sounds</li></ul>



	<p><b>RESPIRATORY SYSTEM:</b></p> <ul style="list-style-type: none"> <li>• Normal physiology and variations in health and diseases,</li> <li>• Asphyxia and artificial respiration</li> </ul> <p><b>ENDOCRINOLOGY:</b></p> <ul style="list-style-type: none"> <li>• thyroid, parathyroid adrenals, pituitary, sex hormones and pregnancy,</li> <li>• Endocrine regulation of blood sugar.</li> </ul>
<b>PATHOLOGY</b>	<ul style="list-style-type: none"> <li>• Inflammation and chemical mediators</li> <li>• Neoplasia and metastasis</li> <li>• Blood disorders</li> <li>• Histopathology and pathogenesis of dental caries, periodontal disease, oral mucosal lesions, and malignancies, HIV</li> </ul> <p>Propagation of dental infection</p> <ul style="list-style-type: none"> <li>• Oedema, Thrombosis and embolism Hemorrhage and shock</li> <li>• Cellular changes following injury Pathogenic mechanism of molecular level</li> </ul>
<b>MICRO BIOLOGY</b>	<ul style="list-style-type: none"> <li>• Microbial flora of oral cavity</li> <li>• Bacteriology of dental caries and periodontal disease</li> <li>• Methods of sterilization Virology of HIV, herpes, hepatitis</li> <li>• Cellular and humoral immunity Hypersensitivity</li> </ul> <p>Basic immunology</p> <ul style="list-style-type: none"> <li>• basic concepts of immune system in human body, antigen and antibody system</li> <li>• Autoimmune diseases Parasitology</li> </ul>
<b>PHARMACOLOGY</b>	<ul style="list-style-type: none"> <li>• Local anesthesia Analgesics and anti – inflammatory drugs</li> <li>• Chemotherapy of bacterial infections and viral infections – sulphonamides and antibiotics</li> <li>• Brief mention of antihypertensive drugs</li> <li>• Emergency drugs in dental practice</li> <li>• Important, hormones – ACTH, cortisone, insulin and oral anti-diabetics.</li> <li>• Drug addiction and tolerance Important pharmacological agents in connection with autonomic nervous system --adrenaline, noradrenalin atropine Vitamins and haemopoietic drugs Hypnotics, tranquilizers and antipyretics</li> <li>• Definition scope and relations to other branches of medicine, mode of action, bioassay, standardization, pharmacodynamics, pharmacokinetics.</li> </ul>

<b>ORAL PATHOLOGY</b>	<ul style="list-style-type: none"> <li>• Detailed description of diseases affecting the oral mucosa, teeth, supporting tissues and jaws</li> </ul>
<b>PHYSICAL AND SOCIAL ANTHROPOLOGY</b>	<ul style="list-style-type: none"> <li>• Introduction and definition Appreciation of the</li> <li>• Biological basis of health and disease</li> <li>• Evolution of human race, various studies of different races by anthropological methods</li> </ul>
<b>HEALTH INFORMATICS</b>	<ul style="list-style-type: none"> <li>• Basic understanding of computers and its components, Operating software ( windows), Microsoft office, Preparation of teaching materials like slides, project, multimedia knowledge</li> </ul>
<b>RESEARCH METHODOLOGY</b>	<ul style="list-style-type: none"> <li>• Definitions, types of research, designing written protocol for research objectivity, in methodology, quantification, records and analysis</li> <li>• Basic understanding of Patent, copyright and IPR regulations in India</li> </ul>
<b>BIOSTATISTICS</b>	<ul style="list-style-type: none"> <li>• Introduction, applications, uses and limitations of bio – statistics in Public Health Dentistry, Collection of data, presentation of data, measures of central tendency, measures of dispersion, methods of summarizing, parametric and non parametric tests of significance, correlation and regression, multivariate analysis, sampling and sampling techniques – types, errors, bias, trial and calibration.</li> </ul>
<b>COMPUTERS</b>	<ul style="list-style-type: none"> <li>• Basic operative skills in analysis of data and knowledge of multimedia</li> </ul>

## **PAPER II: PUBLIC HEALTH**

<b>PUBLIC HEALTH</b>	<ul style="list-style-type: none"> <li>• Terminologies used in public health.</li> <li>• Definition concepts and philosophy of dental health</li> <li>• History of public health in India and at international level</li> </ul>
<b>HEALTH</b>	<ul style="list-style-type: none"> <li>• Definition , concepts and philosophy of health</li> <li>• Health indicators</li> <li>• Community and its characteristics and relation to health</li> </ul>
<b>DISEASE</b>	<ul style="list-style-type: none"> <li>• Disease control and eradication, evaluation and causation, infection of specific diseases Vaccines and immunization.</li> <li>• Definition, concepts Multifactorial causation, natural history, risk factors</li> </ul>
<b>GENERAL EPIDEMIOLOGY</b>	<ul style="list-style-type: none"> <li>• Methods in epidemiology, descriptive analytical, experimental and classic epidemiology of specific diseases</li> <li>• uses of epidemiology .</li> <li>• Screening of diseases and standard procedures used</li> <li>• Ethical consideration in any study requirement.</li> </ul>

	<ul style="list-style-type: none"> <li>• New knowledge regarding ethical subjects</li> <li>• Duties of epidemiologist General idea of method of investigating</li> <li>• chronic diseases, mostly non – infectious nature, epidemic, endemic, and pandemic.</li> </ul>
<b>ENVIRONMENTAL HEALTH</b>	<ul style="list-style-type: none"> <li>• Waste disposal –various methods and sanitation.</li> <li>• Water purification, international standards of water</li> <li>• Impact of important components of the environment of health Principles and methods of identification, evaluation and control of such health hazards</li> <li>• Pollution of air, water soil, noise, food Occupational hazards Publishing</li> </ul>
<b>PUBLIC HEALTH EDUCATION</b>	<ul style="list-style-type: none"> <li>• Definition, aims, principles of health education</li> <li>• Health education, methods, models, contents ,planning health education programs</li> </ul>
<b>PUBLIC HEALTH PRACTICE AND ADMINISTRATION SYSTEM IN INDIA. ETHICS AND JURISPRUDENCE</b>	<ul style="list-style-type: none"> <li>• Legal protection for practicing dentist Consumer protection act, Dental malpractice</li> <li>• Contract laws- dentist–patient relationships &amp; legal forms of practice</li> <li>• Person identification through dentistry</li> <li>• Basic principles of law</li> </ul>
<b>NUTRITION IN PUBLIC HEALTH</b>	<ul style="list-style-type: none"> <li>• Influence of nutrition and diet on general health and oral health, dental caries, periodontal disease and oral cancers</li> <li>• Dietary constituents and carcinogenicity</li> <li>• Nutritional surveys and their evaluations. Study of science of nutrition and its application to human problem</li> <li>• Guidelines for nutrition</li> </ul>
<b>BEHAVIORAL SCIENCES</b>	<ul style="list-style-type: none"> <li>• Definition and introduction ,</li> <li>• Sociology: social class, social group, family types, communities and social relationships, culture, its effect on oral health</li> <li>• Psychology: definition, development of</li> <li>• child psychology, anxiety, fear and phobia, intelligence, learning, motivation, personalities, fear, dentist- patient relationship modeling and experience</li> <li>• Anthropology- Definition &amp; measurements.</li> <li>• Guidelines in causation of disease.</li> </ul>
<b>HOSPITAL ADMINISTRATION</b>	<ul style="list-style-type: none"> <li>• Biomedical waste management</li> <li>• Types of practices</li> <li>• Departmental maintenance, organizational structures</li> </ul>

