



SUMANDEEP VIDYAPEETH

(Declared as Deemed to be University Under Section 3 of UGC Act,
1956)

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REVISED REGULATIONS AND CURRICULUM

FOR

MASTER OF DENTAL SURGERY COURSE

2018

(As ammended upto 28th April 2020)

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DEAN

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Sumandeep Vidyapeeth
(An Institution Deemed to be University)
At. Piparia, Ta. Waghodia,
Vadodara, Gujarat 391760 India.

Our Vision:

SUMANDEEP VIDYAPEETH should be a world class centre of excellence for learning and innovation, driven by social sensitivity and state-of-the-art technology. The University is amongst the top rated Educational Institute offering

contemporary education, high quality research, and training and consultancy services in Health sciences to suit the ever changing needs of society.

Our Philosophy:

- **To train the students through Evidence Based Education System**
- **To encourage Research in all the disciplines in health sciences**
- **To set the Benchmark in Educational Standards, Policies and Practice**
- **To function with spirit of humanity, liberty, integrity, responsibility and togetherness**
- **To encourage new ideas and inculcate spirit of Entrepreneurship**
- **To create and maintain National as well as Global identity**
- **To create a rewarding sense of belonging for mutual growth**
- **To develop a sense of partnership amongst all**
- **To strive hard towards creating human centered development and building knowledge-centered society and nation**

Our Strength:

- **First Largest and Recognized Deemed Health University of Gujarat State.**



- **First University in India to introduce Evidence Based Education System in Dental Curriculum.**
- **First deemed university of Gujarat State to start Dental Postgraduate courses (MDS) in all specialty of Dentistry.**
- **Largest Dental Hospital of Gujarat state having 400 hi-tech dental chairs.**

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SECTION-I

MASTER OF DENTAL SURGERY COURSE

RULES & REGULATIONS

1. SHORT TITLE AND COMMENCEMENT:

1.1 These Regulations shall be called

**“THE REGULATIONS FOR THE MASTER OF DENTAL SURGERY
PROGRAMS OF THE SUMANDEEP VIDYAPEETH,
PIPARIAVADODARA”.**

1.2 The Regulations and the Syllabus are as prescribed in these Regulations and are subject to modifications by the Academic Council of Sumandeep Vidyapeeth from time to time.

2. ELIGIBILITY:

To be Eligible for Admission for the Degree of Master of Dental Surgery, the Candidate shall –

- 2.1 Hold a Degree of Bachelor of Dental Surgery (B.D.S.) of Sumandeep Vidyapeeth or of any other University duly recognized by the Dental Council of India.**
- 2.2 Be registered with the State Dental Council and must have obtained provisional or permanent registration.**
- 2.3 Have undergone compulsory rotatory internship of a year in an approved/recognised dental college.**
- 2.4 Qualify in Merit the NEET Qualifying examination for the said academic year and be granted admission by the common counselling procedure.**
- 2.5 In the case of a foreign national who has qualified the said NEET examination, the candidate shall obtain on payment of the prescribed fee for registration to the Dental Council of India, a 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 postgraduate 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.**
- 2.6 NEET eligibility percentile**

SELECTION OF CANDIDATE FOR POST-GRADUATE COURSES –

- 2.6.1 The candidate has to secure the following category wise minimum percentile* in NEET for admission to postgraduate 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

***It can vary as declared by National Board of Examination for THAT particular year.**

2.6.2 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.

2.6.3 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%:

A. 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:

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

3. AGE LIMIT:

There is No Upper Age Limit.

4. PHYSICAL FITNESS CERTIFICATE:

4.1 Every candidate before admission to the course shall submit to the Principal of the Institution a Certificate of Medical Fitness from an authorized Medical Officer that

the Candidate is physically fit to undergo the M.D.S course and does not suffer from any contagious disease or Psychiatric problems.

4.2 Students with locomotory disability of lower limbs between 50% to 70% should produce the Disability Certificate issued by the duly constituted District Medical Board.

- 4.3 Disabled students should also produce FITNESS CERTIFICATE as described in 4.1.**

5. ELIGIBILITY CERTIFICATE:

The candidate who has passed the NEET qualifying examination conducted by the National Board of Examinations, before seeking admission to KMSDCH, shall obtain an Eligibility Certificate from the Sumandeep Vidyapeeth by remitting the prescribed fees along with the filled application form and required documents.

6. CUT OFF DATES FOR ADMISSION:

The academic session shall commence 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 Candidates admitted up to 31st May, shall be registered for the MDS Course in that academic year.

7. ENROLLMENT:

A candidate admitted to the Master of Dental Surgery Course (M.D.S.) in any one of the affiliated institutions of the Sumandeep Vidyapeeth, Piparia shall submit the prescribed application form for Enrollment, duly filled along with prescribed fee and filled in Declaration Form to the Registrar of this University through the Principal of the affiliated institution within 15 days from the joining to the Master of Dental Surgery course. The candidate who fails to submit the Enrollment form in stipulated time period will get an Extension of One term i.e. Six months.

8. DURATION OF THE COURSE:

- 8.1 The Period of certified study & training of the Master of Dental Surgery Postgraduate Degree Course shall be three complete years including period of examination.**
- 8.2 Time period required for passing out MDS course shall be a maximum of six years from the date of admission in the said course.**
- 8.3 No exemption shall be given from this period of study and training for any other experience gained prior to the admission to the MDS course, except PG diploma holders in the same specialty**
- 8.4 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 (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.

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

9. COMMENCEMENT OF THE COURSE:

Academic year for the Master of Dental Surgery course shall commence from 1st May of each year.

10. POST GRADUATE GUIDE:

- 10.1 The qualifications required to be a postgraduate teacher are as laid down by the Dental council of India.
- 10.2 The postgraduate teacher will be a registered post graduate teacher of Sumandeep Vidyapeeth.
- 10.3 A Professor who is a recognized postgraduate teacher can register maximum two post graduate students in each academic year of MDS course.
- 10.4 Not more than 6 active postgraduate students should be registered under each Professor who is a post graduate teacher during the 3 years MDS course.
- 10.5 A Reader who is a recognized postgraduate teacher can register maximum of one post graduate students in each academic year of MDS course.
- 10.6 Not more than 3 active postgraduate students should be registered under each Reader who is a post graduate Teacher during the 3 years MDS course.
- 10.7 The post graduate teacher will register the post graduate student in the same specialty in which he/she is trained.
- 10.8 The postgraduate teacher shall always certify the clinical/ practical work, library and main Dissertation, research project and

any other activities conducted by post graduate student under them.

10.9 No postgraduate teacher shall enroll candidates for a discipline other than the subject of his/her Specialty for the post-graduate programme and no teacher shall be recognized as Postgraduate teacher for more than one specialty.

10.10 Part-time professor who can put in at least four hours a day or eighty hours in a month are eligible to enrol only one post-graduate student under them.

11. CURRICULUM:

The Curriculum and the Syllabus for the course shall be as prescribed in the Regulations and are subject to modifications by the Academic Council of Sumandeep Vidyapeeth from time to time.

12. MEDIUM OF INSTRUCTION:

English shall be the medium of instruction for all the subjects of the M.D.S. course.

13. WORKING DAYS IN THE ACADEMIC YEAR:

13.1 No candidate shall be permitted to appear in the M.D.S. Examination, unless he / she has attended the course in the concerned specialty for the prescribed period in an affiliated Institution recognized by this University and has produced the necessary certificate of Study, Attendance, Satisfactory Conduct and Progress from the Head of the Department and Principal/Dean of the Institution.

13.2 A candidate is required to put in minimum of 80% of attendance the first academic year for Part I examination and in every academic year before admission to the Part II examination.

14. CONDONATION OF ATTENDANCE:

There shall be NO condonation of Attendance for the MDS course.

15. MAINTENANCE OF LOG BOOK

15.1 Every post graduate candidate shall maintain a record of skills (Log Book), he/ she has acquired during the three years training



period, certified by the Guide, Head of Department, where he / she has undergone training.

- 15.2 The candidate is also required to participate in the teaching and training programme for the under graduate student.
- 15.3 In addition, the Head of the Department shall involve their Post-Graduate students in seminars, journal clubs, group discussions and Participation in conferences.
- 15.4 At the end of the course, the candidate should summarize the contents and get the Log Book certified by the guide, Head of the Department.
- 15.5 Every Post-Graduate candidate should be encouraged to present scientific papers in conferences and improve on it and submit them for publication in indexed journals, motivation by the Heads of Departments shall be essential in this area to sharpen the research skills of the Post-Graduate candidates.
16. **DISSERTATION:**
 - 16.1 Every candidate appearing for the MDS degree examination for the first time shall submit with his/her application for the admission to the examination, four type written copies of a dissertation of a research topic undertaken by the candidate and prepared under the direction and guidance and to the satisfaction of his/her university Teacher / Guide.
 - 16.2 The dissertation should be submitted to the University six months prior to the commencement of MDS theory examination.
 - 16.3 The dissertation shall be referred to FOUR external examiners approved by SVU for the MDS examination and acceptance of it by 75% of the examiners shall be a precondition for the candidate to appear in the final university examination.
 - 16.4 A candidate whose dissertation has been accepted by the examiners, but who is declared to have failed at the examination will be permitted to reappear at the subsequent MDS examination without having to prepare a new dissertation, if, however, the dissertation is rejected, the authorities shall give reasons thereof and suggestion for the improvement of the same and the dissertation thus improved will have to be resubmitted to the

examiners and accepted before appearing in MDS theory examination.

16.5 Acceptance of dissertation:

- 16.5.1 The dissertation submitted by the candidate must be accepted at least by 75% of the examiners.**
- 16.5.2 In case, the dissertation submitted by the candidate is not accepted by the examiners, the concerned candidates shall not be allowed to appear for the theory & practical examination and he/she shall be required to resubmit a fresh dissertation complying with the observations/remarks made by the examiners for not accepting the dissertation previously.**
- 16.5.3 An unsuccessful examinee whose dissertation has already been accepted by the examiners shall not be required to submit a fresh dissertation while appearing at the subsequent examination. However the examinee, on submission of fresh application and payment of fresh examination fee, producing a certificate to that effect by the Head of the Department is allowed to appear for the subsequent examinations.**

17. EXAMINATIONS

17.1 INTERNAL EXAMINATIONS:

- 17.1.1 The internal examinations for MDS course will be conducted by the Internal Examination Cellof the dental college.**
- 17.1.2 There shall be three internal examinations during 3 years of MDS course. All these three exams are compulsory. Only in exceptional cases eg. Medical grounds or unavoidable circumstances a separate examination may be conducted for the particular candidate/s.**
- 17.1.3 First internal examination shall be conducted at the end of first year, with one theory paper according to Part I University Examination Scheme and one clinical/practical examination according to department pattern.**



17.1.4 Second internal examination shall be conducted at the end of second year, with three theory papers and one clinical/practical examination as per department pattern.

17.1.5 Third internal examination called as the Mock exam will be conducted three months before the University examinations, with three theory papers and one clinical/practical examination as per university pattern.

17.1.6 The mock examinations shall be conducted by internal and external examiners similar to that of University exam scheme.

17.2 PART – I EXAMINATIONS

17.2.1 Eligibility to Appear –

17.2.1.1 Attendance: Every candidate should have fulfilled the minimum attendance i.e. 80% of the attendance during the first academic year of the Postgraduate MDS course as prescribed by the Dental council of India and the University.

17.2.1.2 Progress and Conduct: Every candidate should have presented seminars, journal club meetings, clinical case presentations, attended clinics and didactic lectures, attended symposia and specialty conferences during each year as follows:

Seminars	05
Journal Clubs	05
Clinical Case Presentations	04 (minimum)
Lectures taken for undergraduates	01
Main Dissertation Synopsis within six months from the date of commencement of the course	01

17.2.2 University Examination:

- a. Part 1 exam after completion of first year of post graduate training and part 2 exams after 3 years of completion of post graduate training.
- b. Part 1 exam would comprise of basic science paper which would comprise of 10 questions of 10 marks each. Part 2 exam would comprise of 3 papers, paper 1 & 2 would comprise of a total of 7 questions out of which 2 questions will be of 25 marks each and 5 questions of 10 mark each. Paper 3 will comprise of 3 questions in which the student has to compulsorily attend 2 questions which will be 50 marks each.
 - i Part-I: Shall consist of one paper. There shall be a theory examination in the basic sciences at the end of 1st year of MDS course. The question papers shall be set and evaluated by the concerned Department/Specialty.
 - ii The candidates shall have to secure a minimum of 50% in the Basic Science.
 - iii Distribution of Marks in Theory: Part I University Examination (100 Marks):- There shall be 10 questions of 10 marks each (Total of 100 Marks)
 - iv The candidates shall have to pass the Part-I examination at least six months prior to the final (Part-II) examination.

17.3 PART – II EXAMINATIONS

17.3.1 Eligibility to Appear – The following requirements should be fulfilled by every candidate to become Eligible to appear for the University examination:

17.3.1.1 Attendance: Every candidate appearing for the Degree of Master of Dental Surgery (M.D.S.) examination must have completed atleast three academic years of study after registration as a Post-graduate student under a recognized Postgraduate Teacher of Sumandeep Vidyapeeth. Every candidate should have fulfilled the minimum attendance i.e. 80% of the attendance during each academic year of the Postgraduate MDS course as prescribed by the Dental Council of India and the University.

17.3.1.2 Progress and Conduct:

17.3.1.2.1 Every candidate should have presented seminars, journal club meetings, clinical case presentations, attended clinics and didactic lectures, attended



symposia and speciality conferences during each year.

17.3.1.2.2 Every candidate should have conducted at least TWO Research projects as Principal Investigator other than the main dissertation, during the course.

17.3.1.2.3 Every candidate must have

- published at least one scientific article in an Indexed journal.
- A minimum of four national/state scientific paper/ poster/ table clinic to be done by Post Graduate during his /her tenure.
- One Library dissertation within eighteen months
- from the date of commencement of the course.
- Systematic review shall be considered as
- one of the form for library dissertation.
- PG students shall undergo compulsory training on BLS, Adobe photoshop and Corel draw.
- Introduction of ACLS course for all MDS students.

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

1	Journal clubs	05 in a year
2	Seminars	05 in a year
3	Clinical Case Presentations	04 in a year (minimum)
4	Lectures taken for undergraduates	01 in a year

5	Scientific Paper / Poster Presentation in State/ National Conferences	Four scientific presentations during three years of training period
6	Clinico Pathological Conferences/ Interdisciplinary	Two presentations during three years of training period
	Presentation	
7	Scientific Publications	One publication in an indexed scientific journal
8	Submission of Main Dissertation	One Main dissertation within six before appearing for the university examination
9	Submission of Library Dissertation	One Library dissertation within eighteen months from the date of commencement of the course. Systematic review shall be considered as one of the form for library dissertation.
10	Short Research	Two short researches with the candidate being the principal investigator at least in one
11	Training Workshop for A. Basic Life Support B. Dental Photography And Adobe Photoshop C. Corel Draw	Should attend minimum one workshop each during the course
12	Completion of ACLS course	One Course for Post-Graduates of MDS Oral and Maxillofacial Surgery during the program.

17.3.1.2.5 Work diary and Log book: Every candidate shall maintain a work diary and log book for recording his or her participation in the training program



conducted by the department. The work done diary and log book shall be verified and certified by the Guide, Head of the Department and Head of the Institution. The certification of satisfactory progress is based on the work diary and log book.

17.3.1.3 Dissertation:

- 17.3.1.3.1** Every candidate should have submitted one library dissertation within eighteen months from the date of commencement of the course.
- 17.3.1.3.2** Every candidate should have submitted one main dissertation 6 months before the end of third academic year.
- 17.3.1.3.3** The dissertation work should be accepted and certified as per the university guidelines prior to appearing in the Part II Theory examinations.

17.3.1.4 University Examination:

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 University Examination for the MDS Course shall consist of theory, practical and clinical examination and viva-voce and pedagogy

17.3.1.4.1 Theory:

Part-II: Shall consist of three papers, namely: Paper I, Paper II and Paper III.

17.3.1.4.1.1 Distribution of Marks in Theory:

Part II University Examination: (300 Marks) (3 papers of 100 Marks each):-

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

17.3.1.4.1.2 Each paper shall be of three hours duration.

17.3.1.4.1.3 Title of Papers: For written examination, following shall be the Titles of Papers in which

the students will be examined in his/ her respective specialization:

a.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

b.PERIODONTOLOGY

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

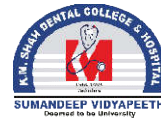
Part-II Paper I: Normal Periodontal structure, Etiology and Pathogenesis of Periodontal diseases epidemiology as related to Periodontics

Paper II: Periodontal diagnosis, therapy and Oral implantology

Paper III: Descriptive and analysing type question

c. ORAL & MAXILLOFACIAL SURGERY

Part-I Paper-I: Applied Basic Sciences: Applied Anatomy, Physiology, & Biochemistry, Pathology,



**Microbiology, Pharmacology, Research
Methodology and Biostatistics.**

**Part- II: Paper-I: Minor Oral Surgery and Trauma
Paper-II: Maxillo-facial Surgery
Paper-III: Descriptive and analysing type question**

d. CONSERVATIVE DENTISTRY AND ENDODONTICS

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

**Part-II Paper-I: Conservative Dentistry
Paper-II: Endodontics
Paper-III: Descriptive and analysing type question**

e. ORTHODONTICS AND DENTOFACIAL ORTHOPEDICS

**Part-I Paper-I: Applied Basic Sciences: Applied anatomy,
Physiology, Dental Materials, Genetics,
Pathology, Physical Anthropology,
Applied Research methodology, BioStatistics
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**

f. 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

g.PUBLIC HEALTH DENTISTRY

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

Part-II: Paper-I: Public Health

Paper-II: Dental Public Health

Paper-III: Descriptive and analysing type question

h.PEDIATRIC DENTISTRY

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

Part-II: Paper-I: Clinical Pedodontics

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

Paper-III: Descriptive and analysing type question

i.ORAL MEDICINE AND RADIOLOGY

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

Part-II: Paper-I: Oral and Maxillofacial Radiology

**Paper-II: Oral Medicine, therapeutics and laboratory
investigations**

Paper-III: Descriptive and analysing type question



17.3.1.4.2 Practical and 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 department shall ensure that the candidate has been given ample opportunity to perform various clinical procedures. The practical/clinical examination in all the specialties shall be conducted for six candidates in two days. The practical/clinical examination may be extended for one day, if it is not completed in two days.

17.3.1.4.3 Viva-voce: Viva voce examination aims at assessing the depth of knowledge, logical reasoning, confidence and communication skill of the students. The Viva voce shall be conducted by two pairs (one external and one internal examiner in each pair). Each pair shall conduct viva for 20 minutes per candidate and award marks out of 40 (Pair

A-40 marks + Pair B-40 Marks=Total 80 Marks).

17.3.1.4.4 Pedagogy: The student needs to make a presentation to demonstrate the teaching skills on a topic assigned by the examiners. Pedagogy exercise is reviewed jointly by all 4 examiners. 20 Marks for Pedagogy exercise shall be awarded individually by each examiner.

17.3.1.4.5 The practical & clinical Examination shall be of 200 marks and viva + pedagogy for (80+20) 100 marks.

17.3.1.4.6 The clinical or practical exams shall be reviewed jointly by all 4 examiners, but marks shall be awarded separately and average shall be computed for final result by the University.

17.4 NUMBER OF DAYS OF EXAMINATION:

The practical/clinical examination in all the specialties shall be conducted for six candidates in two days; however the practical/clinical examination may be extended for one day, if it is

not complete in two days or if there are more than six candidates appearing for exams.

The candidate appearing for the M.D.S. Part I examination will have to submit to the Registrar following certificates along with the examination form:

17.4.1 A certificate for having obtained a recognized BDS degree.

17.4.2 An NOC form duly signed by concerned University authorities, Head of Department and Head of Institution.

17.5 The candidate appearing for the M.D.S. Part II examination will have to submit to the Registrar following certificates along with the examination form:

17.5.1 A certificate for having obtained a recognized BDS degree.

17.5.2 A copy of the Main Dissertation result published by the University.

17.5.3 Mark sheet of passing Part I examination.

17.5.4 An NOC form duly signed by concerned University authorities, Head of Department and Head of Institution.

17.6 COMMENCEMENT OF EXAMINATION:

17.6.1 Examination leading to the Degree of Master of Dental Surgery (M.D.S.) in various branches shall be held twice a year in the month of May/ October at such place and on such dates as may be declared by the University.