<b>HEALTH CARE DELIVERY SYSTEM</b>	<ul style="list-style-type: none"> <li>• Dentists Act 1928,</li> <li>• Dental council of India,</li> <li>• Ethics,</li> <li>• Indian Dental association National and health policy</li> <li>• National health programme</li> <li>• Primary health care- concepts, oral health in PHC and its implications</li> <li>• National and international health organizations</li> <li>• International oral health care delivery systems-</li> <li>• Review</li> <li>• Central and state system in general and oral health care delivery system</li> <li>• Role of W.H.O. and Voluntary organizations in Health Care for the community</li> <li>• Consumer protection Act.</li> </ul>
<b>DISASTER MANAGEMENT</b>	<ul style="list-style-type: none"> <li>•Emergency disaster management</li> </ul>
<b>ORAL BIOLOGY AND GENETICS</b>	<ul style="list-style-type: none"> <li>• A detailed study of cell structure , Introduction to Genetics, Gene structure, DNA,RNA Genetic counseling, gene typing,Genetic approaches in the study of oral disorders Genetic Engineering – Answer to current health</li> </ul>

### **PAPER III: DENTAL PUBLIC HEALTH**

<b>DENTAL PUBLIC HEALTH</b>	<ul style="list-style-type: none"> <li>• Definition and concepts of dental public health</li> <li>• Critical review of current</li> <li>• Differences between clinical and community dentistry practice</li> <li>• Dental problems of specific population groups such as chronically ill, handicapped and institutionalized group</li> </ul>
<b>EPIDEMIOLOGY OF ORAL DISEASES AND CONDITIONS</b>	<ul style="list-style-type: none"> <li>• Dental caries, Periodontal disease, Malocclusion, Dental Fluorosis, Oral cancer, TMJ disorders and other oral health related problems.</li> </ul>
<b>ORAL SURVEY PROCEDURES</b>	<ul style="list-style-type: none"> <li>• WHO basic oral health methods 1997,2013 Indices for dental diseases and conditions</li> <li>• Evaluation Planning Implementation</li> </ul>
<b>DELIVERY OF DENTAL CARE</b>	<ul style="list-style-type: none"> <li>• Oral health policy – National and international policy</li> <li>• Public dental care programs</li> <li>• School dental health programs – Incremental and comprehensive care</li> </ul>

<b>PAYMENT FOR DENTAL CARE</b>	<ul style="list-style-type: none"> <li>• Prepayment Post – payment</li> <li>• International methods</li> <li>• Fee for service Problems in public and private oral health care system program</li> </ul>
<b>EVALUTION OF QUALITY OF DENTAL CARE</b>	<ul style="list-style-type: none"> <li>• Problems in public and private oral health care system program</li> <li>• Evaluation of quality of services, governmental control</li> </ul>
<b>PREVENTIVE DENTISTRY</b>	<ul style="list-style-type: none"> <li>• Preventive oral health programs</li> <li>• screening, health education and motivation</li> <li>• Update regarding Fluorosis Epidemiological studies, History, Mechanism of action Metabolism of all</li> <li>• Prevention of :</li> <li>• Dental caries- Pit and fissure sealant, ART, Caries vaccines, Caries activity test</li> <li>• Periodontal disease- Plaque control measures , Health Education, Personal oral hygiene , Tooth brushing technique,</li> <li>• Dentifrices, mouth rinses Malocclusion- Habit</li> <li>• breaking appliances, serial extractions, functional appliances Dental Fluorosis- Systemic and topical preparations</li> <li>• Oral cancer-TCC</li> <li>• TMJ disorders</li> <li>• Role of dentist in prevention of oral diseases at individual and community level.</li> <li>• Preventive oral health care for medically compromised individual Update on recent preventive modalities Dietary counseling.</li> </ul>
<b>DENTAL PRACTICE MANAGEMENT</b>	<ul style="list-style-type: none"> <li>• Ethical and legal issues in dental practice Current trends</li> <li>• Definition Principles of management of dental practice and types Organization and administration of dental practice</li> </ul>

## **TEACHING AND LEARNING ACTIVITIES**

#### **4. TEACHING LEARNING METHODS (INCLUDING CLINICAL STUDY) PERIOD OF TRAINING.**

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

During the period, each student shall take part actively in learning and teaching activities design of training, by the institution or the University. The teaching and learning activities in each specialty shall be as under:—

##### **A) 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 program.

##### **B) JOURNAL REVIEW:**

The journal review meetings shall be held at least once a week. All trainees, associate and staff associated with the post-graduate program are expected to participate actively and enter relevant details in the logbook. The trainee shall make presentations from the allotted journals of selected articles.

##### **C) SEMINARS:**

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

##### **D) SYMPOSIUM:**

It is recommended to hold symposium on topics covering multiple disciplines.

##### **E) CLINICAL POSTINGS:**

Each trainee shall work in the clinics on regular basis to acquire adequate professional skills and competency in managing various cases. A minimum of 10 comprehensive cases has to be completed per year.

##### **F) CLINICO-PATHOLOGICAL CONFERENCE:**

The clinico pathological conference shall be held once a month involving the faculties of Oral Medicine and Radiology, Oral Pathology and allied clinical departments. The trainees shall be encouraged to present the clinical details, radiological and histo-pathological interpretations and participation in the discussions.

##### **G) INTER-DEPARTMENTAL MEETINGS:**

To encourage integration among various specialities, there shall be inter-departmental meeting chaired by the Dean with all heads of post-graduate departments at least once a month.

##### **H) TEACHING SKILLS:**

All the trainees shall be encouraged in taking part in undergraduate teaching program either in the form of lectures or grouping discussion.

##### **i.) DENTAL EDUCATION PROGRAMMES:**

Each department shall organise dental education programmes on regular basis involving other institutions. The trainees shall also be encouraged to attend such programmes conducted outside their university or institute.

#### **J) 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.

#### **ROTATION AND POSTING IN OTHER DEPARTMENTS:**

To bring in more integration among the specialities and allied fields, each department shall workout a programme to rotate the trainees in related disciplines.

Extramural postings and oral health program

The trainees shall be posted in Peripheral centers, outreach centers, cancer institutes / special schools and Intensive Care Unit of Medical College on rotational basis in the second year of the program.

The trainees shall attend minimum of 50 oral health outreach programs per year and implement and evaluate one oral health program in the course of their program.

#### **STRUCTURED TRAINING PROGRAMME**

All the students of the specialty 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	Outreach programs	50 per year
8	Program evaluation	One program planning and evaluation
9	Scientific Publications	One publication in any indexed scientific journal
10	Submission of Synopsis	one synopsis within six months from the date of commencement of the course
11	Submission of Dissertation months	one dissertation within six months before appearing for the University examination
12	Submission of Systematic Review / Meta-analysis	One Systematic Review / Meta-analysis within eighteen months from the date of commencement of the course.
13	Value added courses	2 Value added courses to be attended per year



## 5. DISSERTATION

Every candidate appearing for the post-graduate degree examination shall at least six months prior to the examinations, submit with his form for examination, four typewritten copies of the dissertation undertaken by the candidate, prepared under the direction and guidance of his/her guide.

It must be approved by the Institutional Review Board consisting of Principal, all the HOD's, an advocate, medical specialties and social worker within the first six months after the commencement of the course. The application for registration of dissertation topic must be sent through the Principal duly forwarded by the Professor/ HOD. The University will register such dissertation topic. In case the students want to change the topic of dissertation, they can do it within the next three months. No change in the Guide/ dissertation topic shall be made without prior approval of the University.

The aim of dissertation is to train a postgraduate student in research methodology. It includes identification of a problem with recent advances, designing of research study on collection of data, practical analysis and comparison of results and drawing conclusions.

The dissertation should be written under the following headings. Introduction /Aims and objective/Review and literature/Materials & Methods/Results/Discussion Conclusion/Summary

The written text of dissertation shall not be less than 100pages. It should be neatly typed in double line spacing on one side ( A4 size, 8. 27’’x 11.69’’ ) and bounded properly. Photos, charts, tables, tables and graphs can be attached where ever necessary. Spiral binding should not be used. The dissertation shall be certified by the Guide and Head of the department and forwarded by the Principal to the University.

The dissertation so submitted shall be referred to the examiners for their examination and acceptance of it shall be a condition precedent to allow the candidate to appear for the written part of the examination.

Provided that a candidate whose dissertation has been accepted by the examiner, but declared failed at the examination, shall be permitted to re-appear at the subsequent examination without a new dissertation.

Provided further that if the dissertation is rejected by the examiner, the examiner shall assign reasons thereof with suggestions for its improvement to the candidate and such candidate shall re-submit his/ her dissertation to the examiner who shall accept it before appearing in the examination.

## **ASSESSMENT METHODS**

## **6. THEORY EXAMINATION ELIGIBILITY:**

The following requirements shall be fulfilled by the candidate to become eligible for the final examination.

Attendance: Every candidate shall secure (80% attendance during each academic year).

Progress and conduct: Every candidate shall participate in seminars, journal review meetings, symposia, conferences, case presentations, clinics and didactic lectures during each year organized by the concerned department.

Work diary, E-portfolio and log book: Every candidate shall maintain a work diary, E-Portfolio and log book appended to the regulations for recording his or her participation in the training programmes conducted by the department. The work diary, E-portfolio and log book shall be verified and certified by the Head of the Department of the institution. The certification of satisfactory progress is based on the work diary and log book.

## **SCHEME OF EXAMINATION:**

Part- I: There shall be a theory examination in the Basic Sciences at the end of 1ST year of the 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 6 months before final year exams.

(Part-II) examination.

Part-II: Shall consist of three papers, namely:– Paper 1: Public Health

Paper 2: Dental Public Health

Paper 3: Descriptive and analyzing type questions (Recent advances)

Practical and Clinical Examination/Viva-voce and Pedagogy

## **7. CRITERIA FOR PASS CERTIFICATE:**

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% shall be declared to have failed in the examination.

## **8. THEORY EXAMINATION PART 1:**

Paper 1: Applied basic sciences,

Applied Anatomy and Histology, Applied Physiology and Biochemistry, Applied Pathology, Microbiology, Oral Pathology, Physical and Social anthropology, Applied Pharmacology and Research Methodology and Biostatistics

Paper 1 University Examination shall be conducted for 100 marks

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

PART II;

Paper 1: Public Health

University examinations shall be conducted for 100 marks 2 long essay questions of 25 marks each and 5 short essays of 10 marks each (Total of 100 marks)

Paper 2: Dental Public health

University examinations shall be conducted for 100 marks

2 long essay questions of 25 marks each and 5 short essays of 10 marks each (Total of 100 marks)

Public Health Dentistry

Paper 3: Descriptive and analyzing type questions University examinations shall be conducted for 100 marks

1 long essay questions of 100 marks

## **9. PRACTICAL / CLINICAL 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 sample opportunity to perform various clinical procedures.

The practical/clinical examination in all the specialties 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.

## **10.LOG BOOK**

Viva voce examination aims at assessing the depth of knowledge, logical reasoning, confidence and communication skill of the students

### **SCHEDULE FOR CONDUCTING THE PRACTICAL EXAMINATION DAY ONE**

1. Exercise One: (50 marks)

Comprehensive case history along with treatment plan on a individual and community basis. Assessment of the oral health status has to be conducted using appropriate indices

2. Exercise Two: (50 marks) Preventive dental procedure

3. Exercise Three: (50 marks) Critical analysis of scientific journal 4.Exercise Four: (50 marks)

Problem solving

Day Two

5. Exercise Five: (20 marks) Pedagogy

6. Exercise Six: (40 marks) Viva voce

## **MODEL QUESTION PAPER**

**MDS DEGREE EXAMINATION**  
**DEPARTMENT OF PUBLIC HEALTH DENTISTRY**

**PAPER 1- Applied Basic Sciences and Research Methodology**

(10x10=100)

1. Discuss saliva as a biomarker for oral and systemic diseases.
2. Explain in detail the implications of Vitamin D on oral health.
3. Describe the oral microflora and its significance in relation to dental caries
4. List the most essential emergency drugs in dental practice and discuss the common dental emergencies encountered in Outreach settings
5. Explain in detail about the development, gross anatomy, blood supply and nerve supply of tongue.
6. Explain matching and blinding. Discuss in details the implications of the same.
7. Classify sampling methods. Explain in detail about non-random sampling methods
8. Define and classify hypothesis. Discuss the various statistical methods of testing hypothesis.
9. Discuss in detail about qualitative research
10. List any 5 bias and explain each with suitable examples.

**PAPER II: PUBLIC HEALTH**

(2x25=50)

**ESSAY**

1. Define health care. Outline the health care system at centre, state and district level in India. Add a note on decentralization of health care.
2. Discuss the role of various voluntary organizations in promotion of health status in Indian scenario.

**SHORT ANSWERS**

(5x10=50)

1. Formulate steps for investigating an epidemic in India.
2. Discuss the role of acculturation on oral health
3. Explain about Millennium development goals and its impact on health care delivery system
4. Define screening and surveillance. Describe about the sensitivity, specificity, and predictive values
5. Critically analyze the various types of analytical epidemiological study designs.

**PAPER III: DENTAL PUBLIC HEALTH**

**ESSAY**

(2x25=50)

1. Define planning. Mention the types of planning. Plan a oral health program to combat dental caries for government schools in rural India.
2. Define defluoridation. Discuss in detail the methods of defluoridation. Suggest some indigenous defluoridating materials for rural population in India.