17.6.2 The Theory and/or Practical Examination will not be held on Sundays and public holidays.

17.6.3 There shall be a gap of minimum 1 day in between each theory papers.

17.7 EXAMINATION CENTRE:

When the PG university examination is being conducted in the same city / town having more than one PG institution under the same university, one central examination centre shall be fixed by the concerned university and all the PG students from all the PG institutions of the city will take the examination in that centre only. Centres can be rotated as per the direction of the university.

17.8 EXAMINERS:

17.8.1 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 specialty.



However, the number of examiner/s may be increased with the corresponding increase in number of students.

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

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

- i. Possess qualification and experience of a professor in a post-graduate degree program.
- 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 reciprocal 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.

17.9 VALUATION OF ANSWER BOOKS:

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

17.9.2 Part II: The Answer books of the theory question papers shall be valued individually by the Four Examiners during the Practical / Clinical examination. Average of commuted marks should be awarded for final result.

17.10 RE-EVALUATION/ RE-TOTALING OF ANSWER BOOKS:

There is No provision for revaluation of answer papers. However, re-totaling is allowed in the failed subjects.

17.11 NUMBER OF ATTEMPTS:

A candidate registered for three years M.D.S. Course must qualify in the examinations within six years from the date of his / her admission. The candidate will not be permitted to appear for more than six attempts in the final examinations and shall be discharged from the course if he / she fails to pass the examination in the said number of attempts.

17.12 CRITERIA FOR DECLARING AS PASS:

17.12.1 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 theory examination and 150 marks out of 300 in Part II theory examination and 150 out of 300 in Part - II clinical plus viva voce together).

17.12.2 A candidate securing marks below 50% as mentioned above shall be declared to have failed in the examination.

17.12.3 A postgraduate student who fails in the university examination will have to attend the department/clinical duties as scheduled during the period till the next examination. They will have to gain 80% attendance, and obtain applicable NOC to be eligible for the next examination.

17.12.4 All the PG students who have failed shall have to pay the applicable fees according to the university guidelines for the failed period.

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

17.13 Award of Distinction and University Ranks:

Distinction will be awarded to successful candidates who secure 75% marks or more as a course aggregate in the concerned subject without any failure.

18. ACTIVE STUDENTS

18.1 The postgraduate student who is actively pursuing the MDS course and regularly attending the day to day various activities, and whose dissertation is yet to be completed as well as completed three years shall be considered as Active student for the purpose of calculating Active student under a postgraduate teacher.

18.2 However, students having completed the attendance and dissertation, but not having appeared or failed in the examination or, candidates having discontinued the course (absent for more than six months) and students not completing the dissertation within 1 year after the regular duration of course, shall not be considered as Active student for this purpose.



19. RE-ADMISSION AFTER BREAK OF STUDY: As per the University common Regulations for Re-admission after break of study for all courses.

20. MIGRATION/TRANSFER OF CANDIDATES:

Request for Migration/Transfer of candidates during the course of study from one recognized college to another recognized college of this University or from another University shall not be granted under any circumstances. No inter-change of the specialty in the same institution or in any other institution shall be permitted after the last date of the commencement of session.

21. VACATION:

The Head of Institution shall declare 2 week vacation in an academic year to the students. The period(s) of vacation can be decided by the Head of the Department and Head of the Institution.

22. 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 authorize.

SECTION II

GOALS & OBJECTIVES OF MDS COURSE

Goals: The goals of postgraduate training in various specialties are to train M.D.S. graduates who will, after successful completion of the course:

- ❖ Practice respective specialty efficiently and effectively, backed by scientific knowledge and skill.
- ❖ Exercise empathy and a caring attitude and maintain high ethical standards.

- ❖ Continue to evince keen interest in continuing professional education in the specialty and allied specialties irrespective of whether in teaching or practice.
- ❖ Willing to share the knowledge and skills with any learner, junior or a colleague.
- ❖ Develop the faculty for critical analysis and evolution of various concepts and views, to adopt the most rational approach.

Objectives:

- ❖ The objective is to train a candidate so as to ensure higher competence in both general and special area of interest and prepare him for a Career in Teaching, Research and Specialty Practice.
- ❖ A candidate must achieve a high degree of clinical proficiency in the subject matter and develop competence in research and its methodology as related to the field concerned.

These objectives are to be achieved by the time the candidate completes the course and the objectives may be considered as under:

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

Programme Outcomes (PO's) (MDS)

Post graduates should be able to:

PO 1. Understand basic sciences relevant to specialty.

PO 2. Describe etiology, patho-physiology and principles of diagnosis and management of common problems within the specialty in adults in children.



PO 3. Identify social economic, environmental and emotional determinants in a given case and take them into account for planning treatment.

PO 4. Recognize conditions that may be outside the area of specialty/competence and to refer them to an appropriate specialist.

PO 5. Update knowledge by self-study and by attending courses, conferences and seminars relevant to specialty.

PO 6. Undertake audit, use information technology and carryout research both basic and clinical with the aim of publishing or presenting the work at various scientific gatherings.

Knowledge :

- ❖ **Demonstrate understanding of basic sciences relevant to specialty.**
- ❖ **Describe etiology, patho-physiology and principles of diagnosis and management of common problems within the specialty in adults & children.**
- ❖ **Identify social economic, environmental and emotional determinants in a given case and take them into account for planning treatment.**
- ❖ **Recognize conditions that may be outside the area of specialty/competence and to refer them to an appropriate specialist.**
- ❖ **Update knowledge by self study and by attending courses, conferences and seminars relevant to specialty.**
- ❖ **Undertake audit, use information technology and carryout research both basic and clinical with the aim of publishing or presenting the work at various scientific gatherings.**

Skills:

- ❖ Take a proper clinical history, examine the patient, perform essential diagnostic procedures and other relevant tests and interpret them to come to a reasonable diagnosis about the condition.
- ❖ Acquire adequate skills and competence in performing various procedures as required in the specialty.

Human values, ethical practice and communication abilities:

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

GENERAL OBJECTIVES OF POST-GRADUATE TRAINING EXPECTED FROM STUDENTS AT THE END OF POST-GRADUATE TRAINING:

At the End of the Postgraduate training in the discipline concerned, the student shall be able to:



- 8 Recognize the importance to the concerned specialty in the context of the health needs of the community and the national priorities in the health section.**
- 9 Practice the specialty concerned ethically and in step with the principles of primary health care.**
- 10 Demonstrate sufficient understanding of the basic sciences relevant to the concerned specialty.**
- 11 Identify social, economic, environmental, biological and emotional determinants of health in a given case, and take them into account while planning therapeutic, rehabilitative, preventive and primitive measure/strategies.**
- 12 Diagnose and manage majority of the conditions in the specialty concerned on the basis of clinical assessment, and appropriately selected and conducted investigations.**
- 13 Plan and advice measures for the prevention and rehabilitation of patients suffering from disease and disability related to the specialty.**
- 14 Demonstrate skills in documentation of individual case details as well as morbidity and mortality rate relevant to the assigned situation.**
- 15 Demonstrate empathy and humane approach towards patients and their families and exhibit interpersonal behavior in accordance with the societal norms and expectations.**
- 16 Play the assigned role in the implementation of National Health Programme, effectively and responsibly.**
- 17 Organize and supervise the chosen/assigned health care services demonstrating adequate managerial skills in the clinic/hospital or the field situation.**
- 18 Develop skills as a self-directed learner, recognize continuing education needs; select and use appropriate learning resources.**
- 19 Demonstrate competence in basic concepts of research methodology and epidemiology, and be able to critically analyze relevant published research literature.**

-
- 20 Develop skills in using educational methods and techniques as applicable to the teaching of medical/nursing students, general physicians and paramedical health workers.**
- 21 Function as an effective leader of a health team engaged in health care, research or training.**



SECTION III

TEACHING AND LEARNING ACTIVITIES

All the candidates registered for MDS course in various specialties shall pursue the course for a period of three years as fulltime students. During this period each student shall take part actively in learning & teaching activities designed by the institution/ university. Sumandeep Vidyapeeth desires the following Teaching & Learning activities in each specialty.

1. LECTURES

There shall be Didactic lectures in the specialty and in the allied fields. The postgraduate departments should encourage guest lectures in the required areas to strengthen the training programmes. It is desirable to have certain integrated lectures by multidisciplinary teams on selected topics.

2. JOURNAL CLUB

The Journal review meetings shall be held at least once a week. Critical appraisal of article should be presented as per the principles of Evidence Based Decision Making in journal clubs. All trainees, associates and staff associated with the post-graduate program are expected to participate actively and enter relevant details in logbook. The trainee should make the journal article presentations from the allotted journals based on clinical/community relevant question. The article should be appraised on the basis of critical appraisal tool kit for the study design as applicable. The journal review presentation should be evaluated according to the model checklist (Annexure I).

3. SEMINARS

The Seminars shall be held at least twice a week in each post graduate department. Seminars shall be evidence based with incorporation of most recent evidences as per the hierarchy of evidences. All trainees are expected to participate actively and enter relevant details in Logbook. Each trainee shall make presentations as per the desired

requirement of the respective department. The seminar presentation should be evaluated according to the model checklist (Annexure II).

4. SYMPOSIUM

It is recommended to hold symposiums on topics covering multiple disciplines. The post graduate students of respective specialty should actively participate in these symposia.

5. CLINICAL POSTINGS

Each trainee shall work in the clinics on regular basis to acquire adequate professional skills and competency in managing various cases to be treated by the specialist. The performance in the clinical postings should be evaluated according to the model checklist (Annexure III-a).

6. CLINICAL CASE PRESENTATION

The clinical case presentation shall be a presentation of interesting/special cases with a detailed history, evidence based diagnosis and treatment plan. The performance in the clinical case presentation should be evaluated according to the model checklist (Annexure III-b).

6. CLINICO- PATHOLOGICAL CONFERENCES/ INTERDISCIPLINARY PRESENTATIONS

The Clinico-Pathological conference / interdisciplinary presentation should be held once in a month involving the faculties of Oral Medicine and Radiology, Oral Pathology and allied clinical department. The trainees should be encouraged to present the clinical details, radiological and histopathological interpretations and participation in the discussions.(Annexure IV)

7. INTERDEPARTMENTAL MEETINGS

To bring in more integration among various specialties, there shall be interdepartmental meetings chaired by the Principal / Dean with all Heads of Postgraduate Department at least once a month.

8. TEACHING SKILLS

All the trainees shall be encouraged to take part in undergraduate teaching programmes either in the form of lectures or group



discussions. The teaching skills should be evaluated according to the model checklist (Annexure V).

9. CONTINUING DENTAL EDUCATION PROGRAMMES (CDE)

Each postgraduate department of the Institute shall organize CDE programmes on regular basis involving the other institutions. The trainees shall also be encouraged to attend such programmes conducted outside their institute and university

10. CONFERENCES/ WORKSHOPS/ ADVANCED COURSES

The trainees shall be encouraged not only to attend conference/ workshops/ advanced courses but also to present at least two papers and two posters, or one poster and one table clinic at State / National Speciality and allied conferences/ conventions during their training period.

11. ROTATIONAL POSTINGS IN OTHER DEPARTMENTS AND RELATED FIELDS

To bring in more integration between the speciality and allied fields, each postgraduate department shall workout a programme to rotate the trainees in related disciplines. The postgraduate students may interact with these centers for specialized learning of clinical skills in handling these patients. The performance in these postings should be evaluated according to the model checklist (Annexure III-a).

12. DISSERTATION / THESIS/ RESEARCH

The Sumandeep Vidyapeeth appreciates the importance of Research activities for the growth of the profession. Trainees shall prepare a dissertation based on the clinical or experimental work or any other study conducted by them under the supervision of the Postgraduate guide. The dissertation should be continuously evaluated by the guide/coguide according to the model checklist (Annexure VI a & b).

13. WORK DIARY/LOG BOOK

Every candidate shall maintain a work diary and record his/her participation in the training programmes conducted by the department such as journal reviews, seminars, etc. Special mention may be made of the presentations by the candidate as well as details of clinical or laboratory procedures, if any conducted by the candidate.

The trainee undergoing the postgraduate course shall be evaluated using the overall assessment sheet. (Annexure VII)



Minimum Academic Quota:

1	Journal clubs	05 in a year
2	Seminars	05 in a year
3	Clinical Case Presentations	04 in a year
4	Lectures taken for undergraduates	01 in a year
5	Submission of Synopsis	Dissertation synopsis submission within 6 months from the date of commencement of course
6	Scientific Paper / Poster Presentation in State/ National Conferences	Four scientific presentations during three years of training period
7	Clinico Pathological Conferences/ Interdisciplinary Presentation	Two presentations during three years of training period
8	Scientific Publications	One publication in any indexed scientific journal
9	Submission of Main Dissertation	One Main Dissertation within six 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. Systematic review shall be considered as one of the form for library dissertation.

11	Short Research	Two Short Researches with the candidate being the principal investigator in minimum one
12	Training	Should attend minimum one
	Workshop for A. Basic Life Support B. Dental Photography And Adobe Photoshop C. Corel Draw	workshop each during the course
13	Introduction of ACLS course	Minimum one for Post graduate students in the Department of Oral and Maxillofacial Surgery.



SECTION IV

MASTER OF DENTAL SURGERY (MDS) COURSE SYLLABUS

MDS is a Postgraduate Dental Program, recognized by the Dental Council of India.

BRANCH-I PROSTHODONTICS, CROWN & BRIDGE

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

The course shall include epidemiology and demographic studies, research and teaching skills that enable the student to prevent, diagnose and treat with after care for all patients for control of diseases and / or treatment related syndromes with patient satisfaction for restoring functions of stomatognathic system by Prosthodontic therapy.

The program outline addresses the knowledge, procedural and operative skills needed in Masters Degree in Prosthodontics. A minimum of three 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.

1. AIM

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

2. GENERAL OBJECTIVES OF THE COURSE

- Training programme in the Prosthetic dentistry including Crown & Bridge & Implantology is structured to achieve knowledge and skill in theoretical and clinical laboratory, attitude, communicative skills and ability to research with understanding of social, cultural, educational and environmental background of the society.**
- Have acquired adequate knowledge and understanding of applied basic and systemic medical science, knowledge in general and particularly of head and neck.**

- The postgraduates will be able to provide Prosthodontic therapy for patients with competence and working knowledge with understanding of applied medical, behavioural 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.
- Upon completion of the evidence based Prosthodontic education the trainee should be able to:
 - Demonstrate significance of Evidence Based Prosthodontics
 - Demonstrate awareness of epidemiologically-based needs assessments through research and systematic reviews of research evidence
 - Contribute to the appraisal process
 - Understand quality assurance in the delivery of prosthodontic care

Outcomes: At the end of the course the Postgraduate student should be able to examine the patients requiring prosthodontics therapy, investigate the patient systemically, analyze the investigation results, radiology, diagnose the ailment, plan a treatment, communicate it with the patient and execute it, understand the prevalence and prevention of diseases of craniomandibular system related to prosthetic dentistry, 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, interact with other speciality including medical speciality congenital defects, temporomandibular joint syndromes, aesthetics, and implant supported prosthetics and problems of psychogenic origin, carry out appropriate treatment at higher level of knowledge, training and practice skills currently available in their specialty area, identify target diseases and awareness amongst the population for prosthodontic therapy, perform clinical and laboratory procedure with understanding of biomaterials, tissue conditions related to prosthesis and have competent dexterity and skill for performing clinical and laboratory procedures in fixed, removable, implant,



maxillofacial, TMJ and aesthetics prosthodontics, management of Lab technique based on skills and knowledge of dental materials and dental equipment and instrument management, understand demographic distribution and target diseases of cranio-mandibular region related to prosthodontics, understand all applied aspects for achieving physical psychological wellbeing of the patients for control of diseases and / or treatment related syndromes with the patient satisfaction and restoring function of cranio-mandibular system for quality life of a patient, have the theoretical knowledge and clinical practice principles involved for support, retention, stability, aesthetics, phonation, mastication, occlusion, behavioural, psychological, preventive and social aspects of science of prosthodontics including crown & bridge and implantology, acquire knowledge and practice of history taking, systemic and oral and craniofacial region and diagnosis and treatment plan, prognosis and record maintaining. A comprehensive rehabilitation concept with pre prosthetic treatment plan, impressions, jaw relations, aesthetics, phonation and psychological comfort. Fit and insertion and instruction for patients after care and preventive prosthodontics, management of failed restorations.

3. KNOWLEDGE

- **The candidate should possess knowledge of applied basic and systemic medical sciences on Human Anatomy, Embryology, Histology, Applied in general and particularly to Head and Neck, Physiology & Biochemistry, Pathology and Microbiology, Virology, Health and Diseases Nutrition, Behavioural science, age changes, genetics, Immunology, Congenital defects and syndrome and Anthropology, Bioengineering, Bio-medical and Biological Principle and applications to Dental Material science.**
- **Ability to diagnose and plan treatment for patients requiring a Prosthodontic therapy.**
- **Ability to read and interpret a radiograph and other investigations for the purpose of diagnosis and treatment plan.**
- **Tooth and tooth surfaces restorations, Complete Denture Prosthodontics, Removable Partial Prosthodontics, Fixed Prosthodontics and Maxillofacial and Craniofacial Prosthodontics, Implants and Implant supported Prosthodontics, T.M.J. and occlusion, craniofacial esthetic and biomaterials, craniofacial disorders, problems of psychogenic origin.**
- **Age changes and Prosthodontic therapy for the aged.**

- Ability to diagnose failed restoration and provide Prosthodontic therapy and after care.
- Should have essential knowledge on ethics, laws and Jurisprudence and forensic odontology in Prosthodontics.
- General health conditions and emergency as related to Prosthodontics treatment.
- Identify social, cultural, economic, environmental, education and emotional determinants of the patient and consider them in planning the treatment.
- Identify cases, which are outside the area of his/her speciality /competence and refer those appropriate specialists.
- Advice regarding case management involving surgical, interim treatment etc.
- Competent specialization in team management of craniofacial design.
- To have acquired adequate knowledge and understanding of applied basic and systematic medical science knowledge in general and particular to head and neck.
- Should attend continuing education programs, seminars and conferences related to Prosthodontics, thus updating himself/herself.
- Teach and guide his/her team, colleague and other students.
- Should be able to use information technology tools and carry out research both basic and clinical, with the aims of publishing his/her work and presenting his/her work at various scientific forums.
- Should have essential knowledge of personal hygiene, infection control, prevention of cross infection and safe disposal of waste, keeping in view the risks of transmission of Hepatitis and HIV.
- Should have an ability to plan to establish Prosthodontics clinic/hospital, teaching department and practice management.
- Should have a sound knowledge for application of pharmacology. Effects of drugs on oral tissue and systems of body and for medically compromised patients.
- The postgraduates should be able to provide Prosthodontic therapy for patients with competence and working knowledge with understanding of applied medical, behavioural and clinical science that are beyond the treatment skills of the general BDS graduate and MDS graduate of other specialties, to



demonstrate evaluative and judgment skills in making appropriate decisions regarding prevention, treatment, after care and referral to deliver comprehensive care to patients.

- Upon completion of Evidence based Prosthodontics education the trainee should be able to describe:
 - Evidence based clinical practice including cost effectiveness.
 - The development and application of clinical guidelines and standards.
 - The process of risk assessment as relevant to clinical practice
 - Multi-disciplinary clinical care pathways and appropriate integration of Prosthodontics.

4. SKILLS:

- The candidate should be able to examine the patients requiring Prosthodontics therapy, investigate the patient systemically, analyze the investigation results, radiology, diagnose the ailment, plan a treatment, communicate it with the patient and execute it.
- Understand the prevalence and prevention of diseases of cranio-mandibular system related to prosthetic dentistry.
- The candidate should be able to restore lost functions of stomatognathic system namely mastication, speech, appearance and psychological comforts. By understanding biological, biomedical, bioengineering principles and systemic condition of the patient to provide a quality health care of the craniofacial region.
- The candidate should be able to interact with other speciality including medical specialty for a planned team management of patients for a cranio-facial and oral acquired and congenital defects, temporo-mandibular joint syndromes, esthetics, implant supported prosthetics and problems of psychogenic origin.
- Should be able to demonstrate the clinical competence necessary to carry out appropriate treatment at higher level of knowledge, training and practice skills currently available in their specialty area.
- Identify target diseases and awareness amongst the population for Prosthodontic therapy.
- Perform clinical and laboratory procedure with understanding of biomaterials, tissue conditions related to prosthesis and have competent dexterity and skill for performing clinical and laboratory procedures in fixed, removable, implant, maxillofacial, TMJ and esthetics Prosthodontics.