**SHORT ANSWERS**

(5x10=50)

1. Discuss the Advantages and disadvantages of: Incremental and comprehensive care
2. Describe methods to improve utilization of dental care in rural India
3. Discuss about the ethical implications in outreach programs
4. Explain about Smokeless tobacco and its effect on oral health.
5. Discuss in detail about the levels of prevention of oral cancer.

**PAPER IV: ESSAY (Any two of three)**

(2x50=100)

1. Discuss in detail about the recent developments in diagnosis and prevention of dental caries.
2. Discuss the role of political system on health.
3. Explain in detail about role of evidence based practice in dental health care delivery.

## **LEARNING RESOURCE MATERIAL**

## LEARNING RESOURCE MATERIAL

- Dentistry dental practice and community by David F. Striffler and Brain A. Burt . Edn- 983 W. B. Saunders company
- Principles of Dental public health by James Morse Dunning, IV Edition 1986,Harward Univer sity Press.
- Dental public health and community Ed by Anthony Jong Publication by the C.V.Mosby company 1981
- Community oral health A –system approach by Patricia P. Cormier and Joyce I. Levy published by Appleton-century-Crofts/New York,1981
- Community dentistry – A problem oriented approach by P.C. Dental Hand book series vol .8. by Stephen L. Silverman and Ames F. Tryon, series editor –Alvin F Gardener, PSG Publishing company Inc. Littleton Massachusetts , 1980
- Dental public health- An introduction to public health dentistry. Edition by Geoffrey L. Slack and Brain Burt ,Published by John Wright and sons Bristol,1980.
- Oral health surveys – Basic methods ,2013 Published by WHO GENEVA available at the region al office New Delhi
- Preventive Medicine and Hygiene – By Maxcy and Rosenau , Published by Appleton century crofts , 1986
- Preventive Dentistry – By J.O. Forrest published by John Wright and Sons Bristoli , 1980
- Preventive Dentistry by Murray , 1997
- Introduction to Bio- statistics By B.A.Mahajan
- Research Methodology and Bio statistics .
- Introduction to statistical methods By Grewal.
- Text Book of Preventive and social Medicine by Park and park, 24th edition 15.Community Dentistry by Dr.Soben Peter. 5th Edition



## **PROSTHODONTICS AND CROWN & BRIDGE**

## **DESCRIPTION OF THE PROGRAMME**

## **GENERAL OBJECTIVES OF THE COURSE:**

The training programme in Prosthetic dentistry including Crown & Bridge & Implantology is structured

1. To achieve knowledge and skill in theoretical and clinical laboratory, attitude, communicative skills
2. To be able to perform research with understanding of social, cultural, educational and environmental background of the society.
3. To have acquired adequate knowledge and understanding of applied basic and systemic medical science, knowledge in general and particularly of head and neck.
4. 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,
5. To demonstrate evaluative and judgment skills in making appropriate decisions regarding prevention, treatment, after care and referral to deliver comprehensive care to patients.

## **KNOWLEDGE:**

1. 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.
2. To appreciate age changes in the growing and elderly and planning Prosthodontic Therapy considering any associated polymorbidity, geriatric and nutritional factors.
3. To understand demographic distribution and target diseases of Cranio mandibular region related to Prosthodontics
4. Ability to establish protocols for maintenance of care and diagnose failed restoration and provide Prosthodontic therapy and after care.
5. Should be thorough with diagnostic work up protocols, referrals, relevant investigations, infection control protocols in the department and realize the need for interdisciplinary approach
6. Should have essential knowledge on ethics, laws and Jurisprudence and forensic odontology in Prosthodontics.
7. Should attend continuing education programmes, seminars and conferences related to Prosthodontics, thus updating himself.
8. 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.

## **SKILLS:**

1. Ability to obtain personal details, systematic history, carry out systematic examination and arrive at differential diagnosis.
2. Ability to prescribe appropriate investigations including radiographs, CBCT and interpret the results accordingly, confirm the diagnosis.

3. Develop problem list for the patient and advice appropriate treatment plan for the patient considering the patient factors, existing scientific evidence and outline the treatment for 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.
4. Identify social, cultural, economic, environmental, educational and emotional determinants of the patient and consider them in planning the treatment.
5. Identify cases, which are outside the area of his speciality/ competence and refer them to appropriate specialists.
6. Advice regarding case management involving surgical, interim treatment etc.
7. 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.
8. The candidate should be able to interact with other specialty including medical specialty for a planned team management of patients for a craniofacial and oral acquired and congenital defects, temporo-mandibular joint syndromes, esthetics, Implant supported Prosthetics and problems of Psychogenic origin,
9. 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 along with infection control protocol.
10. 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
11. Laboratory technique management based on skills and knowledge of Dental Materials and dental equipment and instrument management.
12. 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.
13. Should have an ability to plan to establish Prosthodontics clinic/hospital teaching department and practice management.
14. Demonstrate leadership qualities to Teach and guide his/ her team, colleague and other students.

#### **ATTITUDES:**

1. Adopt ethical principles in all Prosthodontic practices. Professional honesty and integrity are to be fostered. Treatment to be delivered irrespective of social status, caste, creed or religion of patient.
2. Willing to share the knowledge and clinical experience with professional colleagues.
3. Willing to adopt new methods and techniques in prosthodontics from time to time based on scientific research, which is in patient's best interest.
4. Respect patient's rights and privileges including patients right to information and right to seek second opinion.

## **COMMUNICATIVE ABILITIES:**

1. Develop communication skills, in particular, to explain treatment option available in management.
2. 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.
3. Develop the ability to communicate with professional colleagues through various media like Internet, e-mail, video conference, and etc. To render the best possible treatment.
4. Provide leadership and get the best out of his group in a congenial working atmosphere.

## **PROGRAM EDUCATIONAL OBJECTIVES (PEO)**

At the end of the Dental Post Graduate Programme the student is expected to be a competent practitioner who is

- PEO1. To be approached for specialty related care owing to his established reputation in patient management and care
- PEO2. To inculcate the spirit of continuous learning, professional development, seeking evidence and establish evidence through his practice
- PEO3. To be sensitive to community needs of his specialty and also integrate other disciplines, professions wherever required to render holistic oral health care.
- PEO4. To inculcate the acumen to have an exploratory approach in all his professional endeavours including clinical and pedagogical areas and develop ethical practice in the same to improve the field of research
- PEO 5. To be sensitive to global, local and institutional goals and develop the spirit to think globally and to act locally responsible health workers/. *Competent* – One who exhibits behaviour of critical thinking, demonstrates high standards of patient care through quality delivery of treatment, interpersonal and communication skills, professionalism, maintenance of oral health and practice management skills.