- Laboratory technique management based on skills and knowledge of Dental Materials and dental equipment and instrument management.
- To understand demographic distribution and target diseases of Cranio mandibular region related to Prosthodontics.
- Understanding all applied aspects for achieving physical psychological well being of the patients for control of diseases and / or treatment related syndromes with the patient satisfaction and restoring function of cranio-mandibular system for quality life of a patient.
- The theoretical knowledge and clinical practice shall include principles involved for support, retention, stability, aesthetics, phonation, mastication, occlusion, behavioural, psychological, preventive and social aspects of science of Prosthodontics including Crown & Bridge and Implantology.
- Students shall acquire knowledge and practice of history taking, systemic and oral and craniofacial region and diagnosis and treatment plan, prognosis and record maintaining. A comprehensive rehabilitation concept with pre prosthetic treatment plan, impressions, jaw relations, aesthetics, phonation and psychological comfort. Fit and insertion and instruction for patients after care and preventive Prosthodontics, management of failed restorations.
- Upon completion of the subject of Prosthodontics the trainee should be able to:
 - Utilize appropriate communication / presentation skills
 - Utilize critical appraisal skills and be able to apply to research evidence
 - Produce and update patient information material.
 - Construct, analyze and use patient surveys.
 - Use procedures to ensure consumer involvement and consultation.

5. ATTITUDES:

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



• Upon completion of the subject of prosthodontics, the trainee should be able to recognize:

- Importance of maintaining professional standards by EBP.
- The need to constantly appraise and evaluate clinical practice and procedures.

6. COMMUNICATIVE ABILITIES:

- Develop communication skills, in particular, to explain treatment option available in management.
- Provide leadership and get the best out of his group in a congenial working atmosphere.
- Should be able to communicate in simple understandable language with the patient and explain the principles of Prosthodontics to the patient. He/She should be able to guide and counsel the patient with regard to various treatment modalities available.
- Develop the ability to communicate with professional colleagues through various media like Internet, e-mail, videoconference, and etc. to render the best possible treatment.

7. SYLLABUS DISTRIBUTION:

7.1 Part 1- PAPER-I: APPLIED BASIC SCIENCES:

A thorough knowledge on the applied aspects of Anatomy, Embryology, Histology particularly to head and neck, Physiology, Biochemistry, Pathology, Microbiology, Virology. Pharmacology, health and systemic diseases and principles in surgery medicine and anaesthesia, Nutrition, Behavioural sciences, Adult and geriatric psychology, age changes, genetics, Dental Material Sciences, Bio-engineering and Biomedical and Research Methodology as related to Masters degree in Prosthodontics, Crown & Bridge and Oral

Implantology. It is desirable to have adequate knowledge in biostatistics, research methodology and use of computers, to develop necessary teaching skills in Prosthodontics including crown and bridge and Implantology.

I. APPLIED ANATOMY OF HEAD AND NECK:

- i. General human anatomy – gross anatomy

- ii. **Anatomy of head neck in detail**
- iii. **Cranial and facial bones**
- iv. **TMJ and function**
- v. **Muscles of mastication and facial expression**
- vi. **Muscles of neck and back including muscles of deglutition and tongue**
- vii. **Arterial supply and venous drainage of the head and neck,**
- viii. **Anatomy of the paranasal sinuses with relation to the V cranial nerve**
- ix. **General consideration of the structure and function of the brain**
- x. **Brief consideration of V, VII, XI, XII, cranial nerves and autonomic nervous system of the head and neck**
- xi. **Salivary glands, Pharynx, Larynx, Trachea and Esophagus**
- xii. **Functional anatomy of mastication and Deglutition**
- xiii. **Speech**
- xiv. **Respiration and circulation**
- xv. **Teeth eruption, Morphology, Occlusion and function**
- xvi. **Anatomy of TMJ, its movements and myofacial pain dysfunction syndrome**

II. EMBRYOLOGY:

- i. **Development of the face, tongue, Jaws, TMJ, Paranasal sinuses, Pharynx, Larynx, Trachea, Esophagus**
- ii. **Development of Salivary glands**
- iii. **Development of oral and para oral tissue including detailed aspects of tooth and dental hard tissue formation**

III. GROWTH & DEVELOPMENT:

- i. **Facial form and Facial growth and development overview of Dento-facial growth process and physiology from fetal period to maturity and old age**
- ii. **Comprehensive study of craniofacial biology**
- iii. **General physical growth**
- iv. **Functional and anatomical aspects of the head**
- v. **Changes in craniofacial skeletal**



vi. Relationship between developments of the dentition and facial growth

IV. DENTAL ANATOMY:

- i. Anatomy of primary and secondary dentition**
- ii. Mechanism of articulation**
- iii. Masticatory function**
- iv. Detailed structural and functional study of the oral dental and para oral tissues**
- v. Normal occlusion development of occlusion in deciduous missed and permanent dentitions**
- vi. Root length, Root configuration**
- vii. Tooth-numbering system**

V. DENTAL HISTOLOGY:

- i. Histology of enamel, Dentin, Cementum, periodontal ligament and bone**
- ii. Pulpal anatomy, Histology and biological consideration**
- iii. Salivary glands and histology of epithelial tissues including glands**
- iv. Histology of general and specific connective tissue including bone, Hematopoietic system, Lymphoid etc.**
- v. Muscle and neural tissues of Endocrinal system including thyroid and Salivary glands**
- vi. Histology of skin, Oral mucosa, Respiratory mucosa, Connective tissue, Bone Cartilage**
- vii. Cellular elements of blood vessels, Blood, Lymphatic, Nerves, Muscles, Tongue, tooth and surrounding structures**

VI. ANTHROPOLOGY & EVOLUTION:

- i. Comparative study of tooth, joints, jaws, muscles of mastication and facial expression, tongue, palate, facial profile and facial skeletal system**
- ii. Comparative anatomy of skull, bone, brain, musculoskeletal system, neuromuscular coordination, posture and gait-plantigradee and orthogradee posture.**

VII. APPLIED GENETICS AND HEREDITY:

- i. Principles of orofacial genetics**

- ii. Molecular basis of genetics
- iii. Genetic risks & Counseling
- iv. Bioethics and relationship to orthodontic management.
- v. Dentofacial anomalies, Anatomical psychological and pathological characteristics of major groups of developmental defects of orofacial structures

H. CELL BIOLOGY:

- i. Detailed study of the structure and function of the mammalian cell with special emphasis on ultra structure features and molecular aspects
- ii. Detailed consideration of inter cellular junctions
- iii. Cell cycle and division, cell-to-cell and cell-extra cellular matrix interactions

I. APPLIED PHYSIOLOGY AND NUTRITION:

- i. Introduction
- ii. Mastication and Deglutition, Digestion and assimilation
- iii. Homeostasis, Fluid and electrolyte balance
- iv. Blood composition, volume, function
- v. Blood groups and hemorrhage, Blood transfusion and Circulation, vi. Heart, Pulse, Blood pressure
- vii. Capillary and lymphatic circulation, Shock
- viii. Respiration control, Anoxia, Hypoxia, Asphyxia, Artificial respiration ix. Endocrine glands in growth and development of teeth, Bone and jaws
- x. Role of Vit. A, C, and B complex in oral mucosal and periodontal health
- xi. Physiology and function of the masticatory system.
- xii. Speech mechanism, mastication, Swallowing and deglutition mechanism
- xiii. Salivary glands and saliva

J. ENDOCRINES:

- i. General principle of endocrine activity and disorders relating to pituitary, Thyroid, Pancreas, Parathyroid,



Adrenals, Gonads, including pregnancy and lactation ii.

Physiology of saliva

iii. Urine formation, Normal and abnormal constituents, iv.

Physiology of pain

v. Sympathetic and parasympathetic nervous system

vi. Neuromuscular co-ordination of the stomatogenic system

K. APPLIED NUTRITION:

i. General principles

ii. Balanced diet

iii. Effect of dietary deficiencies and starvation

iv. Diet, Digestion, Absorption, Transportation and utilization

v. Diet for elderly patients

L. APPLIED BIOCHEMISTRY:

i. General principles governing the various biological activities of the body

ii. Osmotic pressure, electrolytic dissociation, oxidationreductions, etc.

iii. General composition of the body

iv. Intermediary metabolism

v. Carbohydrates, Proteins, Lipids and their metabolism

vi. Enzymes, Vitamins, Minerals, and Hormones

vii. Blood and body fluids

viii. Metabolism of inorganic elements,

ix. Detoxication in the body

x. Anti metabolites

M. APPLIED PHARMACOLOGY AND THERAPEUTICS:

i. Definition of terminologies used – dosage and mode of administration of drugs

ii. Action and fate of the drugs in the body

iii. Drug addiction

iv. Tolerance and hypersensitive reactions

v. Drugs acting on CNS, General anesthetics, Hypnotics

vi. Analeptics and tranquilizers

vii. Local anesthetics

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- viii. Chemotherapeutics and antibiotics
 - ix. Anti tubercular and anti syphilitic drugs
 - x. Analgesics and antipyretics
 - xi. Antiseptics
 - xii. Styptics
 - xiii. Sialogogues and antisialogogues
 - xiv. Haematinics
 - xv. Cortisone
 - xvi. ACTH
 - xvii. Insulin and other antidiabetics vitamins: A, D, B complex, C and K etc.
 - xviii. Chemotherapy and radiotherapy

N. APPLIED PATHOLOGY:

- i. Inflammation, Repair and degeneration,
- ii. Necrosis and gangrene,
- iii. Circulatory disturbances, Ischemia, Hyperemia, iv. Chronic venous congestion, edema,
- v. Thrombosis, Embolism and infarction. vi. Infection and infective granulomas, vii. Allergy and hypersensitive and reaction,
- viii. Neoplasm, Classification of tumors,
- ix. Carcinogenesis,
- x. Characteristics of benign and malignant tumor,
- xi. Spread of tumors.
- xii. Applied histopathology and clinical pathology.

O. APPLIED MICROBIOLOGY:

- i. Immunity
- ii. Knowledge of organisms commonly associated with diseases of the oral cavity (morphology cultural characteristics etc) of strepto. Staphylo, pneumo, gono and meningococci, clostridia group of organisms etc.
- iii. Virology
- iv. Spirochetes
- v. Organisms of tuberculosis, leprosy, diphtheria, actinomycosis and moniliasis etc.



- vi. Cross infections & Cross infection control**
- vii. Sterilization and hospital waste management**
- viii. Applied oral pathology**
 - **Developmental disturbances of oral and para oral structures**
 - **Regressive changes of teeth, bacterial**
 - **Viral and mycotic infections of oral cavity**
 - **Dental caries, diseases of pulp and Periapical tissues**
 - **Physical and chemical injuries of the oral cavity**
 - **Oral manifestations of metabolic and endocrine disturbances**
 - **Diseases of the blood and blood forming organism in relation to the oral cavity**
 - **Periodontal diseases**
 - **Diseases of the skin, nerves and muscles in relation to oral cavity**
- ix. Laboratory determinants**
 - **Blood groups, blood matching**
 - **RBC and WBC COUNT**
 - **Bleeding and clotting time**
 - **Smears and cultures – urine analysis and culture**

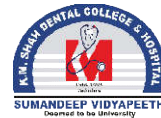
P. BIOSTATISTICS:

- i. Study of biostatistics as applied to dentistry and research**
- ii. Definition, Aim characteristics and limitations of statistics**
- iii. Planning of statistical experiments, Sampling**
- iv. Collection, Classification and presentation of data (tables, graphs, pictograms)**
- v. Analysis of data**
- vi. Introduction to biostatistics: Scope and need for statistical application to biological data**
 - **Definition of selected terms – scale of measurements related to statistics**
 - **Methods of collecting data, presentation of the statistical diagrams and graphs**
 - **Frequency curves, mean, mode of median, standard deviation and co-efficient of variation**

- Correlation - co-efficient and its significance
- Binominal distributions normal distribution and poisson distribution
- Tests of significance vii. 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 observation, experimentation and experimental design
- Logic of statistical interference balance judgments
- Judgment under uncertainty
- Clinical vs. scientific judgment
- Problem with analysis as a means of literature evaluation
- Influencing judgments, the problem of contradictory evidence
- Citation analysis as a means of literature evaluation -
Influencing judgment: Lower forms of rhetorical life
denigration, terminal, and inexactitude

Q. APPLIED RADIOLOGY:

- i. Introduction,
- ii. Radiation, Background of radiation, Sources
- iii. Radiation biology
- iv. Somatic damage, Genetic damage, and protection from primary and secondary radiation
- v. Principles of x-ray production applied principles of radio therapy and after care
- vi. Roentgenographic techniques:
 - Intra oral & extra oral roentgenography
 - Methods of localization digital radiology and ultra sound
 - Normal anatomical landmarks of teeth and jaws in radiograms



**- Temporo-mandibular joint radiograms,
neck radiograms**

R. APPLIED MEDICINE:

- i. Systemic diseases and its influence on general health and oral and dental health
- ii. Medical emergencies in the dental offices-
Prevention, Preparation, Medico legal consideration
- iii. Unconsciousness, Altered consciousness, Seizures
- iv. Respiratory distress, Chest pain, Cardiac arrest, Resuscitation
- v. Drug related emergencies
- vi. Premedication, and Management of ambulatory patients
- vii. Applied psychiatry - Child, adult and senior citizens
- viii. Assessment of case, Premaliation, Inhibition, Monitoring, Extubation
- ix. Complication arising in O.T. for anesthesia

S. APPLIED SURGERY & ANESTHESIA:

- i. General principles of surgery
- ii. Wound healing, Incision, Wound care, Hospital care
- iii. Control of hemorrhage, Electrolyte balance
- iv. Common bandages, Sutures splints, Shifting of critically ill patients
- v. Prophylactic therapy
- vi. Bone surgeries, Grafts, etc
- vii. Surgical techniques
- viii. Nursing assistance, Anesthetic assistance
- ix. Principles in speech therapy
- x. Surgical and radiological craniofacial oncology
- xi. Applied surgical ENT and ophthalmology

T. PLASTIC SURGERY:

- i. Applied understanding and assistance in program of plastic surgery for Prosthodontics therapy.

U. APPLIED DENTAL MATERIAL:

- i. All materials used for treatment of craniofacial disorders-clinical, treatment, and laboratory materials
- ii. Associated materials
- iii. Technical considerations
- iv. Shelf-life, storage, and manipulations
- v. Clinical methods and materials for implants supported extra oral and intra oral prosthesis.
- vi. Knowledge of testing biological, mechanical and other physical properties of all material used for the clinical and laboratory procedures in prosthodontic therapy.
- vii. Knowledge and practice equipment, instruments, materials, laboratory procedures at a higher competence with accepted methods.
- viii. All clinical practices shall involve personal and social obligation of cross infection control, sterilization and waste management.

V. HERBAL PROSTHODONTICS

W. ADULT AND GERIATRIC PSYCHOLOGY

X. EVIDENCE BASED PROSTHODONTICS

- i. Introduction to evidence-based decision making
- ii. Assessing Evidence
- iii. Implementing Evidence- Based Decision in Clinical Practice

Y. ETHICS IN DENTISTRY – Refer Section V

7.2 PART 2 - PAPER-I: REMOVABLE PROSTHODONTICS AND IMPLANTS

- I. PROSTHODONTIC TREATMENT FOR EDENTULOUS PATIENTS— Complete denture, Immediate Complete Denture, Single Complete Denture, Tooth Supported Complete Denture, Implant Supported Prosthesis for Completely Edentulous.
- II. PROSTHODONTIC TREATMENT FOR PARTIALLY EDENTULOUS PATIENTS—Clasp Retained Partial Dentures, Intra-coronal and



**Extra-coronal precision attachment retained Partial
Dentures, Maxillofacial Prosthesis.**

I. PROSTHODONTIC TREATMENT FOR EDENTULOUS PATIENTS:

- i. Introduction to complete denture prosthesis – definitions, terminology, G.P.T., Boucher's clinical dental terminology, Scope of Prosthodontics-the Cranio-Mandibular system and its functions, the reasons of for loss of teeth and methods of restorations, Infection control, cross infection barrier - clinical and laboratory and hospital and lab waste management.
- ii. Edentulous predicament, Biomechanics of the edentulous state, Support mechanism for the natural dentition and by wearing complete denture biological considerations, Functional and para-functional considerations, Esthetic, behavioral and adaptive responses. Temporomandibular joints changes,
- iii. Effects of aging of edentulous patients – gaining 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.
- iv. Sequelae caused by wearing complete dentures - the denture in the oral environment, mucosal reactions, altered taste perception, burning mouth syndrome, gagging, residual ridge reduction, oral cancer in denture wearers, nutritional deficiencies, masticatory ability and performance nutritional status and masticatory functions.
- v. Temporo-mandibular disorders in edentulous patients – Epidemiology, etiology and management pharmacotherapy, physical modalities, and biobehavioral modalities.
- vi. 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, diet counseling and risk factors for malnutrition in patients with denture and when teeth are extracted.
- vii. Preparing patient for complete denture- -Diagnosis and treatment planning for edentulous –
-Familiarity with patients, principles of perception, health questionnaires and 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 adaptability,
- Geriatric changes – physiologic, pathological, and intra oral changes.
- Intra oral-health – mucosa membrane, alveolar ridges, palate and vestibular sulcus and dental health.
- Data collection recording, visual observation, radiography, palpation, measurement – sulci or fossa, extra oral measurement, the vertical dimension of occlusion on diagnostic casts.
- Specific observations-existing dentures, soft tissue health, hard tissue health – teeth tone, neuromuscular co-ordination, tongue, cheek and lips. viii. 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 –d papillomatosis, frenularepulisfissuratum 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.

- ix. Immediate denture – Advantages, disadvantages, contra indications, diagnosis treatment plan and prognosis, Explanation to the patient, Oral examinations, examinations 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 of anterior teeth, wax contouring, flasking boil out, processing and finishing, surgical templates, surgery and immediate denture, over denture tooth attachments, implants or implant attachments.



- x. Over dentures (tooth supported complete dentures)**
– indications and treatment planning, advantages and disadvantages, selection of abutment, loss of abutment teeth, tooth supported complete dentures. Non-coping abutments, abutment with coping, abutments with attachments, submerged vital roots, preparations of the retained teeth.
- xi. 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.
- xii. 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 probable, interpreting and explaining the problem offering a solution to the problem.
- xiii. Materials prescribed in the management of edentulous patients:-** Denture base materials, general requirements of biomaterials of edentulous patients, requirement of an ideal denture base, chemical composition of denture base resins, materials used in fabrication of prosthetic denture teeth, requirement of prosthetic denture teeth, denture lining materials and tissue conditioners, cast metal alloys as denture, bases- base-metal alloys.
- xiv. Articulators** – Classification, selection, limitations, precision, accuracy and sensitivity, and functional activities of the lower member of the articulator and uses, Digital Facebows and virtual articulator
- xv. Fabrications of complete dentures** – complete denture impressions – factors that influence muscles of facial expressions and anatomical landmarks, support, retention, stability, aim 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 supporting bones, incisive foramen, maxillary tuberosity, sharp spiny process, torus palatines , anatomy of peripheral or limiting structures, labial vestibule, buccal vestibule, vibrating line, preliminary and final impressions, impression making, custom tray and refining the 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 for supporting structure, mylohyoidridge, mental foramen, genial tubercle, torus mandibularis, anatomy of peripheral or limiting structure – labial vestibule. Bulccal vestibule, lingual border, mylohyoid muscle, retromylohyoid fossa, sublingual gland region, alveolingualsulculs, Mandibular impressions – preliminary impressions, custom tray, refining, preparing the tray, final impressions.

xvi. Mandibular movements, maxilo 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 determining vertical dimension of occlusion, interocclusal, centric relation records, Biological and clinical considerations in making jaw relation records and transferring records from the patients to the articulator, Recording of mandibular movements – influence of opposing tooth contacts, TMJ, muscular involvements, neuromuscular regulation of mandibular motion, the envelope of motion, rest position, Maxillo – Mandibular relations – the centric, eccentric, physiologic rest position, vertical dimension, occlusion recording methods – mechanical, physiological, Determining the horizontal jaw relation – Functional graphics, tactile or interocclusal check record method, Orientation / saggittal relation records, arbitrary / Hinge axis and face bow record, significance and requirement, principles and biological considerations and securing on articulators.

xvii. Selecting and arranging artificial teeth and occlusi0on 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 aesthetic, phonetics and mechanics – to concept of occlusion.

- xviii. 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.**
- xix. Speech considerations with complete dentures – speech production – structural and functional demands, neuropsychological background, speech production and the role of teeth and other oral structure, bilabial sounds, linguoalveolar sound, articulatoric characteristics, acoustic characteristics, auditory characteristics, lingulopalatal and linguoalveolar sounds, speech analysis and prosthetic considerations.**
- xx. 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 grinding, finishing and polishing. Critiquing the finished prosthesis – doctors evaluation, patient 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 denture, speaking with new dentures, Oral hygiene with 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 Prosthodontics - periodontic recall for oral examination 3 to 4 months intervals and yearly intervals.**
- xxi. Implant supported prosthesis for partially edentulous patients - science of Osseo-integration, clinical protocol for treatment with implant supported over dentures, managing problems and complications, implant prosthodontics for edentulous patients: current and future directions.**
 - Introduction and Historical Review**
 - Biological, clinical and surgical aspects of oral implants**
 - Diagnosis and treatment planning**

- Radiological interpretation for selection of fixtures
- Splints for guidance for surgical placement of fixtures
- Intra oral plastic surgery
- Guided bone and tissue generation consideration for implant fixture.
- Implant supported prosthesis for completed edentulism and partial edentulism
- Occlusion for implant supported prosthesis.
- Peri-implant tissue and management
- Peri – implant and management -Maintenance and aftercare -Management of failed restoration.
- Work authorization for implant supported prosthesis – definitive introductions, legal aspects, delineation of responsibility.
- Types and techniques of Implant supported Removable Prosthesis (Overdenture with different attachments and hybrid dentures).

II. Prosthodontic treatment for partially edentulous patients – Removable Partial Prosthodontics:

- i. Scope, definition and terminology,
- ii. Classification of partially edentulous arches requirements of an acceptable method of classification,
- iii. Kennedy's classification, Applegate's rules for applying the Kennedy classification
- iv. Components of RPD –
 - Major connector – Mandibular and Maxillary,
 - Minor connectors
 - Design, Functions, form and location of major and minor connectors,
 - Tissue stops, Finishing lines, and Reaction of tissue to metallic coverage
 - Rest and rest seats- Form of the occlusal rest and rest seat, Inter-proximal Occlusal rest seats, Internal Occlusal rests, Possible movements of partial dentures, Support for rests, Lingual rest 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 arm, 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 retainers- Denture rotation about an axis, Factors influencing effectiveness of indirect retainers, Form of indirect retainers, Auxillary occlusal rest, Canine extentions from occlusal rests, Canine rest, Continuous bar retainers and linguoplates, Modification area, rugae support, direct – indirect retention.**
- **Principles of removable partial denture design- Bio mechanical 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 essentials 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.**
- **Education of patient**
 - **Design, treatment sequencing and mouth preparation**
- **Surveying- Description of dental surveyor, Purpose of surveying, Aims and objectives in surveying of diagnostic cast and master cast, Paralleled blockout, shaped blockout, arbitrary blockout and relief.**
- **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

- Preparation of mouth for removable partial denture- 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.
- 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.
- Support for the distal extension denture base- Distal extension removable partial denture, Factors influencing the support of distal extension base, Method for obtaining functional support for the distal extension base.
- Laboratory procedure- 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 opposite cast or template, Types of anterior teeth, Waxing and investing the partial denture before processing acrylic resin base,

Processing the denture, Remounting and occlusal correction to an occlusal template,
Polishing the denture.

- 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 patients, follow up services.



- Relining and rebasing the removable partial denture- Relining tooth supported denture bases, Relining distal extension denture bases, Method of re-establishing occlusion on a relined partial denture.
- Repairs and additions to removable partial dentures- Broken clasp arm, 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 type of repairs, Repair by soldering.
- Removable partial denture consideration in maxillofacial prosthetics- Intra oral prosthesis, Design consideration, Maxillary prosthesis- obturators, speech aids, palate lifts, palate augmentation, Mandibular prosthesis- treatment planning, framework design, class i restoration, class ii restoration, mandibular flange prosthesis, jaw relation record
 - Management of failed restorations and authorization.

v. MAXILLOFACIAL REHABILITATION:

- Scope, terminology, definition,
 - Cross infection control and hospital waste management,
- Work authorization.
- Behavioral and psychological issues in head and cancer, psychodynamic interactions – clinician and patient
 - Cancer chemotherapy: oral manifestations, complications, and management,
- Radiation therapy of head and neck tumors: oral effects, dental manifestations
- Dental treatment etiology treatment and rehabilitation (restoration)
 - Acquired defects of the mandible,
 - Acquired defect of the hard palate, Soft palate,
 - Clinical management of edentulous and partially edentulous maxillectomy patients,
 - Facial defects,
 - Restoration of speech,
 - Velopharyngeal function,
 - Cleft lip and palate,

- Cranial implants,
- Maxillofacial trauma,
- Lip and cheek support prosthesis,
- Laryngectomy aids,
- Obstructive sleep apnea
- Tongue prosthesis,
- Oesophageal prosthesis,
- Vaginal radiation carrier,
- Burn stents,
- Nasal stents,
- Auditory inserts,
- Trismus appliances,
- Mouth controlled device for assisting the handicapped,
- Custom prosthesis for lagophthalmos of the eyes,
- Osseo integrated supported facial and maxillofacial prosthesis.
- Resin bonding for maxillofacial prosthesis,
- Implant rehabilitation of the mandible compromise by radiotherapy, craniofacial osseo integration, prosthodontic treatment, and material and laboratory procedures for maxillofacial prosthesis.
- Cranial Prosthesis

7.3 PART 2 - PAPER-II: FIXED PROSTHODONTICS, TEMPOROMANDIBULAR JOINT, OCCLUSION AND AESTHETICS:

I. CROWN AND BRIDGES

i. Introduction

- Scope, Definition, Terminology and Classification.
- Principles of design
- Mechanical and biological considerations of components: Retainers, Connectors, Pontics
- Work Authorization ii. 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, endodontic consideration, abutment selection – bone support, root proximities and inclinations, selection of abutment, for cantilever, pier abutment, splinting, available tooth structures and crown morphology, TMJ and muscles of mastication and comprehensive planning and prognosis.

- iii. Management of carious teeth- caries in aged, Caries control, Removable carious, Protection of pulp, Reconstruction measures for compromising teeth- retentive pins, horizontal slots, retentive grooves, Resins, gold and gold alloys, glass ionomer, restorations Prevention of caries, diet, prevention of root caries and vaccine for caries.
- iv. Periodontal considerations- Attachment unit, Ligaments, Gingivitis, Periodontitis, Microbiological aspect of periodontal diseases, Marginal lesions, Occlusal trauma, Periodontal pockets, Attached gingival, interdental papilla, Gingival embrasures, Gingival/periodontal prosthesis, Radiographic interpretations of periodontia, Periodontal splinting – fixed prosthodontics with periodontally compromised dentition and placement of margin restorations.
- v. Biomechanical principle of tooth preparations:
 - Individual tooth preparations- complete metal crowns, PFC, All porcelain – Cerestore crown, Dicor crowns, Inceram etc. Porcelain jacket crowns, Partial $\frac{3}{4}$, Proximal half, Radicular crown, $\frac{7}{8}$ th crown, Telescopic, Pin ledge, Laminates, Inlays and Onlays.
 - Preparations for restoration of teeth – amalgam, glass ionomer and composite resins,
 - Resin bond retainers,
 - Gingival marginal preparations – design, material selection, biological and mechanical considerations.
 - Intracoronal retainer and precision attachment – custom made and ready made
- vi. Isolation and fluid control- Rubber dam applications, Tissue dilation – soft tissue management for cast restoration,
- vii. Impression materials, techniques,
- viii. Provisional restoration,

- ix. Interocclusal records, Occlusion, Occlusal equilibration, Articulators, Recording and transferring of occlusal relations,
- x. Laboratory procedures for fixed Prosthodontics- die system, wax patterns, investing and casting procedures finishing and polishing, casting failures.
- xi. Ceramic in fixed Prosthodontics.
- xii. Cementation of restorations
- xiii. Restorations of endodontically treated teeth, stomatognathic dysfunction and management
- xiv. Management of failed restoration.
- xv. Osseo integrated supported fixed Prosthodontics osseo integrated supported and tooth supported
Fixed Prosthodontics
 - Introduction to prosthodontics components
 - Biomechanics of Implants
 - Impression making
 - Implant-abutment connections
 - Provisionalization
 - Cement, screw retained and screw- cementable restorations
 - Failures in Implants
- xvi. Application of lasers
 - Preparation of pontic receptor site
 - Tissue retraction for impressions
 - Removal of faulty restorations
 - Implant surgeries
 - Laboratory procedures
 - Welding of components of fixed partial denture,
 - Laser scanning of casts for CAD
 - Ceramic milling procedures
 - Laser welding of titanium components of prosthesis

II. TEMPOROMANDIBULAR JOINT DYSFUNCTION:

- i. Scope, definitions, and terminology



- ii. **Anatomy of Temporo-mandibular joint and its function,**
- iii. **Orofacial pain, and pain from the Temporomandibular region,**
- iv. **Temporo-mandibular joint dysfunction, Temporomandibular joint sounds,**
- v. **TMJ disorders- Trauma, Disc displacement, Osteoarthritis/osteoarthritis, Hypermobility and dislocation, Infection arthritis, Inflammatory diseases, Eagle's syndrome (styloid – stylohyoid syndrome), Synovial chondromatosis, Osteochondrosis disease, Osteonecrosis, Nerve entrapment process, growth changes, Tumors,**
- vi. **Radiographic imaging**
- vii. **Etiology and Diagnosis of craniomandibular pain,**
- viii. **Differential diagnosis, and management of orofacial pain- Pain from teeth, pulp, dentin, muscle, TMJ, Psychological, physiological – endogenous control, acupuncture analgesia, Placebo effects on analgesia, Trigeminal neuralgia, Temporal arteritis**
- ix. **Occlusal splint therapy- Construction and fitting of occlusal splints, Management of occlusal splints, Therapeutic effects of occlusal splints, Occlusal splints and general muscles performance, TMJ joint uploading and anterior repositioning appliances, Use and care of occlusal splints. Occlusal adjustment procedures, Reversible therapy- Occlusal stabilization splints and physical therapies, jaw exercises, jaw manipulation and other physiotherapy. Irreversible therapy-Occlusal repositioning appliances, Orthodontic treatment, Orthognathic surgery, Fixed and removable prosthodontic treatment and occlusal adjustment. Indication for occlusal adjustment, Special nature of Orofacial pain, Psychopathological considerations, Occlusal adjustment philosophies, Mandibular position, Excursive guidance, Occlusal contact scheme, Goals of occlusal adjustment, Significance of a slide in centric, Preclinical procedures, Clinical procedures for occlusal adjustment.**

III. AESTHETIC

- i. **Scope & Definitions**
- ii. **Morphopsycology and esthetics,**

iii. Structural esthetic rules

- Facial components,
 - Dental component,
 - Gingival components and physical components.
- iv. Esthetics and its relationship to function**
- Crown morphology,
 - Physiology of occlusion,
 - Mastication,
 - Physical and physiological characteristic and muscular activities of facial muscle,
 - Peri-oral anatomy and muscle retaining exercises.

v. Smile

- Classification and smile components,
 - Smile design, esthetic restoration of smile,
 - Esthetic management of the dentogingival unit,
 - Intraoral materials for management of gingival contours and ridge contours,
 - Periodontal esthetics,
- vi. Restorations**
- Tooth colored restorative materials,
 - The clinical and laboratory aspects,
 - Marginal fit,
 - Anatomy, inclinations, form, size, shape, colour, embrasures, contact point.

IV. OCCLUSION EVALUATION, DIAGNOSIS AND TREATMENT OF OCCLUSAL PROBLEMS:

- i. Scope, definition, terminology,**
- ii. Optimum oral health, anatomic harmony, functional harmony, occlusal stability,**
- iii. Causes of deterioration of dental and oral health, anatomical physiological, neuro– muscular, psychological, consideration of teeth**
- iv. Muscle of mastication,**
- v. Temporo-mandibular joint,**

- vi. Intra oral and extra oral and facial musculatures
- vii. The function of cranio-mandibular system.
- viii. Occlusal therapy, ix. Centric relation,
- x. Vertical dimension,
- xi. The neutral zone,
- xii. The occlusal plane,
- xiii. Differential diagnosis of Temporo-mandibular disorders,
- xiv. Understanding and diagnosing intra-articular problems
- xv. Relating treatment to diagnosis of internal derangement of TMJ.
- xvi. Occlusal splints
- xvii. Selecting instrument for occlusal diagnosis and treatment, mounting casts,
- xviii. Pankey-Mann-Schuler philosophy of Complete occlusal rehabilitation
- xix. Long centric
- xx. Anterior guidance
- xxi. Restoring lower anterior teeth, restoring upper anterior teeth,
- xxii. Determining the Type of posterior occlusal contours,
- xxiii. Method for determining the Plane of occlusion,
- xxiv. Restoring lower posterior teeth, restoring upper posterior teeth,
- xxv. Functionally generated pathway techniques for recording border movements intra orally,
- xxvi. Occlusal equilibration
- xxvii. Bruxism,
- xxviii. Procedural steps in restoring occlusions,
- xxix. Requirement for occlusal stability,
- xxx. Solving occlusal problems through programmed treatment planning,
- xxxi. Splinting,
- xxxii. Solving
 - Occlusal – wear problems,
 - Deep over bite problems,
 - Anterior overjet problems,
 - Anterior overbite problems,

- Tracing end to end occlusion,
- Splayed anterior teeth,
- Cross bite patient,
- Crowded, irregular, or interlocking anterior bite,
- Using cephalometric for occlusal analysis,
- Solving severe arch mal-relationship problems,
- Transcranial radiography,
- Post operative care of occlusal therapy.

7.4 PART 2 - PAPER-III: DESCRIPTIVE AND ANALYSING TYPE OF QUESTION

Any contents from 7.1 to 7.3 can be included

8. YEARLY PRACTICAL/CLINICAL SCHEDULE:

A. PRECLINICAL EXERCISES

i. COMPLETE DENTURE PROSTHODONTICS:

- Drawing of various Landmarks on maxillary and mandibular casts.
- Different types of spacer designs.
- Custom trays by using different materials (acrylic resin, polystyrene).
- Stabilization of different types of record bases with ZOE impression paste, Light Body Elastomeric impression material and Acrylic Resin.
- Setting of teeth and fabrication of complete dentures in class I jaw relation.
- Setting of teeth and fabrication of complete dentures in class II jaw relation.
- Setting of teeth and fabrication of complete dentures in class III jaw relation.
- Repair of maxillary and mandibular complete dentures.
- Rebasing and Relining of maxillary and mandibular complete dentures.
- Denture characterization using SPA concepts.
- One balanced arrangement on mean value articulator.
- Balanced occlusion on Hanau Articulator
- Acrylization of dentures in class I, II & III along with finishing, polishing and lab remounting.

ii. REMOVABLE PARTIAL PROSTHODONTICS:

Step by Step procedure for a cast partial denture like:

- Diagnostic Surveying
- Tripoding
- Mouth preparation
- Surveying of master cast
- Block out (different types)
- Duplication,
- Cast Hardening,
- Patterns for Kennedy's class I, II, III, & IV
- Casting of any two patterns
- Finishing & polishing
- Placement of teeth and Acrylization on one of the finished framework

iii. FIXED PARTIAL PROSTHODONTICS:

-Tooth preparations on Typodonts:

- Anterior three unit porcelain fused to metal FPD.
- Anterior all ceramic restoration.
- Maxillary lateral incisor to receive composite/porcelain laminate.
- Posterior complete metal crown.
- Posterior three unit porcelain fused to metal FPD. □7/8th crown on maxillary 1st molar □Proximal half crown.
- 3/4th on premolar & canine
- Full veneer ceramic preparation on central incisor
- PFM preparation on central incisor
- All metal preparation on molar & premolar
- Making Impression of the prepared teeth & pouring two sets of casts.
- Die preparation with die ditching
- Mounting on articulator
- Wax pattern in Duplicate
- Casting
 - Posterior Bridge-Full cast
 - Anterior Bridge-PFM
 - Metal free ceramic
- Post and core on maxillary central incisor.

iv. MAXILLOFACIAL PROSTHODONTICS: Fabrication of

- Ocular prosthesis
- Orbital prosthesis
- Ear prosthesis
- Finger prosthesis
- Nasal prosthesis
- Obturator
- Gunning splint
- Ostructive Sleep Apnea Appliance - 01

v. IMPLANT PROSTHODONTICS:

- Diagnosis & treatment planning on study cast
- Placement of dummy implants in cast
- Open tray & close tray technique for impression making
- Occlusal splints for temporomandibular Disorders
 - Soft Splints
 - Hard Splints
- One week interdisciplinary posting of I
MDS postgraduate students to the Departments of
Periodontology, Conservative Dentistry and Endodontics
and Oral & Maxillofacial Surgery.

B. Academic and Clinical work done:

**i. Academic work – REFER SECTION III. ii. LIST
OF CLINICAL / SPECIAL CASES**

PROCEDURE	CATEGORY			
	O	A	PA	PI
Tooth and tooth surface restoration				
a) Composites – fillings , laminates, Inlay , onlay	2	2	2	10
b) Ceramics – laminates, Inlays , onlays	2	2	2	10
c) Glass ionomer	1	1	1	10
CROWNS				
FVC for metal	1	2	2	10

FVC for ceramic	1	2	2	10
Precious metal crown	1	-	1	5
Galvanoformed crown	-		1	1
3/4th crowns(canines ,premolars, centrals)	1	-	-	5
7/8th posteriors crowns	1	-	-	5
Proximal half crowns	1	-	-	5
Pinledge and pinhole crowns	1	-	-	5
Telescopic crowns	1	-	-	5
Intraradicular crowns (central, lateral, canine , premolars, and molar)	1	-	-	5
Crown as implant supported prosthesis	1	-	1	5
FIXED PARTIAL DENTURES				
Cast Porcelain (3 unit)	1	-	-	5
Cast metal – precious and non precious (3 unit Posterior)	1	-	-	5
Porcelain fused metal (anterior and posterior)	1	1	1	10
Multiple abutment – Maxillary and	1	1	1	5

Mandibular Full arch				
Incorporation of custom made and ready maded precision joint or attachments	1	1	1	4
Adhesive bridge for anterior / posterior	1	-	1	5
Metal fused to resin anterior FPD	-	-	1	5
Interim provisional restorations(crowns and FPDs)	1	1	1	10
Immediate fixed partial dentures (interim)	1	-	-	5
Fixed prosthesis as a retention and rehabilitation for acquired and congenital defects - maxillofacial prosthetics	1	1	1	5
Implant supported prosthesis	1	-	1	1
Implant tooth supported prosthesis	1	-	1	1
REMOVABLE PARTIAL DENTURES				
Provisional partial denture prosthesis	1	1	1	10
Cast removable partial denture (for kennedy'sappegate classification with modification)	1	1	1	6
Removable bridge with precision attachments and telescopic crowns for anterior and posterior	1	1	2	4
Immediate RPD	1	1	1	5
Partial denture for medically compromise and handicapped patients	1	1	1	5
COMPLETE DENTURES				
Neurocentric occlusion and characterized prosthesis	-	-	1	5

Anatomic characterized prosthesis (by using semiadjustable articulator)	-	-	1	25
Single dentures	-	-	1	5
Overlay dentures	-	-	1	5
Interim Complete dentures as a treatment prosthesis for abused denture supporting tissues	-	-	1	5
Complete denture prosthesis (for abnormal ridge relation, ridge form and ridge size)	-	-	1	5
Complete denture for patients with TMJ syndromes	-	-	1	5
Complete denture for medically compromised and handicapped patients	-	-	1	5
GERIATRIC PATIENTS				
Tooth and tooth surface - restorations, crowns , fixed prosthesis , removable prosthesis		-	1	5
IMPLANT SUPPORTED COMPLETE PROSTHESIS				
Implant supported complete prosthesis (maxillary and Mandibular)	-	-	1	1
MAXILLOFACIAL PROSTHESIS				
Guiding flange and obturators	-	-	1	4
Speech and palatal lift prosthesis	-	-	1	2
Eye prosthesis	-	-	1	2
Ear prosthesis	-	-	1	2
Nose prosthesis	-	-	1	2
Face prosthesis	-	-	-	1
Maxillectomy	-	-	1	2
Hemimandibulectomy	-	-	1	2
Cranioplasty	-	-	1	1
Finger/hand ,foot	-	-	1	2

Body prosthesis	-	-	1	1
Management of burns , scars	-	-	-	1
TMJ SYNDROMES MANAGEMENT				
Splints – periodontal, teeth, jaws	-	-	1	4
TMJ supportive and treatment prosthesis	-	-	1	1
Stabilization appliances for maxilla and mandible with freedom to move from IP To CRCP	-	-	-	1
In IP without the freedom to move to CRCP	-	-	-	1
Repositioning appliances , anterior disclusion	-	-	-	1
Chrome cobalt and acrylic resin stabilization appliances for modification to accommodate for the irregularities in the dentition	-	-	-	2
Occlusal adjustment and equilibrium	-	-	1	4
FULL MOUTH REHABILITATION				
Full mouth rehabilitation – restoration of esthetics and function of stomatognathic system	-	-	1	4
INTERDISCIPLINARY TREATMENT MODALITIES				
Inter disciplinary management – - - restoration of orocraniofacial defects esthetics , phonation , mastication, and psychological comforts	for		1	2
MANAGEMENT OF FAILED RESTORATION				
Tooth and tooth surface restorations	-	-	-	5
Removable prosthesis	-	-	-	10
Crowns and fixed prosthesis	-	-	-	5
Maxillofacial prosthesis	-	-	-	2
Implant supported prosthesis	-	-	-	1
Occlusal rehabilitation and TMJ syndrome	-	-	-	2

Restoration failure of psychogenic	-	-	-	5
Restoration of failure to age changes	-	-	-	2

9. SCHEME OF EXAMINATION:

9.1 Theory Examination: Refer to Section 1 point 17

9.2 Practical / Clinical Examination: 200 marks

A. Presentation of treated patients and records during their 3 years training period (evidence based) - 25 marks

C.D.	1 mark
R.P.D.	2 marks
F.P.D. including single tooth and surface restoration	2 marks
Implant Supported Prosthesis	5 marks
Occlusal rehabilitation	5 Marks
T.M.J	5 marks
Maxillofacial prosthesis	5 marks

B. Complete Denture Exercise: Total 90 marks* *All steps will include chair side and lab steps viva.

Discussion on treatment plan and patient review (evidence based)	10 marks
Tentative jaw relation records	05 marks
Face bow – transfer	05 marks
Transferring it on articulators	05 marks
Extra oral tracing and securing centric and protrusive/ lateral record	25 marks
Transfer on articulator	05 marks
Selection of teeth	05 marks
Arrangement of teeth	15 marks
Waxed up denture trial	10 marks
Fit, insertion and instruction of previously processed characterized, anatomic complete denture prosthesis	05 marks

C. Fixed partial denture: 50 marks

Case discussion and selection of patients for F.P.D.	5 marks
Abutment preparation isolation and fluid control	25 marks
Gingival retraction and impressions	10 marks
Cementation of provisional restoration	10 marks

D. Removable partial denture: 35 marks

Surveying and designing of partial dentate cast	15 marks
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Discussion on components and material selection including occlusal scheme	20 marks
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9.3 Viva Voce and pedagogy: 100 marks: The Viva-voce examination shall be aimed at assessing depth of knowledge, logical reasoning, confidence and verbal communication skills.