## **PROGRAM OUTCOMES (PO)**



At the end of the MDS programme in Prosthodontics and Crown & Bridge, the post graduate scholar is expected to

PO 1: Identify various forms of edentulous predicament and develop a systematic protocol with problem list and possible solutions in order to provide a holistic care through replacement of teeth and associated tissues

PO 2: Use appropriate basic and advanced investigation and diagnostic aids in arriving at a confirmatory diagnosis through meticulous record and interpretation of the findings.

PO 3: Execute planned treatment with various prosthetic options using best evidence based approaches with current state of art techniques and materials.

PO 4: Deliver prosthodontic care using inter disciplinary, inter professional approach and demonstrate astute communication skills, professionalism, team-player abilities and ethics.

PO 5: Communicate to laboratory for various prosthodontic restorations and to be able to check for the norms of acceptability and excellence in the prosthodontics work for survival in the oral cavity to the expected life span of the restorations.

PO 6: Care for maintenance, longevity and functioning of the prosthesis in the patient's mouth through regular check up and recall.

PO 7: Use digital technology in seeking evidence, planning for restorations, documentation, presentation and dissemination of information.

## **COURSE OUTCOMES (CO)**

The following are the course outcomes of a post graduate from the department of Prosthodontics and Crown & Bridge

CO 1. Ability to execute planned treatment on a patient with a *partially edentulous condition* requiring a fixed, removable or a combined prosthetic option to restore optimal function comfort and esthetics

CO 2. Ability to execute planned treatment on a patient with a *completely edentulous condition* requiring a fixed, removable or a combined prosthetic option to restore optimal function comfort and esthetics

CO 3. Execute planned treatment on a patient with mutilated tooth/ teeth due to wear, trauma or decay with appropriate prosthetic option to restore optimal function, comfort and esthetics

CO 4. Execute planned treatment on a patient with oral and maxillofacial defects, deformities with appropriate choice of materials to restore optimal function comfort and esthetics [simple to complicated]

CO 5. Execute planned treatment on a patient with temporomandibular disorder, myo-facial pain dysfunction or sleep disturbances with appropriate prosthetic devices to restore to health.

CO 6. Evaluate the outcomes of executed treatment with clinical judgement, questionnaires, feedbacks and other objective strategies

CO 7. Perform Laboratory procedures including wax up, flasking, packing and curing for acrylic, metal prosthesis,

CO 8. Perform an educational counseling session with the patient on the importance of conserving teeth, importance of replacement and treatment options available using educational aids [models, charts, videos]

CO 9. Management of emergencies pertaining to prosthodontics care including allergy to materials, anaphylaxis and needle prick injury [ subject to availability of cases]

## **COURSE CONTENT**

The candidates shall undergo training for 3 academic years with satisfactory attendance of 80% for each year with the following aim

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.

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 Applied Basic Sciences and Prosthodontics including Crown and Bridge, Implantology and Material Science.

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

The MDS Course in Applied Basic Sciences shall vary according to the particular speciality, similarly the candidates shall also acquire adequate knowledge in other subjects related to their respective speciality.

#### **APPLIED BASIC SCIENCES OPTIONAL SUBJECTS:**

- (i) Applied Anatomy
- (ii) Applied Physiology
- (iii) Applied Pathology

#### **SUBJECTS RELATED TO DIFFERENT SPECIALITIES:**

1. Bio-statistics
2. Nutrition and Dietetics
3. Teaching and Testing Methodology
4. Research Methodology
5. Psychology and Practice Management
6. Comparative Anatomy
8. Applied Chemistry including Metallurgy, Dental Materials.

#### **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, Nutrition, Behavioral sciences, age changes, genetics, Dental Material Science, 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 Vth 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, pulp anatomy, histology and biological consideration. Salivary glands and Histology of epithelial tissues including glands. Histology of general and specific connective tissue including bone, hematopoietic system, lymphoid etc. Muscle and neural tissues, Endocrinal system including thyroid, Salivary glands, Histology of skin, oral mucosa, respiratory mucosa, connective tissue, bone, cartilage, cellular elements of blood vessels, blood, lymphatic, nerves, muscles, tongue, tooth and its surrounding structures.

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

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

Cell biology – Detailed study of the structure and function of the mammalian cell with special emphasis on ultra structural features and molecular aspects. Detailed consideration of 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, 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, lipids 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 Prosthodontics and crown and bridge

## **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 histopathology and clinical pathology.

## **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 Scope and need for statistical application to biological data. Definition of selected terms – scale of measurements related to statistics, Methods of collecting data, presentation of the statistical diagrams and graphs. Frequency curves, mean, mode of median, Standard deviation and co-efficient of variation, Correlation – Co-efficient and its significance, Binominal distributions normal distribution and Poisson distribution, Tests of significance

## **RESEARCH METHODOLOGY:**

Understanding and evaluating dental research, scientific method and the behavior of scientists, understanding to logic – inductive logic – analogy, models, authority, hypothesis and causation, Quacks, Cranks, Abuses of Logic, Measurement and Errors of measurement, presentation of results, Reliability, Sensitivity and specificity diagnosis test and measurement, Research Strategies, Observation, Correlation, Experimentation and Experimental design. Logic of statistical interference balance judgements, judgement under uncertainty, clinical vs., scientific judgement, problem with clinical judgement, forming scientific judgements, the problem of contradictory evidence, citation analysis as a Means of literature evaluation, influencing judgement : Lower forms of Rhetorical life, Denigration, Terminal, Inexactitude.

## **APPLIED DENTAL MATERIAL:**

1. All materials used for treatment of cranio-oro-facial disorders – Clinical, treatment, and laboratory materials, associated materials, technical consideration, shelf life, storage, manipulations, sterilization, and waste management.
2. 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,
3. The students will understand the physical, mechanical and biological basis of various dental materials as applied to clinical practice with their performance in oral cavity during function and longevity.
4. The students will be able to understand the principles involved in selection of following dental materials according to clinical scenario/ Laboratory set up based on their availability in market, ADA specifications, classification, manipulation characteristics, manufacturer recommendations, technical considerations, recent advancements, behavior of the material under various circumstances during manipulation, scientific evidence and their performance in clinical scenario or laboratory set up.
  - a. Impression materials
  - b. Gypsum products including investment materials
  - c. Denture Base Resins and other polymers
  - d. Dental Waxes
  - e. Ceramics
  - f. Composites
  - g. Dental Cements
  - h. Abrasives and polishing agents
  - i. Soldering , Welding, Brazing and syncrystallisation

## **CLINICAL SCIENCES**

### Removable prosthodontics and implants

1. Complete Denture Prosthesis – Definitions, terminology, G.P.T., Boucher's clinical dental terminology
2. Scope of Prosthodontic – the Cranio Mandibular system and its functions, the reasons for loss of teeth and methods of restorations,
3. Infection control, cross infection barrier – clinical and laboratory and hospital and lab waste management
4. 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.
5. 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



6. 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.
7. Temporomandibular disorders in edentulous patients – Epidemiology, etiology and management, Pharmacotherapy, Physical modalities, and Bio-behavioral modalities
8. 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 formal nutrition in patients with dentures and when teeth are extracted.
9. 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 – mucous membrane, alveolar ridges, palate and vestibular sulcus and dental health.
10. 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.
11. Data collection and recording, visual observation, radiography, palpation, measurement – sulci or fossae, extra oral measurement, the vertical dimension of occlusion, diagnostic casts.
12. Specific observations – existing dentures, soft tissue health, hard tissue health – teeth, bone
13. Biomechanical considerations – jaw relations, border tissues, saliva, muscular development – muscle tone, neuromuscular co-ordination, tongue, cheek and lips.
14. Interpreting diagnostic findings and treatment planning
15. 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.

16. Over dentures (tooth supported complete dentures) – indications and treatment planning, advantages and disadvantages, selection of abutment teeth, loss of abutment teeth, tooth supported complete dentures. Non-coping abutments, abutment with copings, abutments with attachments, submerged vital roots, preparations of the retained teeth.
17. 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.
18. 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.
19. Articulators – Classification, selection, limitations, precision, accuracy and sensitivity, and Functional activities of the articulator and uses, Selection of articulator, evolution of articulators to current concepts and trends in understanding the mandibular movements and articulator components.
20. 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.
21. 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, inter occlusal, 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,
22. 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.

23. 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.
24. 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. Speech considerations with complete dentures – speech production – structural and functional demands, neuropsychological background, speech production and the role of teeth and other oral structures – bilabial sounds, labiodentals sounds, linguodentals sounds, linguoalveolar sound, articulatoric characteristics, acoustic characteristics, auditory characteristics, linguopalatal and linguoalveolar sounds, speech analysis and prosthetic considerations.
25. 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.
26. 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.

#### Implant supported Prosthesis for partially edentulous patients

27. Science of Osseointegration, clinical protocol for treatment with implant supported over dentures, managing problems and complications, implant Prosthodontics for edentulous patients: current and future directions.
28. 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
29. Radiological interpretation for selection of fixtures, Splints for guidance for surgical placement of fixtures, Intra oral plastic surgery Guided bone and Tissue generation consideration for implants fixture.
30. Surgical procedures including basic adjunctive surgical procedures including alveoplasty, ridge expansion, ridge split, bone grafting etc. Realising the need for specialty intervention including vestibuloplasty, nerve, muscle repositioning, sinus lift and placement of implants beyond the confines of the residual alveolar ridge [eg: basal, nasal or pterygoid implants]
31. Prosthetic phase from impression, prosthetic options and occlusion for implants supported and retained prosthesis
32. Peri-implant tissue and Management
33. Maintenance and after care, Management of failed restoration.
34. Work authorization for implant supported prosthesis – definitive instructions,
34. Legal aspects, delineation of responsibility.

## Removable partial Prosthodontics

1. 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
2. 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, inter proximal 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.
3. 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.
4. Education of patient
5. Diagnosis and treatment planning
6. Design, treatment sequencing and mouth preparation
7. 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 block-out, shaped block-out, arbitrary block-out and relief.
8. 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.

9. 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. 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.
10. 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.
11. 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.
12. 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
13. Relining and Rebasement of the removable partial denture – Relining tooth supported denture bases, relining distal extension denture bases, methods of reestablishing occlusion on a relined partial denture.
14. 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.
15. 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
16. Management of failed restorations and work authorization. Prosthodontics and crown and bridge

### **MAXILLOFACIAL REHABILITATION:**

1. Scope, terminology, definitions, cross infection control and hospital waste management, work authorization.
2. 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)
3. Acquired defects of the mandible, acquired defects of hard palate, soft palate, clinical management of edentulous and partially edentulous maxillectomy patients, Facial defects.

4. 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, Burnstents, 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 them and ible compromise by radiotherapy, Craniofacial Osseo integration, Prosthodontic treatment,
5. Material and laboratory procedures for maxillofacial prosthesis.

## **FIXED PROSTHODONTICS**

1. Scope, definitions and terminology, classification and principles, design, mechanical and biological considerations of components – Retainers, connectors, pontics, work authorization.
2. 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.
3. 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.
4. 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.
5. 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 compositeresins, Resin Bond retainers, Gingival marginal preparations – Design, material selection, and biological and mechanical considerations – intracoronar retainer and precision attachments –custom made and ready made
6. 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.
7. Resins, Gold and gold alloys, glass Ionomer, restorations.
8. Restorations of endodontically treated teeth, Stomatognathic Dysfunction and management
9. Management of failed restorations
10. Osseo integrated supported fixed Prosthodontics – Osseo integrated supported and tooth supported fixed Prosthodontics

## TMJ – Temporomandibular joint dysfunction

1. Scope, definitions, and terminology
2. 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 – stylohyoidsyndrome), Synovial chondromatosis, Osteochondrosis disease, Osteonecrosis, Nerve entrapment process, Growth changes, Tumors,
3. Radiographic imaging
4. Etiology, diagnosis and cranio mandibular pain, differential diagnosis and management of orofacial pain – pain from teeth, pulp, dentin, muscle pain, TMJ pain – psycho logic, physiologic –endogenous control, acupuncture analgesia, Placebo effects on analgesia, Trigeminal neuralgia, Temporal arteritis
5. 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.
6. 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, 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.

## OCCLUSION

1. 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.
2. 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,
3. 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,
4. 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 archmal relationship problems, transcranial radiography, postoperative care of occlusal therapy.

## AESTHETIC

1. Scope, definitions :Morpho psychology and esthetics, structural esthetic rules – facial components, dental components, gingival components and physical components.
2. 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
3. Smile – classification and smile components, smile design, esthetic restoration of smile,
4. Esthetic management of the dentogingival unit, intra oral materials for management of gingival contours, and ridge contours,
5. Periodontal esthetics,
6. Restorations – Tooth colored restorative materials, the clinical and laboratory aspects, marginal fit, anatomy, inclinations, form, size, shape, color, embrasures, contact point.



## **TEACHING AND LEARNING ACTIVITIES**

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

Prosthetic 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 post graduate 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 multi disciplinary teams on selected topics. Invited lectures can be coordinated by departments by resource persons from clinical areas, laboratory specialty and those who are having expertise in a particular area.
2. Journal club: The intention of conducting a journal club is to inculcate the habit of identifying, seeking and critically analyzing the strength of evidence. 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 presentations in each year. All the seminars should be evaluated by a moderator who assesses the students on the comprehensives of presentation.
4. Symposium: It is recommended to hold symposium on topics covering multiple disciplines one in each academic year with the involvement of students and / or faculty.
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. The time present in the department by the trainee should be made use of and the faculty supervising should assess the trainee in all dimensions of competency and regularly give them feedbacks for improvement.
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, periodontology, 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 at least 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. All the skill training programmes should be assessed in the criterion sheet given by council guidelines.

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 been couraged to attend such programmes conducted elsewhere.
13. Conferences/Workshops/Advanced courses: The trainees shall be encouraged not only to attend conference/workshops/advance courses but also to present at least two papers at state/national speciality meeting during their training period.
14. 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 postgraduate guide.