A. Viva voce examination: 80 marks
(As per the university rules)

B. Pedagogy exercise: 20 marks

Pedagogy exercise is reviewed jointly by all 4 examiners. 20 Marks for Pedagogy exercise shall be awarded individually by each examiner. A topic shall be allotted to each candidate on the first day of the Practical/Clinical examination. He/she shall be asked to make an evidence based presentation on the allotted topic for 8 – 10 minutes.

10. RECOMMENDED BOOKS

SR.NO.	AUTHOR	TITLE
1	Murray J J,Bennett	A Colour Atlas Of Acid Etch Technique
2	Sarandha D L	Textbook Of Complete Denture Prosthodontics
3	KlinebergIven	Occlusion & Clinical Practice
4	Kenneth L.Stewart	Clinical Removable Partial Prosthodontics
5	Malone W.F.P	Tylman's Theory & Practice Of Fixed Prosthodontics
6	Bernard G N Smith	Planning & Making Crowns & Bridges
7	James C. Kessler	Fundamentals Of Tooth Preparations
8	Jens Fischer	Esthetics& Prosthetics
9	Rosenstiel F. Stephen	Contemporary Fixed Prosthodontics
10	Herbert T. Shillingburg	Fundamentals Of Fixed Prosthodontics
11	Brudvik James S	Advanced Removable Partial Dentures
12	Rosenstiel F. Stephen	Contemporary Fixed Prosthodontics
13	Grant Alan A	Complete Prosthodontics
14	McGivney Glen P.	Removable Partial Prosthodontics
15	James S Brudvik	Clinical Removable Partial Prosthodontics
16	Barclay C.W	Fixed & Removable Prosthodontics
17	Lovely M	Review Of Fixed Partial Dentures
18	Carr Alan B.	Removable Partial Prosthodontics
19	Mccracken William L	Partial Denture Construction

20	SoraturSh	Essentials Of Prosthodontics
21	Stratton Russell J	An Atlas Of Removable Partial Denturedesign
22	Bartlett David W	Clinical Problem Solving In Prosthodontics
23	Mccord Fraser J	Missing Teeth
24	Neill D J	Partial Denture Construction
25	Dr.Venay C.G.	Handbook Of Complete Denture
26	TilakrajTn	Essentials Of Prosthodontics
27	Nallaswamy Deepak	Text Book Of Prosthodontics
28	KothavadeMukund	Handbook Of Complete Denture Prosthodontics
29	Lechner Sybille K	Removable Partial Prosthodontics
30	LiddelowK.P.	Clinical Dental Prosthetics
31	Kawabe Seiji	Complete Dentures
32	Rahn Arthur O	Textbook Of Complete Dentures
33	Agarwal Nitin Kumar	Complete Denture Prosthodontics
34	Rahn Arthur O	Syllabus Of Complete Dentures
35	Heartwell Charles M	Syllabus Of Complete Dentures
36	Allen Finbarr P	Complete Dentures From Planning To problem Solving
37	Hine Maynard K	Review Of Dentistry Questions & Answers
38	Zarb George A	Boucher's Prosthodontics Treatmentfor Edentulous Patients
39	SoraturSh	Viva In Prothodontics
40	Zarb George A	Boucher's Prosthodontics Treatmentfor Edentulous Patients
41	Winkler Sheldon	Essentials Of Complete Denture Prosthodontics
42	Ram Sabita M	Prosthodontics At A Glance
43	Mccord Fraser J	Treatment Of Edentulous Patients
44	Castleberry Mcgivney	Mccracken's Removable Partialprosthodontics
45	Misch Carl E	Contemporary Implant Dentistry

46	Binu George	Text Book Of Complete Denture Prosthodontics
47	RanjitSen	Fractures Of Mandible
48	Dawson Peter E	Functional Occlusion
49	Ferracane Jack L	Materials In Dentistry
50	O'brien William J	Dental Materials & Their Selection
51	Rosenstiel	Contemporary Fixed Prosthodontics
52	Sheldon Winkler	Essentials Of Complete Denture Prosthodontics
53	Denissen H	Atlas Of Porcelain Restorations
54	Zarb A .George	Prosthodontic Treatment For Edentulous Patients
55	Shillingburg Herbert T	Guide To Occlusal Waxing
56	Yadav NS	Review Of Fixed Partial Dentures
57	Mount Graham J	An Atlas Of Glass-Ionomer Cements
58	John Joy Manappallil	Complete Denture Prosthodontics
59	Zarb A .George	Prosthodontics Treatment For Edentulous Patients
60	Grhsmmount	Atals Of Glass Inomer Cement
61	Freilich Martin A	Fiber Reinforced Composites
62	Tylman	Theory & Practice Of Fixed Prosthodontics
63	Smith	Planning & Making Gronens& Bridges
64	CW Barclay, AD Walmsley	Fixed & Removable Prosthodontics
65	Heartwell,Rahn	Textbook Of Complete Denture
66	Keith F Thomas	Prosthetic Rehaflitation
67	Ruidd	Dental Lab Procdunc
68	Graber	Color Atlas Of Dental Medicine- RPD
69	Carl A Misch	Dental Implant Prosthetics
70	Jose Dos Santos	Occlusion Principle & Concepts
71	Gent	Advances In Clinical Prosthodontics
72	Thomas	Clinical Maxillofacial Prosthetics
73	Wonkler	Essentials Of Complete Denture

		Prosthodontics
74	H.R.B Fenn	Clinical Dental Prosthetics
75	Pradeep Kumar C	Review Of Fixed Partial Dentures
76	Luis Jose	Design Of The Partial Removable Denture Step Step By Step

**BRANCH II
PERIODONTOLOGY**

MDS SYLLABUS

Periodontology is the science dealing with the health and diseases of the investing and supporting structures of the teeth and oral mucous membrane, the practice of which is called Periodontics.

1. AIM

- **To train dental graduates as to ensure higher competence in both general and special areas of Periodontics**
- **To prepare a candidate for teaching, research and clinical abilities, including prevention and after care in Periodontics**
including periodontal surgical therapy and Oral Implantology.
- **To prepare the candidate to practice Evidence Based Periodontics**

2. GENERAL OBJECTIVES OF THE COURSE

- **Training programme in the Periodontology including periodontal surgical therapy. Implantology is structured to achieve knowledge and skill in theoretical and clinical, attitude, communicative skills and ability to research with understanding of social, cultural, educational and environmental background of the society.**
- **Have acquired adequate knowledge and understanding of applied basic and systemic medical science, knowledge in general and particularly of head and neck.**
- **The postgraduates will be able to provide Periodontal 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

- Upon completion of the evidence based Periodontal education, the trainee should be able to:
 - Demonstrate significance of Evidence Based Periodontics
 - Demonstrate awareness of epidemiologically-based needs assessments through research and systematic reviews of research evidence.
 - Contribute to the appraisal process.
 - Understand quality assurance in the delivery of Periodontal care.

Course Outcomes: At the end of the course the Postgraduate student should be able to examine the patients requiring periodontal therapy, investigate the patient systemically, analyze the investigation results, radiology, diagnose the ailment, plan a treatment, communicate it with the patient and execute it, understand the prevalence and prevention of diseases related to periodontal origin, perform both non-surgical & surgical procedures independently, by understanding biological, biomedical, bioengineering principles and systemic condition of the patient to provide a quality health care of the periodontal diseases.

3. KNOWLEDGE

- The candidate should possess knowledge of applied basic and systemic medical sciences on human anatomy, embryology,

histology, applied in general and particularly to head and neck, Physiology & Biochemistry, Pathology and Microbiology, Virology, Health and Disease, Nutrition,

Behavioral science, age changes, genetics, Immunology, Congenital defects and syndrome and Anthropology, Bioengineering, Bio-medical and Biological Principle and applications to regenerative therapy.

- Ability to diagnose and plan treatment for patients requiring a Periodontology therapy.
- Ability to read and interpret a radiograph and other investigations for the purpose of diagnosis and treatment plan.
- Nonsurgical periodontal therapy, surgical periodontal therapy, mucogingival surgery, bone grafts and biomaterials, periodontal regenerative and resective periodontal therapy, oral implants.
- Age changes and periodontal therapy for the aged.
- Ability to diagnose periodontal disease, provide periodontal therapy and supportive periodontal therapy.
- Should have essential knowledge on ethics, laws and Jurisprudence in Periodontology.
- General health conditions and emergency as related to Periodontal treatment.
- Identify cases, which are outside the area of his speciality / competence and refer those appropriate specialists.
- Advice regarding case management involving surgical, interim treatment etc.

- To have acquired adequate knowledge and understanding of applied basic and systematic medical science knowledge in general and particular to head and neck.
- Should attend continuing education programs, seminars and conferences related to Periodontology, thus updating himself.
- Teach and guide his/her team, colleague and other students should be able to use information technology tools and carry out research both basic clinical, with the aims of publishing his/her work and presenting his/her work at various scientific forums.
- Should have essential knowledge of personal hygiene, infection control, prevention of cross infection and safe disposal waste, keeping in view the risks of transmission of Hepatitis and HIV.
- Should have an ability to plan to establish periodontal clinic/hospital teaching department and practice management.
- Should have a sound knowledge for application of pharmacology. Effects of drugs on oral tissue and systems of body and for medically compromised patients.
- The postgraduates will be able to provide Periodontal therapy for patients with competence and working knowledge with understanding of applied medical, behavioral and clinical science that are beyond the treatment skills of the general BDS graduate and MDS graduate of other specialties, to demonstrate evaluative and judgment skills in making appropriate decisions regarding prevention, treatment, maintenance and referral to deliver comprehensive care to patients.

- Upon completion of Evidence based Peridontal education the trainee should be able to describe:
 - Evidence based clinical practice including cost effectiveness.
 - The development and application of clinical guidelines and standards.
 - The process of risk assessment as relevant to clinical practice
 - Multi-disciplinary clinical care pathways and appropriate integration of Periodontics.

4. SKILLS:

- The candidate should be able to examine the patients requiring periodontal therapy, investigate the patient systemically, analyze the investigation results, radiology, diagnose the ailment, plan a treatment, communicate it with the patient and execute it.
- Understand the prevalence and prevention of diseases related to periodontal origin.
- The candidate should be able to perform both non-surgical & surgical procedures independently. By understanding biological, biomedical, bioengineering principles and systemic condition of the patient to provide a quality health care of the periodontal diseases.
- Upon completion of the subject of Periodontics, the trainee should be able to:
 - Utilize appropriate communication / presentation skills
 - Utilize critical appraisal skills and be able to apply to research evidence

- Produce and update patient information material.
- Construct, analyze and use patient surveys.
- Use procedures to ensure consumer involvement and consultation

5. ATTITUDES:

- Adopt ethical principles in all Periodontal practice.
Professional honesty and integrity are to be fostered. Treatment to be delivered irrespective of social status, caste, creed or region of patient.
- Willing to share knowledge and clinical experience with professional colleagues.
- Willing to adopt new methods and techniques in periodontal from time to time based on scientific research, this is in patient's best interest.
- Respect patient's rights and privileges including patient's right to information and right to seek second opinion.
- Upon completion of the subject of Periodontics, the trainee should be able to recognize:
 - Importance of maintaining professional standards by EBD.
 - The need to constantly appraise and evaluate clinical practice and procedures.

6. COMMUNICATIVE ABILITIES:

- Develop communication skills, in particular, to explain treatment option available in management and to make patient partner in evidence based decision making
- Provide leadership and get the best out of his group in a congenial working atmosphere.
- Should be able to communicate in simple understandable language with the patient to explain the principles of Periodontics to the patient. He should be able to guide and counsel the patient with regard to various treatment modalities available.
- Develop the ability to communicate with professional colleagues through various media like Internet, e-mail, videoconference, and etc. to render the best possible treatment.

7. SYLLABUS DISTRIBUTION:

7.1 Part 1: PAPER-I: APPLIED BASIC SCIENCES

A. APPLIED ANATOMY OF HEAD AND NECK:

- i. General human anatomy – gross anatomy, anatomy of head neck. ii. Cranial and facial bones iii. TMJ, functions and applied aspects iv. Muscles of mastication and facial expression,
- v. Muscles of neck including muscles of deglutition & tongue vi. Arterial supply and venous drainage of the head and neck
- vii. Anatomy of the paranasal sinuses viii. V, VII, XI, XII, cranial nerves ix. Salivary glands-gross anatomy and histology

x. Deglutition, speech xi. Teeth eruption, morphology,
occlusion and function xii. Tongue and oropharynx B. DENTAL
ANATOMY:

i. Anatomy of primary and secondary dentition ii.
Concept of occlusion iii. Root length, root
configuration, tooth numbering system C. DENTAL

HISTOLOGY:

i. Histology of enamel, dentin, cementum,
periodontal ligament and alveolar bone ii. Histology
of general and specific connective
tissue including bone, cartilage,
hematopoietic system, lymphoid, skin, oral mucosa &
blood.
iii. Muscle

D. CELL BIOLOGY:

i. Detailed consideration of inter cellular
junctions ii. Cell cycle and division iii. Cell-to-cell
and cell-extra cellular matrix interactions

E. APPLIED PHYSIOLOGY

i. Blood and clotting mechanism
ii. Homeostasis, fluid and electrolyte balance.
Blood composition iii. Volume, function, blood
groups and hemorrhage iv. Circulation, heart, pulse, blood
pressure, capillary and lymphatic circulation
v. Shock, respiration control, anoxia, hypoxia,
asphyxia, artificial respiration
vi. Endocrinology- Hormonal influence on

- Periodontium vii. Role of Vitamin in oral mucosal and periodontal health
- viii. Respiratory system- as applied in Periodontology ix. CVS- Normal ECG, stroke
- x. Physiology of Pain, pathways of pain xi. Nervous system- Taste, taste buds and pathways

F. APPLIED BIOCHEMISTRY:

- i. Basics of carbohydrates, proteins and lipids ii. Biochemical tests and their significance iii. Vitamins and minerals iv. Diet and nutrition
- v. Calcium and phosphorous

G. APPLIED PHARMACOLOGY AND THERAPEUTICS:

- i. Definition of terminologies used – dosage and mode of administration of drugs
- ii. Action and fate of the drugs in the body iii. Drug addiction, tolerance, hypersensitive reactions and adverse drug reactions iv. General Pharmacology
 - Definitions- Pharmacokinetics with clinical applications, routes of administration including local drug delivery in Periodontics
 - Adverse drug reactions and interactions
- v. Detailed pharmacology of
 - Analgesics-Opoids and Non-opioids

- Local anesthetics
- Haematinics and coagulants, anti-coagulants
- Vitamin D and calcium preparations
- Anti-diabetic drugs
- Steroids
- Antibiotics
- Antihypertensives
- Immunosuppressive drugs and their effects on oral tissues

- Antiepileptic drugs vi. Brief pharmacology, dental use and adverse

effects of:

- General anesthetics
- Anti-psychotics
- Antidepressants
- Anxiolytics
- Sedatives
- Antiepileptics
- Antihypertensives
- Anti-anginal drugs
- Diuretics
- Hormones
- Preanesthetic medication vii. Drugs used in bronchial asthma cough viii. Drug therapy of
- Emergencies
- Seizures

- Anaphylaxis
- Bleeding
- Shock
- Diabetic ketoacidosis
- Acute Addisonian crisis ix. Dental

Pharmacology

- Antiseptics
- Astringents
- Sialogogues
- Disclosing agents
- Antiplatelet agents

x. Fluoride Pharmacology H.

APPLIED PATHOLOGY:

- i. Cell structure and metabolism ii. Inflammation and repair, necrosis and degeneration iii. Immunity and hypersensitivity
- iv. Circulatory disturbances-edema, hemorrhage, shock, thrombosis, embolism, infarction and hypertension
- v. Disturbances of nutrition vi. Diabetes mellitus vii. Cellular growth and differentiation, regulation
- viii. Lab investigations ix. Hemorrhage

I. APPLIED MICROBIOLOGY

- i. General bacteriology
 - Identification of bacteria
 - Culture media and methods

- Sterilization and disinfection ii.

Immunology and infection iii. Systemic bacteriology with special emphasis on oral microbiology-staphylococci, Genus Actinomyces and other filamentous bacteria and Actinobacillus Actinomycetemcomitans iv. Virology

- General properties of viruses

- Herpes, Hepatitis virus, HIV virus

v. Mycology - Candidiasis vi. Applied Microbiology

vii. Diagnostic Microbiology and Immunology, hospital infection and management J. BIOSTATISTICS:

i. Introduction, definition and branches of biostatistics

ii. Collection of data, sampling, types, bias and errors iii. Compiling data graphs and charts iv. Measures of central tendency (mean, median, mode), standard deviation and variability

v. Tests of significance (Chi-square test, t-test and Z-test)

vi. Null hypothesis

K. RESEARCH METHODOLOGY:

i. Types of research ii. Understanding research decision for Crosssectional Cohort, Randomized controlled trial and Case-control study iii. Ethics in Research L. APPLIED SURGERY:

i. General principles of surgery, wound healing, incision wound care ii. Hospital care, control of hemorrhage

M. EVIDENCE BASED PERIODONTICS

- i. Introduction to evidence-based decision making
- ii. Assessing Evidence
- iii. Implementing Evidence- Based Decision in Clinical Practice

N. ETHICS IN DENTISTRY (Ref Section V)

7.2 PART II: PAPER-I: NORMAL PERIODONTAL STRUCTURE, ETIOLOGY, PATHOGENESIS AND EPIDEMIOLOGY OF PERIODONTAL DISEASES.

- A. Classification of periodontal diseases & conditions
- B. Epidemiology of gingival & periodontal diseases
- C. Dental plaque
- D. Microbiology of periodontal diseases etiology& predisposing factors for periodontal diseases
- E. Microbiological interactions with host in periodontal diseases
- F. Role of dental calculus & other predisposing factors
- G. Pathogenesis of plaque associated periodontal diseases
- H. Genetic factors associated with periodontal diseases
- I. Smoking, tobacco and periodontal diseases
- J. Effects of systemic disorders and stress on the periodontium
- K. Oral malodor
- L. Trauma from occlusion and periodontal diseases
- M. Aids and periodontium
- N. Dental hypersensitivity
- O. Interdisciplinary Periodontics
- P. Gingival diseases

Q. Periodontal diseases

R. Dental hypersensitivity

S. Periodontal medicine

i. Cerebrovascular & cardiovascular diseases ii.