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

1. Theoretical exposure of all applied sciences of study
2. Clinical and non-clinical exercises involved in Prosthodontics therapy for assessment and acquiring higher competence
3. Commencement of Library Assignment within six months.
4. Short epidemiological study/relevant research in Prosthodontics.
5. 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
6. Acquire knowledge of instruments, equipment, and research tools in Prosthodontics.
7. To acquire knowledge of Dental Material Science – Biological and bio mechanical & bio-esthetics, knowledge of using material in laboratory and clinics including testing methods for dental materials. articpation and presentation in seminars, didactic lectures
8. Evaluation – Internal Assessment examinations on Applied subjects

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

1. Acquiring confidence in obtaining various phases and techniques for providing Prosthodontic therapy.
2. Acquiring confidence by clinical practice with sufficient numbers of patients requiring tooth and tooth surface restorations.
3. Fabrication of Adequate number of complete denture prosthesis following, higher clinical approach by utilizing semi-adjustable articulators, face bow and graphic tracing.
4. Understanding the use of the dental surveyor and its application in diagnosis and treatment plan in R.P.D.
5. Adequate numbers of R.P.D. covering all partially edentulous situation
6. Adequate number of Crowns, Inlays, laminates F.P.D. covering all clinical situation.
7. Selection of cases and principles in treatment of partially or complete edentulous patients by implant supported prosthesis.

8. Treating single edentulous arch situation by implant supported prosthesis.
9. Diagnosis and treatment planning for implant prosthesis.
10. Ist stage and IInd stage implant surgery
11. Understanding the maxillofacial Prosthodontics.
12. Treating craniofacial defects Management of orofacial defects
13. Prosthetic management of TMJ syndrome
14. Occlusal rehabilitation
15. Management of failed restoration
16. Prosthodontics Management of patient with psychogenic disorder. Practice of child and geriatric prosthodontics
17. Participation and presentation in seminars, did actics lectures
18. Evaluation – Internal Assessment examinations

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

1. Clinical and laboratory practice continued from IInd year
2. Occlusion equilibration procedures – fabrication of stabilizing splint for parafunctional disorders, occlusal disorders and TMJ functions.
3. Practice of dental, oral and facial esthetics
4. The clinical practice of all aspects of Prosthodontic therapy for elderly patients. Implants Prosthodontics – Rehabilitation of Partial Edentulous, Complete edentulism and for craniofacial rehabilitation
5. Failures in all aspects of Prosthodontics and its management and after care
6. Team management for esthetics, TMJ syndrome and Maxillofacial and Craniofacial Prosthodontics
7. 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

8. Complete and submit Library Assignment 6 months prior to examination.
9. Candidates should acquire complete the oretical and clinical knowledge through seminars, symposium, workshops and reading. Participation and presentation in seminars, did actic lectures
10. Evaluation – Internal Assessment examinations three months before University examinations

## PROSTHODONTIC TREATMENT AREAS

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 –  $\frac{3}{4}$  th,  $\frac{4}{5}$ th,  $\frac{7}{8}$ th,  $\frac{1}{2}$  crowns, Pin-ledge Radicular crowns, Full crowns,
3. Tooth replacements Partial complete
  - Tooth supported Fixed partial denture Over denture
  - Tissue supported Interim partial denture Complete denture  
Intermediate partial denture Immediate denture  
Immediate complete denture
  - Tooth and tissue Cast partial denture Over denture  
Supported Precision attachment
  - Implant supported Cement retained Bar attachment  
Screw retained Ball attachment  
Clip attachment
  - Tooth and implant Screw retained  
Supported Cement retained
  - Root supported Dowel and core Overdenture  
Pin retained  
Precision attachments

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

Congenital Defects - Cleft lip and palate, Pierre Robin Syndrome, Ectodermal dysplasia, Hemifacial microsomia cast partial dentures, Anodontia implant supported prosthesis, Oligodontia complete dentures, Malformed teeth fixed partial dentures

Acquired defects - Head and neck cancer patients – prosthodontic splints and stents, Restoration of facial defects , Parts of face and cranium, Midfacial defects, Restoration of maxillofacial trauma, Hemimandibulectomy cast partial denture, Maxillectomy implant supported dentures, Lip and cheek support prosthesis complete dentures, Ocular prosthesis

Speech and Velopharyngeal prosthesis, Laryngectomy aids, . Esophageal prosthesis, . Nasal stents, Tongue prosthesis, Burn stents, Auditory inserts, Trismus appliances

5. T.M.J and Occlusal disturbances - Occlusal equilibration, Splints – Diagnostic, Repositioners / Deprogrammers, Anterior bite plate, d. Posterior bite plate, Bite raising appliances, Occlusal rehabilitation
6. Esthetic/Smile designing - Laminates / Veneers, Tooth contouring (peg laterals, , formed teeth), Tooth replacements, Team management,
7. Psychological therapy – Questionnaires, Charts, papers, photographs, Models, Case reports, Patient counseling, Behavioral modifications, Referrals,
8. Geriatric Prosthodontics- Prosthodontics for the elderly, . Behavioral and psychological counseling, Removable Prosthodontics, . Fixed Prosthodontics, Implant supported Prosthodontics, . Maxillofacial Prosthodontics, . Psychological and physiological considerations
9. Preventive measures - Diet and nutrition modulation and counseling, Referrals

## **PRECLINICAL WORK**

The bench work of following preclinical exercises should be completed to have an in depth step by step understanding of various procedures done in prosthodontics

- I. Complete dentures
- II. Removable partial denture
- III. Fixed Partial Denture IV Implants
- IV. Maxillofacial prosthesis
- VI. Other exercises TMJ splints

## **ASSESSMENT METHODS**

## SUMMATIVE ASSESSMENT

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

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

(100 Marks for each Paper)

Written examination shall consist of Basic Sciences Paper (Part-I) of three hours duration and should be conducted at the end of First year of MDS course. Part I examination consists of two essays of 25 marks each and 10 short answers of 5 marks each. Part-II Examination will be conducted at the end of Third year of MDS course. Part-II Examination will consist of Paper-I, Paper-II & Paper-III, each of three hours duration. Paper-I, Paper-II and Paper III shall consist of two long answer questions carrying 25 marks each and five questions carrying 10 marks each. Distribution of topics for each paper will be as follows:

Part-I : Applied Basic Sciences: Applied Anatomy

Nutrition & Biochemistry, Pathology & Microbiology, virology, 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 (descriptive and analyzing type questions)

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

A. Practical / Clinical Examination: 200 Marks

1. Presentation of treated patients and records during their 3 years

Training period 35 Marks

a. C.D. 1 mark

b. R. P.D. 2 marks

c. F.P.D. including single tooth and surface restoration 2 marks

d. I.S.P. 5 marks

e. Occlusal rehabilitation 5 marks

f. T.M.J. 5 marks

g. Maxillofacial Prosthesis 5 marks

h. PreClinic Exercises 10 marks

1	Discussion on treatment plan and patient review	10 marks
2	Tentative jaw relation records	5 marks
3	Face Bow – transfer	5 marks
4	Transferring it on articulators	5 marks