Endocrine system

iii. Reproductive system iv.

Respiratory system

**7.3 PAPER-II: PERIODONTAL DIAGNOSIS, THERAPY AND ORAL
IMPLANTOLOGY**

A. History, diagnosis and treatment plan

**i. clinical diagnosis ii. Advanced diagnostic
techniques iii. Risk assessment and levels of clinical
significance iv.**

Prognosis

**v. Rationale for periodontal disease vi. General principles
of anti-infective therapy with special emphasis on infection
control vii. Bruxism and its treatment viii. Periodontal
treatment plan ix. Halitosis and its treatment**

B. Periodontal instrumentation-sonic and ultra-sonics

**i. Instrumentation ii. Principles of periodontal
instrumentation iii. Instruments used in different parts of
mouth**

C. Periodontal therapy

- i. Scaling and root planing ii. Plaque control iii. Treatment of medically compromised patients and Management medical emergencies in Periodontal practice iv. Treatment of female patients and older adults
 - v. Treatment of aggressive and atypical forms of Periodontitis vi. Treatment of acute gingival diseases vii. Treatment of periodontal abscess viii. Periodontal splints ix. Periodontal management of HIV patients
 - x. Management of dental hypersensitivity xi. Role of orthodontics in adjunct to periodontal therapy xii. Preparation of Periodontium for restorative dentistry
- D. Non-surgical periodontal therapy including host modulation and local drug delivery
- E. Periodontal surgical phase
 - i. General principles of periodontal surgeries ii. Surgical anatomy of periodontal related structures iii. Gingival curettage iv. Gingivectomy techniques
 - v. Treatment of gingival enlargement vi. The periodontal flap vii. Osseous surgery (i) Resective and (ii) Regenerative viii. Furcation involvement and treatment ix. Periodontic – endodontic continuation

- x. Perio – esthetics xi. Electro surgery and lasers
- xii. Recent advances in surgical techniques
 - i. Future directions in regenerative therapy
 - ii. Future directions in measurement of periodontal diseases
 - iii. Future directions for infection control
 - iv. Research direction in regenerative therapy
 - v. Future directions in anti-inflammatory therapy
 - vi. Future directions in measurement of Periodontal disease

F. Periodontal Maintenance phase

- i. Supportive periodontal treatment
- ii. Results of periodontal treatment

G. Oral Implantology

- i. Introduction and historical review
- ii. Biological, clinical and surgical aspects of dental implants
- iii. Diagnosis and treatment planning
- iv. Implant surgery
- v. Osseointegration
- vi. Prosthetic aspects of dental implants
- vii. Localized bone augmentation and implant site development
- viii. Diagnosis and treatment of peri-implant complications
- ix. Special emphasis on plaque control measures
- x. Maintenance of dental implant
- xi. Recent advances in implant surgical technology

7.4 PAPER- III: Descriptive and analyzing type question. Any content from mentioned above can be included in paper III

8. YEARLY PRACTICAL/CLINICAL SCHEDULE:

8.1 FIRST YEAR EXERCISE

A. Pre-clinical work -Dental

- i. Practice of incisions and suturing techniques on the typhodont models.**
- ii. Fabrication of bite guards and splints.**
- iii. X-Ray techniques (IOPA, OPG and CBCT) and interpretation.**
- iv. Local anesthetic techniques.**

B. Pre-clinical work -Dental Medical

- i. Basic diagnostic microbiology and immunology, collection and handling of sample, culture techniques**
- ii. Basic understanding of immunological diseases.**
- iii. Interpretation of various biochemical investigation**
- iv. Practical training and handling medical emergencies and basic life support devices.**
- v. Basic biostatistics-surveying and data analysis.**

C. Clinical work (diagnosis/treatment plan to be supported with higher level of evidences as per the department treatment protocol)

- i. Long case-history with Applied periodontal indices
10 Cases**
- ii. Scaling and root
planning (SRP)**

Students shall perform 2 scaling and root planning cases and 3 surgical cases under magnification with the total work quota remaining the same.

iii. Hand (20 cases) iv. Ultrasonic(30 cases)

v. Curettage (25 cases) vi.

Gingivectomy (10 cases) vii.

Gingivoplasty (10 cases)

8.2 SECOND YEAR- EXERCISES

i. Case history and treatment plan (15 Cases) ii.

Local drug Delivery techniques (5 Cases) iii.

Periodontal surgical procedures

- Pocket therapy (50 cases)**
- Muco-gingival surgeries & periodontal plastic surgery (20 Cases)**
- Management of Perio-endo problems (5 Cases) iv. Occlusal adjustments (10 Cases)**
- v. Periodontal splints (10 Cases)**

8.3 THIRD YEAR- EXERCISES

i. Regenerative technique Using various graft and barrier membranes ii. Pre implant surgery (any one technique)

- Ridge augmentation**
- Ridge split**
- Socket preservation**
- Sinus lift technique iii. Implant case (02 cases)**

* Record, maintenance & follow up of all treated cases including implants.

D. Academic work quota in three years: Refer section III

9. SCHEME OF EXAMINATION

9.1 THEORY: Refer section I, Point 17

9.2 PRACTICAL / CLINICAL EXAMINATION: 300 Marks

Sr. No.	Procedure	Marks
Day 1		
1.	Case discussion	
	Long case history - 1	50
	Short case history -1	50
2.	Periodontal surgery- Periodontal flap surgery on a previously prepared case in one quadrant of the mouth after getting approval from the examiners.	75
Day 2		
3.	Post-surgical review & discussion of the case treated	25
	on the first day supported by high level critically appraised evidences)	
4.	Viva Voce	80
5.	Evidence based Pedagogy	20
Total		300

OBJECTIVELY STRUCTURED CLINICAL EXAM PATTERN

□Long case history	50 marks
Recording the history	10 marks
Diagnosis	05 marks
Treatment plan	10 marks
Presentation	05 marks
Discussion	20 marks
□1 Short case history	50 marks
Recording of history	10 marks
Diagnosis	10 marks
Treatment plan	10 marks
Presentation	10 marks
Discussion	10 marks
□Periodontal flap procedure	75 marks
Selection of case	05 marks
Asepsis	05 marks
Local anesthesia	05 marks
Incision	10 marks
Reflection	10 marks
Debridement and root planing	10 marks
Suturing	05 marks
Discussion	25 marks
• Post operative evaluation	25 marks
Findings on the post surgery visit	05 marks
Recording of the findings	05 marks
Medicines	05 marks
Evidence based Discussion	10 marks
□Pedagogy	20 marks
Completeness of the topic	05 marks
Presentation	05 marks

**Incorporation of recent evidence with justification and
appraisal** **10 marks**

- **Viva voce (as per the university rules) 80 marks**

10. REFERENCE BOOKS

Sr. No.	AUTHOR	TITLE	EDITION
1.	Kenney E.Barrie	The Historical Background Of Periodontology	1st
2.	Carranza	Glickman's Clinical Periodontology	7th, 8th, 9th, 10th, 11th
3.	Varma B.R.R	Current Concepts In Periodontics	1st
4.	Pandit Nymphea	Concise Periodontology	1st
5.	Karlstad,Swe den	Diagnosis & Risk Prediction Of Periodontal Diseases	1st
6.	Clerehugh Valerie	Periodontal Management Of Children Adolescents & Young Adults	1st
7.	Serio Francis G	Manual Of Clinical Periodontics	1st
8.	Gururaja Rao	Textbook Of Periodontology	2nd
9.	Wilson Thoms G	Fundamentals Of Periodontics	2nd
10.	Manson J D	Outline Of Periodontics	4th
11.	Eley B M	Periodontics	5th

12.	Perry Dorothy A	Periodontology For The Dental Hygienist	3rd
13.	Rose Louis F	Periodontal Medicine	1st
14.	Hall Walter B	Decision Making In Periodontology	3rd
15.	Reddy Shantipriya	Essentials Of Clinical Periodontology And Periodontics	2nd
16.	Lain, Chapple	Understanding Periodontal Diseases	1st
17.	Varma B.R.R.	Clinical Periodontology	1st
18.	Rose Louis F	Periodontics Medicine,Surgery&Implants	1st
19.	Suzanne L Noble	Decision-Making For The Periodontal Team	1st
20.	Lindhe Jan	Clinical Peridontology And Implant Dentistry	4 th , 5 th
21.	Krishna Kumar	Review Of Clinial Periodontology	1st
22.	Vernino Arthur R	Periodontics Syllabus	5th
23.	Busscher H J	Oralbiofilms& Plaque control	1 st
24.	Rose Louis F	Periodontal Medicine	1st
25.	Fermin Carranza	History Of Periodontology	1st
26.	Ramfiord Sigurd P	Periodontology & Periodontics	1st
27.	Cochran David L	Biomimetics In Periodontal Regeneration	1st
28.	Arun Kv	Molecular Biology Of Periodontium	1st
29.	Darby Michele L.	Mosby's Comprehensive Review Of Dental Hygiene	6th
30.	Pawlak Elizabeth A	Essentials Of Periodontics	3rd

31.	Nield Gehrig Jill S	Fundamentals Of Periodontal Instrumentation	6th
32.	Teruo Ito	Color Atlas Of Periodontal Surigery	1st
33.	Cohen Stephen Edward S	Atlas Of Cosmetic & Reconstructive Periodontal Surgery	2nd

34.	Wolf Herbert F	Color Atlas Of Dental Medicine Periodontology	3rd
35.	Waite I M	A Colour Atlas Of Pariodontology	2nd
36.	Manson J D	Outline Of Periodontics	1st
37.	Walter B. Hall	Critical Decisions In Periodontology	4th
38.	Vernio	The Periodontic Syllabus	1st
39.	Gururaja Rao	T B Of Periodontology	1st
40.	Orbans	Periodontics	1st
41.	Louis Rose	Periodontics Medicine,Surgery& Implants	1st
42.	Myron Nevins	Periodontal Therapy	1st
43.	Carranza	Clinical Periodontology For The Dental Hygienist	1st
44.	Mark Bartold	Biology Of Periodontal Connective Tissues	1st
45.	Watts	Periodontics In Practice	1st
46.	Thomas	Fundamental Of Pariodontics	1st
47.	Thomas	Dental Maintenance For Patients With Pariodontal Diseases	1st
48.	Carranza	Clinical Periodontology	10th
49.	Valerie	Periodontal Management Of Children,Sdolescen Ts & Young Adults	1st

50.	Robert Ireland	Clinical Textbook Of Dental Hygiene & Therapy	1st
51.	Dilip Nayak	Textbook Of Periodontology And Oral Implantology	1st
52.	Dibart Serge	Practical Periodontal Plastic Surgery	1st
53.	Wilkins Esther M	Clinical Practice Of The Dental Hygienist	10th
54.	Vandersall David C	Concise Encyclopedia Of Periodontology	1st
55.	Stegeman Cynthia A	The Dental Hygienist's Guide To Nutritional Care	2nd
56.	Vernino Arthur R	The Periodontic Syllabus	5th
57.	Axelsson Per	Diagnosis & Risk Prediction Of Periodontal Diseases	1st
58.	Millar Diane	Reinforced Periodontal Instrumentation And Ergonomics For The Dental Care Provider	1st
59.	Manson J D	Outline Of Periodontics	5th
60.	Reddy Shantipriya	Essentials Of Clinical Periodontology And Periodontics	3rd
61.	Bimstein, Enrique	Periodontal And Gingival Health And Diseases	1st
62.	Serge Dibert	Practical Periodontal Diagnosis And Treatment Planning	1st
63.	Tarquill Macphee	Essentials Of Periodontology And Periodontics	3rd
64.	Chandra Madhavi K	Clinical Peridontics	1st
65.	Pandit, Nympha	Concise Periodontics	1st
66.	Bathla Shalu	Tips & Tricks In Periodontology	1st

67.	Clerehugh Valerie	Periodontology At A Glance	1st
68.	Sato,Naoshi	Periodontal Surgery	1st
69.	Wilson,Thoma s G	Advances In Periodontics	1st

BRANCH - III

ORAL AND MAXILLOFACIAL SURGERY

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

1. AIM

- **To train dental graduates as to ensure higher competence in both general and special areas of oral and maxillofacial surgery.**
- **To prepare a candidate for teaching, research and clinical abilities including diagnosis and treatment of various disorders, deficiencies, defects and trauma of the oral and maxillofacial region.**

2. OBJECTIVES

- **Training programme in Oral and Maxillofacial surgery is structured to achieve knowledge and proficiency in theoretical and surgical skills, attitude, communicative skills and ability to research with understanding of social, cultural, educational and environmental background of the society.**
- **Have a thorough understanding and applicable knowledge of basic and systemic medical science, with special focus on the head and neck region.**

The training program in Oral and maxillofacial Surgery is structured to achieve the following four objectives –Knowledge; Skills; Attitude; Communicative skills and ability

Outcomes: At the end of the course the student should be able to obtain proper clinical history, methodical examination of the patient, perform essential diagnostic procedures and order relevant laboratory tests and interpret them and to arrive at a reasonable diagnosis about the surgical condition, perform with competence minor oral surgical procedures and common maxillofacial surgery to treat both surgically and medically (or by other means) problems of the oral and maxillofacial and the related area), provide care of maxillofacial surgery patients both on a out-patient and in-patient basis, critically analyze of scientific literature and to incorporate evidence based knowledge in the practice of oral and maxillofacial surgery.

3. KNOWLEDGE

- To have acquired adequate knowledge and understanding of the etiology and of patho-physiology and diagnosis, treatment planning of various common oral and maxillofacial surgical problems both minor and major in nature.
- To have understood the general surgical principles like pre and post surgical management, particularly of evaluation, post surgical care, fluid and electrolyte management, blood transfusion and post surgical pain-management.
- Understanding of basic sciences relevant to practice or oral and maxillofacial surgery.
- Able to identify special, cultural, economic, genetic and environmental factors and their relevance to disease process management in the oral and Maxillo-facial region.

- Essential knowledge of personal hygiene and infection control, prevention of cross infection and safe disposal of hospital waste keeping in view the high prevalence to hepatitis and HIV.

4. SKILLS

- To obtain proper clinical history, methodical examination of the patient, perform essential diagnostic procedures and order relevant laboratory tests and interpret them and to arrive at a reasonable diagnosis about the surgical condition.
- To perform with competence minor oral surgical procedures and common maxillofacial surgery. To treat both surgically and medically (or by other means) problems of the oral and Maxillofacial and the related area).
- Capable of providing care of maxillofacial surgery patients both on out-patient and in-patient basis.
- To develop skills for critical analysis of scientific literature and to incorporate evidence based knowledge in the practice of oral and maxillofacial surgery.
- The student should be able to identify the problem search literature related to the problem critically evaluate and apply and share knowledge with the patient and involve him in decision making

5. 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 delivering 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 and 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 privileges, including patients right to information and right to seek a second opinion.
- Develop attitude to seek opinion from an allied medical and dental specialists as and when required.
- A student should develop an attitude towards embracing new research keeping abreast with the new developments in the field and must be able to critically evaluate the results before and after the application of knowledge and present it to the scientific community.

6. COMMUNICATION SKILLS

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

- Develop the ability to communicate with professional colleagues.
- Develop ability to teach undergraduates.
- The student should be able to take discuss the patient condition with the patient and patient relatives and should achieve expertise in taking true informed consent.

7. Course content

7.1 PART I, PAPER-I: APPLIED BASIC SCIENCES: APPLIED

ANATOMY, PHYSIOLOGY, & BIOCHEMISTRY, PATHOLOGY, MICROBIOLOGY, PHARMACOLOGY, RESEARCH METHODOLOGY AND BIOSTATISTICS.

A. Applied Anatomy

- i. Surgical anatomy of the scalp, temple and face
- ii. Anatomy of the triangles of neck and deep structures of the neck
- iii. Cranial and facial bones and its surrounding soft issues with its applied aspects in maxillofacial injuries
- iv. Muscles of head and neck
- v. Arterial supply, venous drainage and lymphatic of head and neck
- vi. Congenital abnormalities of the head and neck
- vii. Surgical anatomy of the cranial nerves
- viii. Anatomy of the tongue and its applied aspects
- ix. Surgical anatomy of the temporal and infratemporal regions

- x. Anatomy and its applied aspects of salivary glands, pharynx, thyroid and parathyroid gland, larynx, trachea esophagus xi. Tooth eruption, morphology, and occlusion
- xii. Surgical anatomy of the nose xiii. The structure and function of the brain including surgical anatomy of intra cranial venous sinuses xiv. Autonomous nervous system of head and neck xv. Functional anatomy of mastication, deglutition, speech, respiration and circulation xvi. Development of face, paranasal sinuses and associated structures and their anomalies xvii. Cadaveric dissection of different anatomical regions to maxillofacial surgery xviii. Basic and applied anatomy of iliac crest,
- clavicle, ribs, hyoid bone, tibia, femur, fibula xix. Histology of skin, oral mucosa, connective tissue bone, cartilage, cellular elements of blood vessels, lymphatic, nerves, muscles, tongue, tooth and surrounding structures.
- xx. Anatomy of Iliac bone, Radius, Ulna, Femur, Humerus, Fibula, Tibia

B. Applied Physiology

- i. Nervous system
- Physiology of nerve conduction
 - Pain pathway

- Sympathetic and parasympathetic nervous system, hypothalamus and mechanism of controlling body temperature.
- Applied physiology of nerve injury ii. Blood
- Composition and Haemostasis
- Various blood dyscrasias and its management of patients with the same
- Hemorrhage and its control
- Capillary and lymphatic circulation
- Blood grouping and transfusion procedures
- Cross matching
- Component therapy
- Complications of blood transfusion
- Blood substitutes
- Auto transfusion
- Cell savers iii. Digestive and excretory system - Saliva– composition and function of saliva, Mastication, deglutition, digestion, assimilation.

- Urine formation, normal and abnormal constituents

- Applied physiology of sweating.

iv. Respiration

- Control of ventilation, anoxia, asphyxia, artificial respiration

- Hypoxia – types and management

v. Cardio Vascular System

- Cardiac cycle

- Shock

- Heart sounds

- Blood pressure and its regulation

- Hypertension

- Applied physiology of cardiac

disease vi. Endocrinology

- Applied physiology of endocrine gland and its disorders

- **General endocrinal activity and disorder relating to thyroid gland, Parathyroid gland, adrenal gland, pituitary gland, pancreas and gonads**
- **Metabolism of calcium.**
- **Vitamin D regulation**
- **Nutrition**
- **General Principles balanced diet**
- **Effect of dietary deficiency**
- **Protein energy malnutrition**
- **Kwashiokor and Marasmus**
- **Fluid and Electrolytic balance in maintaining haemostasis and significance in minor and major surgical procedures**

C. Biochemistry

- i. **General principles governing the various biological activities of the body, such as osmotic pressure, electrolytes, dissociation, oxidation, reduction etc**
- ii. **General composition of the body**
- iii. **Intermediary metabolism**
- iv. **Enzymes**
- v. **Vitamins and minerals**
- vi. **Hormones**
- vii. **Body and other fluids**

viii. Metabolism of inorganic elements ix.