5	Extra oral tracing and securing centric and protrusive / lateral, record	15 marks
6	Transferring records on articulator and programming.	5 marks
7	Selection of teeth	5 marks
8	Arrangement of teeth	10 marks
9	Waxed up denture trial	10 marks
10	Check of Fit, insertion and instruction of previously processed characterised, anatomic completedenture Prosthesis	5 marks

**ALL STEPS WILL INCLUDE CHAIRSIDE, LAB AND VIVA VOCE**

2. Complete Denture Prosthodontics 75 Marks
3. Fixed Partial Denture 35 Marks
  - a. Case discussion including treatment planning and selection of patient for F.P.D. 5 Marks
  - b. Abutment preparation isolation and fluid control 15 marks
  - c. Gingival retraction and impressions (conventional/CAD 10 marks CAM impressions)
  - d. Cementation of provisional restoration 5 marks
4. Removable Partial Denture 25 Marks
  - a. Surveying and designing of partial denture cast. 5 marks
  - b. Discussion on components and material selection including occlusal schemes. 10 marks
5. Implant supported prosthesis (2nd stage-protocol) 30 marks
  - a. Case discussion including treatment planning and selection of patient for ISP 10 marks
  - b. II stage preparation, Abutment selection, placement, evaluation 10 marks
  - c. Implant impression and making of cast 10 marks
- B. Viva Voce: 100 Marks
- I. Viva-Voce examination: 80 marks

All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach, expressions, 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

## **MODEL QUESTION PAPER**

**DEPARTMENT OF PROSTHODONTICS AND CROWN &  
BRIDGE PAPER -1 – APPLIED BASIC SCIENCES**

Total marks 100

Time 3 hours

Long Answer Questions

2X10 =100

1. Describe the physiology of mastication and deglutition with relevance to prosthodontics.
2. Classify Dental Ceramics according to various characteristics. Describe any two systems of machinable ceramics with appropriate illustrations.
3. Describe the various allergic reactions . Give examples from your specialty.
4. Explain the anatomical considerations when you plan an obturator for a post resection defect in maxilla.
5. A. Describe the infective endocarditis prophylaxis protocol according to current AHA recommendations  
B. Explain the protocol following an accidental needle prick injury while treating an unknown [biohazard disease status] patient.
6. Explain soldering, welding and syncrystallisation procedure as applied to prosthodontics
7. Classify types of studies and explain the statistical tests appropriate for each type of study.
8. Describe various abrasives as finishing and polishing instruments
9. Describe various steps in casting and preventive measures for avoiding casting defects
10. Classify dental waxes and mention the uses of waxes used in prosthodontic restorations.

**DEPARTMENT OF PROSTHODONTICS AND CROWN & BRIDGE  
PAPER -2 REMOVABLE PROSTHODONTICS , IMPLANT , GERIATRIC AND  
CRANIO FACIAL PROSTHODONTICS**

Total marks 100

Time 3 hours

Long Answer Questions

2X25=50

1. Explain the use of Phonetics in Complete Dentures fabrication
2. Explain the success criteria in implant follow up. Explain the outline of the protocol to handle biological and mechanical complications in dental implants.

Short Answer Questions 5X10=50

3. Explain the flow of events of Combination syndrome according to Kelly. Explain methods of prevention.
4. Discuss the various types of mental attitude occurring in dental office in patients receiving complete denture and explain how to handle such individuals.
5. Describe the physiological methods to record vertical jaw relation in complete denture patients
6. Explain how lack of neuromuscular coordination would affect your treatment plan in prosthodontic treatment.
7. Discuss the absolute and relative contraindications of implants

### **PAPER -3: FIXED PROSTHODONTICS, OCCLUSION, TMJ AND ESTHETICS**

Total marks 100

Time 3 hours

Long Answer Questions 2X25 = 50

1. Describe the various luting agents used in prosthodontics with their advantages. Special mention is needed on adhesive luting agents used for ceramic crowns.
2. Explain how would you plan a follow up for fixed partial denture. Outline the characteristics of all the observations which could be made with possible causes and management

Short Answer Questions 5X10 = 50

3. Classification of Temporomandibular disorders
4. Describe various techniques used for provisionalisation and special mention on the currently available provisional restorations
5. Explain how bevel can contribute to marginal integrity of cast metal restorations
6. Explain how various proportions and anthropometric measurements are used to plan esthetics in prosthodontics
7. Discuss methods to record centric relation in a dentulous individual.

### **DEPARTMENT OF PROSTHODONTICS AND CROWN & BRIDGE PAPER -4 RECENT ADVANCEMENTS**

Answer any one 100 x 1=100

Time 3 hours

1. Evolution of Elastic Impression materials used in Prosthodontics and discuss the advantages with the state of art elastic impression materials
2. Evolution of rotary instruments and discuss the advantages with the state of art instruments used in prosthodontics

## **LEARNING RESOURCE MATERIAL**

## STANDARD TEXT BOOKS AND JOURNALS 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 AS REFERENCE :

S.NO	AUTHOR	TITLE
1	Charles W Ellinger	Synopsis of completedenture
2	Bernard Levin	Impressions for completedentures
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 toothpreparation
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 estheticdentistry
11. Journal of esthetic and restorative dentistry
12. Biomaterials

**AERO BICS PROGRAM  
FOR FIRST YEAR POST GRADUATES**



### Academic Enrichment and Research Orientation Program for Post Graduates

S.No	Topic
1.	Research methodology & Biostatistics Literature search Protocol writing
2.	Ethics in research
3.	Reference management software
4.	Do's and Don't's of a powerpoint presentation
5.	Case documentation (Methods of Physical and Electronic Case Documentation including Software)
6.	Dental photography
7.	Evidence based Dentistry
8.	Seminar presentation guidelines
9.	Critical appraisal of article & how to present journal club
10.	Communication skills & Professionalism
11.	Time & stress management
12.	Teaching learning principle/ adult learning principle VARK Questionnaire
13.	Pedagogy training – How to write a Lesson plan & microteaching
14.	Scientific paper/ poster presentation tips
15.	Training in BLS/ALS/ACLS
16.	How to write a thesis
17.	How to write a manuscript

**Basics Sciences - Integrated Classes and Seminars for Post Graduates**

<b>S.NO</b>	<b>TOPIC</b>
1.	Prenatal and Postnatal growth and development & anatomy of face, maxilla & mandible
2.	Prenatal and Postnatal development of teeth and supporting structures.
3.	Temporomandibular Joint
4.	Muscles of mastication & facial expression
5.	Salivary glands & Saliva
6.	Tongue
7.	Orofacial genetics
8.	Endocrine glands
9.	Haemostasis, blood dyscrasias,
10.	Immuno globulins
11.	Inflammation, chemical mediators Wound healing and repair
12.	Pain pathway, pathway of dental pain
13.	Analgesics & Antibiotics
14.	Nutrition & dietics
15.	Carbohydrates metabolism & Regulation of blood sugar
16.	Essential amino acids
17.	Normal oral microflora
18.	Sterilization and disinfection, biomedical waste management



**SBV**