Detoxification in the body

x. Antimetabolites.

xi. Glucose, lipid and protein metabolism and its applied aspect.

xii. Antioxidants

D. General Pathology

i. Inflammation

- Repair and regeneration
- Necrosis and Gangrene
- Role of component system in acute inflammation
- Role of arachidonic acid and its metabolites in acute

inflammation

- Role molecular events in cell growth and intercellular signaling
- Cell surface receptors
- Role of NSAIDs in inflammation
- Cellular changes in radiation injury and its

manifestation ii. Haemostasis

- Role of endothelium in thrombogenesis
- Arterial and venous thrombi
- Disseminated Intravascular coagulation  **iii.**

Shock

- Pathogenesis of hemorrhagic, neurogenic, septic, cardiogenic shock
- Circulatory disturbances, ischemia, hyperemia, venous congestion, edema, infarction
- iv. Chromosomal abnormalities
 - Marfans Syndrome
 - Ehler'sDanlos Syndrome
 - Fragile X-Syndrome
- v. Hypersensitivity
 - Anaphylaxis, type 2 hypersensitivity, type 3 sensitivity and cell mediated reaction, and its clinical importance
 - Systemic lupus erythematosus
 - Infection and infective granulomas
 - vi. Neoplasia
 - Classification of tumors
 - Carcinogenesis and carcinogen – chemical, viral and microbial
 - Grading and staging of cancers
 - Tumor Angiogenesis
 - Paraneoplastic syndrome
 - Spread of tumors
 - Characteristics of benign and malignant tumors
 - vii. Others
 - Sex linked agammaglobulinemia
 - Hepatitis

- AIDS
- Management of immune deficiency patients requiring surgical procedures
- De George Syndrome
- Ghons complex, post primary pulmonary tuberculosis – pathology and pathogenesis
- Autoimmune disorders
- Physiological changes during pregnancy
- Pathophysiology of organ transplant
- Role of laboratory investigations in oral surgery

E. Oral Pathology

- i. Developmental disturbances of oral and Para oral structures
- ii. Regressive changes of teeth
- iii. Bacterial, fungal, viral and mycotic infections of oral cavity
- iv. Dental caries, diseases of pulp and periapical tissues
- v. Physical and chemical injuries of the oral cavity
- vi. Oral manifestations of metabolic and endocrinal disturbances
- vii. Diseases of jawbones and TMJ
- viii. Disease of blood and blood forming organs in relation of oral cavity
- ix. Cysts of the oral cavity
- x. Salivary gland diseases
- xi. Maxillary sinus pathology

F. Microbiology

- i. Immunity

- ii. Knowledge of organisms commonly associated with disease of oral cavity
- iii. Morphology cultural characteristics of streptococcus, staphylococcus, pneumococcus, gonococcus, meningococcus, clostridium group of organisms, spirochetes, organisms of TB, leprosy, diphtheria, actinomycosis and moniliasis
- iv. Hepatitis B and its prophylaxis, Culture and sensitivity test, Laboratory determinations
- v. Blood groups and blood matching
- vi. RBC and WBC count
- vii. Smears and cultures
- viii. Urine analysis and cultures

G. Applied Pharmacology and Therapeutics

- i. Definition of terminologies used
- ii. Dosage and mode of administration drugs
- iii. Action and fate of drugs in the body
- iv. Drug addiction, tolerance and hypersensitive reactions
- v. Drugs acting on the CNS and ANS
- vi. General and local anesthetics
- vii. Conscious sedation, Hypnotics, analeptics, and tranquilizers
- viii. Chemo therapeutics and antibiotics
- ix. Analgesics and antipyretics
- x. Venereal disorder and Antitubercular drugs
- xi. Antiseptics and asepsis

xii. Sialogogues and antisialogogues xiii. Haematinics
 xiv. Antidiabetics xv. Antihypertensive xvi. Vitamins A,
 B-complex, vitamins C,D,E,K xvii. Drugs acting on
 endocrinal disorders xviii. Drugs consideration during
 pregnancy xix. Drugs consideration in paediatric
 patients xx. Chemo and Radiation therapy drugs xxi.
 Immunosuppressant drugs xxii. Steroids in OMFS

H. Research Methodology and Biostatistics

- i. Different study designs, different statistical tests and their applications, scientific paper presentation and paper writing.
- ii. Use of software for biostatistics

I. ETHICS IN DENTISTRY (Ref. Section V)

7.2 PART II, PAPER II: MINOR ORAL SURGERY AND TRAUMA

A. Principles of Surgery

- i. Developing a surgical diagnosis ii. Basic necessities for Surgery iii. Aseptic technique iv. Incisions, Flap Design Tissue handling
- v. Haemostasis vi. Dead space management vii. Decontamination and debridement
- viii. Suturing ix. Oedema control

x. Patient general health and nutrition

B. Medical Emergencies

i. Prevention and management of altered consciousness (syncope, orthostatic hypotension, seizures, diabetes mellitus adrenal insufficiency) ii.

Hypersensitivity reactions iii. 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
- iv.**

Haemorrhage and Shock

- Applied physiology
- Clinical abnormalities of coagulation, extra vascular hemorrhage, and hemorrhagic lesions
- Management of secondary hemorrhage and shock

v. Exodontia

- Principles of extraction, indications and contraindications, types of extraction, complication and their management

-
-
-

Principles of elevators and elevators used in oral surgery vi. Impaction

- **Surgical anatomy**
- **Classification, indications and contraindications**
- **Diagnosis and radiographic interpretations**
- **Procedures, complications and their management vii.**

Surgical Aids to Eruption of Teeth

- **Surgical exposure of unerupted teeth**
- **Surgical repositioning of partially erupted teeth viii.**

Transplantation of Teeth ix. Surgical Endodontics

- **Indications and contraindications**
- **Diagnosis**
- **Procedures of periradicular surgery**

x. Procedures To Improve Alveolar soft tissues

- **Requirements and types (alveoplasty, tuberosity reduction, mylohyoid ridge reduction, general reduction removal of exostosis vestibuloplasty) xi. Procedures to Improve Alveolar soft tissues**

- **Hypermobile tissues - operative/ sclerosing method, epulis fissuratum**

- **Frenectomy and frenotomy xii. Infection of Head and Neck**
- **Odontogenic and non Odontogenic infections**
- **Factors affecting spread of infection**

- **Diagnosis and differential diagnosis**
- **Management of facial space infections**
- **Ludwigs angina**
- **Cavernous sinus thrombosis**
- **Complication of space infection xiii. Chronic Infection**
- **Osteomyelitis (types, etiology, pathogenesis, management)**
- **Osteoradionecrosis xiv. Maxillary Sinus**
- **Maxillary sinusitis – etiology, types, diagnosis, management and complications**
- **Caldwell- luc operation**
- **Closure of oro antral fistula xv. Cysts of the Orofacial region**
- **Etiology, diagnosis , radiographic features and management of cystic lesions**
- **Odontogenic cysts**
- **Non odontogenic cysts**
- **Cysts of the maxillofacial region**
- **Complications and management xvi. Neurological Disorders of the maxillofacial region**
- **Diagnosis and management of trigeminal neuralgia**
- **MPDS**
- **Bell 's palsy**
- **Frey's syndrome**

- Nerve injuries xvii. Implantology Definition, classification, indications and contraindications
 - Advantages and disadvantages
 - Implant armamentarium
 - Oseointegration
 - Surgical procedure
 - Prosthesis considerations in treatment planning
 - Ridge expansion and ridge split
 - Direct and Indirect sinus lift
 - Basal implantology
 - Implant failures, complications and management xviii. Anesthesia
 - Local Anesthesia
 - Classification of local anesthetic drugs
 - Modes of action indications and contra indications
 - Advantages and disadvantages
 - Techniques – intra oral and extra oral
 - Complications and their management
 - Recent advances in Local anaesthesia
- General Anesthesia
 - Classification
 - Stages of GA
 - Mechanism of action
 - Indications and contra indications

- Advantages and disadvantages
- Post anesthetic complications and emergencies
- Anesthesia for dental procedures in children
- Pre medication □ Conscious sedation
- Legal aspects for GA. xix. Dento-alveolar Trauma
- Surgical Anatomy of head and Neck
- Etiology of maxillofacial injuries
- Basic Principles of Treatment of trauma
- Primary Care
- Resuscitation
- Establishment of airway
- Management of hemorrhage xx. Management of head injuries and admission to hospital
- Diagnosis – clinical and radiological
- Soft Tissue Injury of Face and Scalp
- Classification and management of soft tissue wounds
- Injuries to structures requiring special treatment xxi. Dento Alveolar Fractures
- Examination and diagnosis
- General principles of treatment
- Complications and their management xxii. Mandibular Fractures
- Classification, examination and diagnosis

General principles of treatment

Complications and their management. xxiii.

Fracture of Zygomatic Complex

- **Classification, examination and diagnosis**
- **General principles of treatment**
- **Complications and their management xxiv. Orbital Fractures - blow**

out fractures xxv. Nasal Fractures xxvi. 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 xxvii. Ophthalmic**

Injuries

- **Minor injuries**
- **Non-perforating injuries and perforating injuries**
- **Retro bulbar hemorrhage and traumatic optic neuropathy xxviii.**

Traumatic Injuries to Frontal sinus - Diagnosis, classification and treatment xxix. Maxillofacial injuries in Geriatric and pediatric

Patients xxx. Gunshot wounds and War Injuries xxxi. Rigid

Internal Fixation in maxillofacial trauma and reconstruction xxxii.

Metabolic response to Trauma

Neurological and endocrinal responses

Inflammatory mediators

Clinical implications

xxxiii. Healing of Traumatic injuries

- Soft tissues, bone, cartilage
- Response of peripheral nerve to injury xxxiv.

Nutritional Consideration following Trauma xxxv. Tracheotomy

- Indications and contraindications
- Procedure, complications and their management

7.3 PART II, PAPER III: MAXILLOFACIAL SURGERY

i. Salivary gland

- Sialography
- Salivary fistula and management
- Diseases of salivary gland – developmental disturbances, cysts, inflammation and sialolithiasis, mucocele and Ranula,
- Tumors of salivary gland – staging and their management
- Parotidectomy ii. 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
Osteoarthritis and rheumatoid arthritis

Treatment of dislocation and recurrent dislocation

- **TMJ reconstruction and replacement**
- **Arthrocentesis and arthroscopic surgery**
- **Internal Derangement iii. 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**
- **Modes of spread of tumors**
- **Diagnosis and management of tumors of nasal, paranasal, neck, tongue, cheek, maxilla and mandible**
- **Radiation therapy in maxillofacial regions**
- **Chemotherapy**
- **Lateral neck swellings iv. Orthognathic surgery**
- **Diagnosis and treatment planning**
- **Cephalometric analysis and Model surgery**
- **Maxillary and mandibular repositioning procedures**
- **Segmental osteotomies**
 - **Management of apertognathia**
 - **Genioplasty**
 - **Distraction osteogenesis**
- v. **Maxillofacial pathology**

- Cysts and tumor of oro facial region
 - Odontogenic and non-Odontogenic tumors and their management
 - Giant lesions of jawbone
 - Fibro osseous lesions of jawbone vi. Laser surgery
 - The application of laser technology in surgical treatment of lesions
 - Cryosurgery- Principles, applications in surgical management vii. Cleft lip and palate surgery
 - Detailed knowledge of the development of cleft lip and palate deformity
 - Knowledge of Nasal endoscopy and other diagnostic techniques in the evaluation of speech and hearing
 - Concept of multidisciplinary team management. viii.
- Aesthetic facial surgery**
- Detailed knowledge of the structures of the face and neck including skin
 - Diagnosis and treatment planning of deformities and conditions affecting facial skin, Underlying facial muscles, bone, Eyelids and external ear Surgical management of post acne scarring

Facelift

Blepharoplasty

Otoplasty

- **Facial bone recontouring, etc.**
- **Hair transplant**
- **Botox & fillers**
- **Dermabrasion ix. 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 cleft lip and palate**
- **Cranio synostosis, syndromes etc.**
- **Current concept in the management of Craniofacial anomalies**

x. Maxillofacial Implant xi.

Medical Jurisprudence

- **Medicolegal aspects of maxillofacial surgery**
- **Compensation and grounds for compensation**
- **Consumer protection act**
- **Issuances related to death certificate**
- **Informed consent taking for Maxillofacial Surgery xii.**

Tissue Engineering

BMP

Interferon therapy

Immunoglobulin therapy

Basic & latest advances in stem cell research

Grafting with tissue engineering procedure xiii. Use of endoscopes in maxillofacial surgery xiv. Introduction and overview of navigation and robotics in maxillofacial surgery.

7.4 PART II, PAPER-III: DESCRIPTIVE AND ANALYSING TYPE QUESTION Any content above mentioned can be included in the Descriptive and analysing type question

8. ACADEMIC CLINICAL PROGRAME (APPLICABLE FOR ALL THREE YEARS):

8.1 ACADEMIC WORK QUOTA (Refer section III)

8.2 PRE CLINICAL& CLINICAL WORK QUOTA

8.2.1 FIRST YEAR PROGRAMME

i. Dissection and basic sciences ii. Basic computer sciences iii. Exodontias iv.

Attending O.T. and ward rounds

v. Pre – clinical exercises

- Wiring techniques on cast models including direct interdental, Essigs, ivy loops, stouts, loop wiring, arch bar fixation and inter maxillary fixation
- Suturing techniques on pillow models

- Cephalometric tracing and model surgeries Osteotomy techniques including le fort 1 and bilateral sagittal split osteotomies on bone models
Dental implant placement in models and introduction to dentascanner analysis.
- Rotation and postings in other departments Casualty -1 month General medicine -15 days
General Surgery -15 days Ophthalmology -15 days
Neurosurgery -15 days ENT -15 days Radiology anaesthesia-15 days orthopedics- as per schedule decided by the university, one month posting in department of Implantology

8.2.2 SECOND YEAR PROGRAMME

- i. Rotation and postings in other departments:
 - Onco surgery posting -2 months in second half .
 - Optional one month cleft posting as per MOU with the department.
 - Examination of basic sciences – one paper of three hours duration to be conducted by the college.
- ii. Minor oral surgery and higher surgical training
- iii. Two months posting in department of Implantology

iv. The following amendments in syllabus for value addition is as under (Board of Studies Letter No. KMSDCH/BOS/27/2020-21 dated 28-12-2020 and Board of Management Resolution Ref. No. SVDU/R/2502-2/2020-21 dated 27-05-2021).

The value addition shall be as following:

II MDS shall undertake exercise of 'Fixation of bone plate on skull as a preclinical exercise'.

8.2.3 THIRD YEAR PROGRAMME

- i. One month posting in department of implantology
- ii. one preclinical orthognathic surgical procedure to be performed on skull.

(P - performed, PA – performed and assisted, O –operated, A – assisted)

SR NO.	Procedure	Category	Year	Number
1.	Injection I.M. and I.V.	P	I, II	50, 20
2.	Minor suturing and removal of sutures	P	I	N.A.

3.	Incision & drainage of an abscess	P	I	10
4.	Surgical extraction	P	I	15
5.	Impacted teeth	P, PA	I, II	20, 10
6	Pre prosthetic surgery	P		
	a.corrective procedures	P	I	15
	b. ridge extension	PA	I, II	3
	c. ridge reconstruction	A	II, III	3
7.	OAF closure	P, PA	I, II	3,2
8	Cyst enucleation	P,PA	I, II	5,5

9	Mandibular fractures	P, PA	I, II	10,10
10	Peri-apical surgery	P,PA	I	5
11	Infection management	P, PA	I, II	N,A
12	Biopsy procedures	P	I, II	N,A

13	Removal of salivary calculi	PA	I, II	3,5
14	Benign tumors	PA,A	II, III	3,3
15	mid face fractures	PA, A	II,. III	3,5
16	Implants	PA,A	II, III	5,5
17	Tracheotomy	PA,A	II, III	2,2
18	Skin grafts	PA	III	3,5
19	Orthognathic Surgery	PA,A	II, III	3
20	Harvesting bone & cartilage grafts			
	Iliac crest	PA	III	
	Rib	A	III	3
	Calvarial	A	III	2
	Fibula	A,O	III	2
21.	T.M. Joint Surgery	PA,A	II, I,	1

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

9. UNIVERSITY EXAMINATION SCHEME

A. THEORY: Refer Section I, Point 17

B. PRACTICAL / CLINICAL EXAMINATION: 200 Marks

Practical examination: 200 Marks

i. Minor oral surgical procedure: 100 marks

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

ii. Case discussion – 100 marks

- One long case -60 marks

- Two short cases -20 marks each

C. Viva Voce and Pedagogy: 100 marks

i. Viva voce examination: 80 marks ii.

Pedagogy exercise: 20 marks

10. BOOKS RECOMMENDED

SR	AUTHOR	TITLE
1.	S.K. Bhattacharya	Short cases in surgery 5th edi
2.	S.AmilSamarnayake	Infection control in dental practice
3.	Peter bank's	Killey's fracture of the mandible
4.	Laskin	Oral & Maxillofacial surgery, Vol – 2
5.	Das	A Concise Textbook of surgery

6.	S.C Basu	Handbook of surgery	
7.	Stanley F Malamed	Medical Emergencies 5th Edi.	
8.	Neelima Anil malik	Textbook of Oral & Maxillofacial Surgery	

9. Kabantruolis Pediatric oral & Maxillofacial surgery

10.	Fonseca	Oral & Maxillofacial trauma Vol - 2 3rd Edi.	
11.	Fonseca	Oral & Maxillofacial trauma Vol -1 3rd Edi.	
12.	Kapoor	Oral & Maxillofacial surgery, 2nd Edi.	
13.	Linda Bartolmuciboyd	R Dental Instruments	
14.	Seward mcgowan	harries Killey's& Kay's outline of oral surgery part – one	
15.	Killey/seward/kay	An outline of oral surgery part – two	
16.	Malamed	Handbook of local anesthesia 5th Edi.	

17.	Malamed	Medical Emergencies in the dental office 5th Edi.
18.	U.Satyanarayana	Biochemistry
19.	Peterson,ellis,hupp,Tucker	Contemporary oral & Maxillofacial surgery 4th Edi.
20.	Fonseca	Oral & Maxillofacial trauma Vol 3
21.	Fonseca	Oral & Maxillofacial Surgery Vol 7,Reconstructive &Emplant surgery
22.	Fonseca	Oral & Maxillofacial surgery Vol 4 temporomandibular Disorder

23. Fonseca pathology

		Oral & Maxillofacial Surgery Vol 2	
24.	Fonseca	Orthodontic surgery	
25.	Topazian,Goldberyhupp	Oral & Maxillofacial infection 4th Edi.	
26.	Susan standring	Gray's anatomy standring 39th Edi.	
27.	Das	Textbook of surgical short case 2nd Edi.	
28.	T.N Patel	A System of surgical diagnosis 2nd Edi.	
29.	Das	A manual of clinical surgery 4th Edi.	
30.	P Chakraborty	A Textbook of microbiology 2nd Edi.	
31.	Zard,Lekhoin,Alberktss on, Tenebaum	Aging,osteoporosis& dental Implantology	
32.	Rosen	Aesthetic perspectives in jaw surgery	

33.	K.D.Tripathi	Essentials of pharmacology for dentistry
34.	Geoffrey I howe	Minor oral surgery
35.	Pramila Bajaj	Anesthesia& analgesia in dentistry
36.	Bennet	Monheim's local anesthesia& pain control in dental practice 7th Edi.
37.	Bank's	Killey's fracture of the middle third of the facial skelection 5th Edi.

38. David craig& meg Skelly Practical conscious sedation

39.	S.ch.girod	Tumor suppressor genes & cell proliferation control in the carcinogenesis of the oral cavity
40.	Srinivasa	Textbook of Oral & Maxillofacial Surgery
41.	Willoam,b.liby,D.D.S, M.S	Current advances in oral surgery Vol – 3

42.	By Reynelce	Essential of orthognathic surgery
43.	Richard I Drake	Gray's anatomy for students
44.	Okeson,Jeffrey p	Bell's orofacial pains
45.	S.Das	A manual of clinical surgery
46.	ROBINSON PAUL	TOOTH EXTRACTION
47.	Guyton & Hall	Textbook of Medical Physiology
48.	Kurger	Textbook of Oral & Maxillofacial Surgery
49.	Fonseca Yogesh P Upadhya	vol.6 Ward Procedures 4th Edi

BRANCH IV

CONSERVATIVE DENTISTRY AND ENDODONTICS

Operative dentistry- is the art and science of the diagnosis, treatment, and prognosis of defects of teeth that do not require full coverage restorations for correction. Such treatment should result in the restoration of proper tooth form, function and esthetics while maintaining the physiologic integrity of the teeth in harmonious relationship with the adjacent hard and soft tissues, all of which should enhance the general health and welfare of the patient.

Endodontics - is defined as that branch of dentistry concern with the morphology, physiology and pathology of the human dental pulp and peri-radicular tissues. It is a study and practice encompasses the basics and clinical science including biology of normal pulp, etiology, diagnosis, prevention and treatment of disease and injuries of pulp and associated peri-radicular tissues.

Aesthetic Dentistry- is defined as appreciative of, responsive to or zealous about the beautiful having sense of beauty or fine culture.

1. OBJECTIVES:

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

- Describe aetiology, pathophysiology, periapical diagnosis and management of common restorative situations, endodontic situation 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 community level.
 - Ability to master differential diagnosis and recognize that may require multi disciplinary approach or clinical situation outside the realm of the specialty which he or she should be able to recognize and refer to appropriate specialist.
 - Update himself by self study and by attending basic and advanced courses conferences seminars and workshops in the speciality 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.
 - Acquiring knowledge to evidence based decision making, appraising evidence, implementing evidence based decision in clinical practice. C.
- Skills:**
- Take proper chair side history, examine the patient and perform medical and dental diagnostic procedures and order as well as perform relevant tests and interpret to them. To come to a reasonable diagnosis about the dental condition in general and conservative dentistry-endodontics in particular and undertake complete patient monitoring including pre-operative as well as post operative care of the patients.
 - Perform all levels of restorative work and surgical and non surgical Endodontics including part of multidisciplinary approach to clinical condition.
 - Provide basic life 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.**
- **Student should be able to identify clinical problem, acquired the most suitable evidence and critically appraise the same along with application of result as per patient's need and preference. D. Attitudes:**
- **Human Values Ethical practice and Communication Abilities.**
- **Adopt, Ethical principals in all aspects of restorative and contemporary endodontic including non surgical and surgical Endodontic.**
- **Professional honesty and integrity should be the top priority.**
- **Dental care has to be provided regardless of social status, caste, creed or religion of the patient.**
- **Develop communication skills in particular to explain various options available management and to obtain true informed consent from the patient.**
- **He/She shall not carry out any heroic procedure and must know his limitation in performing all aspects of restorative dentistry including Endodontics ask for help from the colleagues or senior when required without hesitation.**
- **Respect patients Rights and Privileges including patient's right to information.**
- **Develop a communication skill in particular, to explain the treatment options available in management and to involve the patient in evidence based decision making.**

Outcomes: At the end of the course the Postgraduate student should be able to take proper chair side history, examine the patient and perform medical and

dental diagnostic procedures and order as well as perform relevant tests and interpret them, come to a reasonable diagnosis about the dental condition in general and conservative dentistry-endodontics in particular and undertake complete patient monitoring including pre-operative as well as post operative care of the patients, perform all levels of restorative work and surgical and non surgical endodontics including part of multidisciplinary approach to clinical condition, provide basic life support in emergency situations, manage acute pulpal and pulpo- periodontal situations, have knowledge of infection control measures in the dental clinical environment and laboratories, know about the advanced knowledge and skills required to learn the concept of generic drug and their development, various regulatory filings in different countries, different phase of clinical trials and submitting regulatory documents in filing process of IND, NDA and ANDA.

7. Syllabus

8.1 PART I, PAPER I: APPLIED BASIC SCIENCES

A. APPLIED ANATOMY OF HEAD AND NECK

- i. Development of face.
- ii. Paranasal sinuses and the associated structures and their anomalies.
- iii. Cranial and facial bones. iv. TMJ anatomy and functions.
- v. Arterial and venous drainage of head and neck.
- vi. Muscles of face and neck including muscles of mastication and deglutition.
- vii. Brief consideration of structure and functions of brain.
- viii. Brief consideration of all cranial nerves and autonomic nervous system of head and neck.
- ix. Salivary glands.

- x. Functional anatomy of mastication, deglutition and speech.
- xi. Detailed anatomy of deciduous and permanent teeth.
- xii. General Consideration in physiology of permanent dentition, form, function, alignment, contact, occlusion.
- xiii. Internal anatomy of permanent teeth and its significance.
- xiv. Histology of skin, Oral mucosa, Connective tissue, Bone, cartilage, Blood vessels, Lymphatics, Nerves, Muscles and Tongue.

B. Applied anatomy of dental and parodontal structures:

- i. Enamel-Development and composition. Physical characteristics, Chemical properties & Structure
- i. Age changes – enamel, dentin and pulp.
- ii. Dentin-Development, Physical and chemical properties, Structure type of Dentin, Innervations, age & functional changes.
- iii. Pulp-Development, Histological structures, Innervations, Functions, Regressive changes and Clinical considerations.
- iv. Cementum-Composition, Structure, Function, Cementogenesis and Clinical considerations.
- v. Periodontal ligament development, Structure, Function and Clinical consideration.
- vi. Salivary glands-Structure, Function, Clinical considerations.
- vii. Eruption of teeth.

C. APPLIED PHYSIOLOGY

- i. Digestive system-** Mastication and Deglutition, Digestion& assimilation, Fluid electrolyte balance.
- ii. Circulatory system-** Blood composition, volume, function, Blood groups, Haemostasis, Coagulation, Blood transfusion, Circulation, Heart, Pulse, Blood pressure, Shock.
- iii. Respiratory system-** Respiration, control, Anoxia, Hypoxia, Asphyxia, and Artificial respiration.
- iv. Endocrine system**
 - General principles of endocrine activity and disorders.
 - Pituitary, Thyroid, Parathyroid and Adrenals including pregnancy and lactation.
- v. Physiology of saliva-**Composition, Function and Clinical significance.
- vi. Clinical significance of vitamins, Diet and nutrition, Balanced diet.**
- vii. Physiology of pain.**
 - Sympathetic and para sympathetic nervous system.
 - Pain pathway.
 - Physiology of pulpal pain.
 - Odontogenic and non odontogenic pain.
 - Pain disorders –typical and atypical.
- viii. Biochemistry** such as Osmotic pressure, Electrolytic dissociation, Oxidation, Reduction.

- ix. Carbohydrates, proteins, lipids, and their metabolism, Nucleoproteins, nucleic acids and their metabolism.
- x. Enzymes, Vitamins and minerals. xi. Metabolism of inorganic elements. xii. Detoxification in the body.
- xiii. Anti metabolites.
- xiv. Chemistry of blood lymph and urine. D.

PATHOLOGY:

- i. Inflammation, Repair, Degeneration, Necrosis and Gangrene.
- ii. Circulatory disturbances- Ischemia, Hyperaemia, Oedema, Thrombosis, Embolism, Infarction, Allergy, and hypersensitivity reaction.
- iii. Neoplasms- Classifications of tumours, Characteristics of benign and malignant Tumors, Spread of tumors.
- iv. Blood dyscrasias.
- v. Developmental disturbances of oral and para-oral structures.
- vi. Dental caries, Regressive changes of teeth & Pulp, Periapical pathology.
- vii. Pulp reaction to dental caries and dental procedures
- viii. Infections of the oral cavity-Bacterial, Viral and Mycotic.

E. MICROBIOLOGY:

- i. Pathway of pulpal infection.

- ii. Oral flora and micro organism associated with endodontic disease.
- iii. Pathogenesis.
- iv. Host defense.
- v. Bacterial virulence factors.
- vi. Healing.
- vii. Theory of focal infection.
- viii. Microbes relevance to dentistry
 - Streptococcus, Staphylococci, Lactobacilli, Corynebacterium, Actinomycetes, Clostridium, Neisseria, Vibrio, Bacteroides, Fusobacteria, Spirochetes, Mycobacterium, Virus and Fungi.
- ix. Cross infection, Infection control, Infection control procedure, Sterilization and disinfection.
- x. Immunology – Antigen antibody reactions, Allergy, Hypersensitivity and anaphylaxis, Auto immunity, Grafts, Viral hepatitis, HIV infections and AIDS.
- xi. Identification and isolation of microorganisms from infected root canals.
- xii. Culture medium and culturing technique (Aerobic and anaerobic interpretation and antibiotics, sensitivity test).

F. PHARMACOLOGY

- i. Dosage and route of administration of the drugs
- ii. Action and fate of drug in body
- iii. Drug addiction
- iv. Tolerance of hypersensitivity reactions.
- v. Local anaesthesia
 - Agents and chemistry

- Pharmacological actions
- Fate and metabolism of anaesthetic
- Ideal properties
- Technique and complications vi. **General**
anaesthesia
- Pre medications
- Neuro muscular blocking agents
- Induction agents
- Inhalation anaesthesia and agents used
- Assessment of anaesthetic problems in medically compromised patients.

vii. **Anaesthetic Emergencies.**

viii. **Antihistamines ix. Corticosteroids**

x. Chemotherapeutic and antibiotics

xi. Drug resistance xii. Haemostasis and haemostatic agents

xiii. Anticoagulants xiv. Sympathomimetic drugs xv. Vitamins and

minerals (A, B, C, D, E, K, IRON) xvi. anti sialogogue xvii.

Immunosuppressant's xviii. Drug interactions xix. Antiseptics xx.

Disinfectants xxi. Anti viral agents xxii. Drugs acting on CNS. G.

BIOSTATISTICS:

- i. Introduction ii. Basic concepts
- iii. Sampling iv.

Health information system

-Collection, Compilation & Presentation of data.

v. Elementary statistical methods

- Presentation of statistical data
- Statistical averages

Measures of central tendency, Measure of dispersion, Normal distribution

vi. Tests of significance

-Parametric and non – parametric tests

Fisher exact test, Sign test, Median test, Mann Whitney test, Kruskal Wallis one way analysis, Friedman two way analysis, Regression analysis.

vii. Correlation and regression viii.

Use of computers.

H. RESEARCH METHODOLOGY:

- i. Essential features of a protocol for research in humans.
- ii. Experimental and non-experimental study designs
- iii.

Ethical consideration of research. I. APPLIED DENTAL

MATERIALS:

- i. Physical and mechanical properties of dental materials
- ii. Biocompatibility.
- iii. Impression materials.
- iv. Detailed study of various restorative materials.
- v. Restorative resins and recent advances
- vi. Bonding& recent developments.
- vii. Tarnish and corrosion
- viii. Dental amalgam
- ix. Direct filling gold,
 - x. Casting alloys,
 - xi. Inlay wax, xii. Die materials, xiii. Investments, xiv. Casting procedures, xv. Casting defects,
- xvi. Dental cements for restoration and pulp protection (luting, liners, bases)
- xvii. Cavity varnishes.
- xviii. Dental ceramics-recent advances,
 - Finishing and polishing materials,
 - Porcelain fused to metal,
 - Ceramic furnace,
 - Firing procedures.
- xix. Dental burs, Design and mechanics of cutting
- xx. Methods of testing biocompatibility of materials used.

J. EVIDENCE BASED CONSERVATIVE DENTISTRY

i. Introduction to evidence-based decision making ii.

Assessing Evidence iii. Implementing Evidence- Based Decision in
Clinical
Practice

K. ETHICS IN DENTISTRY (REFER SECTION V)

L. Documentation and Dental photography

7.2 PART II, PAPER I: CONSERVATIVE DENTISTRY

7.2.1 CONSERVATIVE DENTISTRY

i. Examination, diagnosis and treatment plan.ii.

Occlusion as related to conservative dentistry,

- Contact & contour, its significance.
- Separation of teeth,
- Matrices used in conservative dentistry.

iii. Dental caries

- Epidemiology,
- Recent concept of etiological factors,
- Pathophysiology,
- Histopathology,
- Diagnosis,
- Caries activity tests,

- Prevention on dental caries and management – recent methods.

iv. Hand and rotary cutting instruments,

- Development of rotary equipments,
- Speed ranges,
- Hazards.

v. Dental burs and other modalities of tooth reparation- recent developments (air abrasions, lasers etc) vi. Infection control procedure in conservative dentistry, vii. Isolation equipments etc.

viii. Direct concepts in tooth preparation

-Amalgam, Composite, GIC ix. Restorative techniques, failures and management.

x. Infection control procedure in conservative dentistry, xi. Isolation equipment etc.

xii. Recent developments [air abrasions, lasers etc.] xiii. Direct and indirect composite restorations.

xiv. indirect tooth coloured restoration

-Ceramics, Inlays & Onlays, Veneers, Crowns.

xv. Recent advances in fabrication & materials.

xvi. Impression procedures used in indirect restorations.

xvii. Cast metal restorations

- Indications.

- Contraindications,
- Tooth preparation for class II inlay,
- Onlays,
- Full crown restorations.
- Restorative techniques – direct & indirect methods of fabrication
- Materials used for fabrication like inlay wax,
- Investment materials.

xviii. Direct gold restorations.

xix. Recent advances in restorative materials & procedures.

xx. Management of non carious lesions. xxi. Advance knowledge of minimal intervention dentistry.

xxii. Recent advances in restoration of endodontically treated teeth & grossly mutilated teeth.

xxiii. Hypersensitivity – theories, causes & management.

xxiv. Lasers in conservative dentistry. xxv.

CAD-CAM & CAD-CIM in dentistry

xxvi. Dental imaging & its application in restorative dentistry.
[clinical photography]

7.2.1 AESTHETIC DENTISTRY

i. Colour, ii. Facial analysis iii. Smile design. iv. Principles of aesthetic integration.

v. Treatment planning in aesthetic dentistry

vi. Evolution of tooth restoration from an Aesthetic dentistry vii.

Basic principles of Aesthetic dentistry

viii. Various Aesthetics restoration and its application

ix. Protocols for predictable Aesthetics Dental Restoration

x. Various important factors to be considered in Smile Designing.

xi. Aesthetic qualities of various restorative materials. xii. Composite inlay procedures and techniques.

xiii. Correlation of facial features with the dentition and aesthetic restorative procedures. xiv. Role of CAD/CAM in Aesthetic Dentistry.

xv. Future of Aesthetic Dentistry.

7.3 PART II, PAPER II: ENDODONTICS

i. Rationale of endodontics.

ii. Knowledge of internal anatomy of permanent teeth,

iii. Anatomy of root apex and its implications in endodontic treatment.

iv. Dentin and pulp complex.

v. Pulp and Periapical pathology.

- vi. Pathology of periapex.
- vii. Diagnosis procedure – recent advances and various aids used for diagnosis.
- viii. Orofacial dental pain emergencies: endodontic diagnosis and management.
- ix. Case selection and treatment planning.
- x. Infection control procedure used in Endodontics (aseptic technique such as rubber dam, sterilization of instruments etc).
- xi. Access cavity preparation – objectives and principles.
- xii. Endodontic instruments and instrumentation – recent development, detailed description of hand, rotary, sonic, ultra sonic, etc.
- xiii. Working length determination
- xiv. Cleaning and shaping of root canal system
- xv. Recent development in techniques of canal preparation.
- xvi. Root canal irrigation
- xvii. Intra canal medicaments used including non-surgical Endodontics by calcium hydroxide.
- xviii. Endodontic microbiology.
- xix. Local anaesthesia in Endodontics.
- xx. Endodontic radiology- digital technology in Endodontics practice.

- xxi. Obturating materials xxii. Various obturating techniques
- xxiii. Recent advances in Obturation of root canal. xxiv.
- Traumatic injuries and management.
- xxv. Endodontic treatment for young permanent teeth, xxvi.
- Paediatric endodontic treatment of immature apex. xxvii.
- Endodontic surgeries.
- xxviii. Endodontics Implants-biology of bone and wound healing.
- xxix. Endo-perio interrelationship. xxx. Drugs and chemicals used in Endodontics. xxxi. Endodontic emergencies and management. xxxii. Restoration of endodontically treated teeth
- xxxiii. Recent advances in techniques of restoration of endodontically treated teeth.
- xxxiv. Geriatric Endodontic.
- xxxv. Biology response of pulp to various restorative materials and operative procedures.
- xxxvi. Multidisciplinary approach to Endodontics and their management. xxxvii. Success and failures in Endodontics and Re treatment procedures.
- xxxviii. Endoscope in Endodontics.
- xxxix. Resorption External and internal resorption and their management.
- xl. Microscope in Endodontics.

- xli. Single visit Endodontics-Current concepts and controversies.
- xlvi. Endodontics Flare ups
- xlvi. Dental management of medically complex endodontic patients
- xlv. Rhino sinusitis and endodontic disease
- xlv. Management of pain fear and anxiety in endodontic treatment
- xv. Pediatric endodontics
- xlvii. Interdisciplinary management of orthodontic and endodontic inter-relationship
- xlviii. Imaging interpretation in endodontics – Introduction to MRI and ultrasound

7.4PART II, PAPER III Descriptive and analyzing type question

Any contents from 7.1 to 7.3 can be included

8. Clinical work Quota for MDS

A. First Year MDS

i. PRECLINICAL WORK EXERCISES

- Wax carving: All 32 permanent teeth.
- Sectioning of all permanent teeth & deciduous molars (Second upper molar & second lower molar).
- Class II Amalgam cavities.

TYPE	CONSERVATIVE	CONVENTIONAL
TYPHODONT	3	3
EXTRACTED TEETH	2	2

- Inlay Cavities (MO, MOD, DO)

TYPE	CAVITY PREPRATION	WAX PATTERN	CASTING
TYPHODONT	10	6	4
EXTRACTED TEETH	8	2	2

- Onlay cavity

TYPE	CAVITY PREPRATION	CASTING
TYPHODONT	2	1
EXTRACTED TEETH	3	1

- Full Crown Preparation

TYPE	ANTERIOR CROWN CUTTING	POSTERIOR CROWN CUTTING	CASTING
TYPHODONT	5	5	2-2
EXTRACTED TEETH	6	4	3-2

- 7/8TH Crown Preparation

TYPE	CROWN CUTTING	CASTING
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TYPHODONT	2	1

- **3/4TH Crown Preparation**

TYPE	CROWN CUTTING	CASTING
TYPHODONT	2 On Premolar	1

- **Pin Retained Amalgam Restoration Extracted teeth 2 cavities**
- **Post and Core Built up On Extracted teeth: 10 Anterior, 5 Posterior**
- **Veneer Preparation On Extracted teeth 2 Anterior by Indirect Method**
- **Composite Inlay On Extracted teeth 3 Class II Preparation 1 Casting**
- **Access Cavity Preparation**

TYPE	MAXILLARY TEETH	MANDIBULAR TEETH	OBTURATION
CONVENTIONAL	1	1	3
STEP BACK	1	1	
CROWN DOWN	1	1	
PREMOLAR	3	3	1-1
MOLAR	2 -1ST MOLAR , 1-2ND MOLAR	2-1ST MOLAR, 1-2ND MOLAR	1-1

- Removable Dies 4 Nos.
- Incisions used for periapical surgery like triangular, trapezoid, rectangular, semilunar etc
- Sutures like intermittent, figure of 8, horizontal mattress, sling sutures etc.

Note: technical work to be completed in 1st four months.

Minimum Requirement of Academic (Refer Section III, Page no. 14) & Clinical Work to be carried out by the Postgraduate (MDS) Student of Conservative Dentistry and Endodontics in Each Year:

Sr. No.	Particulars	FIRST YEAR	SECOND YEAR	THIRD YEAR
1.	Composite restorations	30	05	-
2.	GIC	30	-	-
3.	Complex amalgam restorations	05	-	-
4.	Composite inlay/veneers (direct/indirect)	05	-	-
5.	Post and core anterior	05	10	10
6.	Post and core posterior	-	05	10
7.	Bleaching (Vital/Nonvital)	05	-	-
8.	RCT Anterior	20	20	-

9.	Posterior RCT	-	30	50
10.	Endodontic surgery	05 (Assisted)	05 (performed independently)	05 (performed independently)
11.	Ceramic jacket crowns	-	10	-
12.	Full crown posterior	-	15	-
13.	Cast gold inlays /onlay	-	05	10
14.	Special work like splinting, reattachment, crown lengthening, bicuspidization, reimplantation etc.	-	05	10
15.	Endo-perio lesions	-	05	-

9. SCHEME OF EXAMINATION:

A. THEORY EXAM – Refer Section I, Point 17

B. Clinical /practical Exercise: 200 marks

DAY 1

Exercise 1: Inlay 50 marks

- Tooth preparation-for class II gold inlay 25 marks

- Direct impression – 25 marks

Exercise 2 : Post and Core- 50 marks

- Post space preparation - 10 marks

- Direct wax pattern- 10 marks

- Casting - 10 marks
- Cementation - 10 marks
- Retraction and Elastomeric impression 10 marks

DAY 2

Exercise 3: Molar Endodontics – 100 marks

- Local anaesthesia and rubber dam application 20 marks
- Access Cavity preparation- 20 marks
- Working length determination- 20 marks
- Biomechanical Preparation 20 marks
- Master cone selection- 20 marks

C. Viva- voce & pedagogy 100 marks

a. Viva-Voce Examination: 80 marks

b. Evidence based Pedagogy exercise: 20 marks

10. LIST OF BOOKS RECOMMENDED

SR.NO	TITLE	AUTHOR	EDITION
	DENTAL MATERIALS		
1	Text book of dental materials science	Phillips	11 Edition
2	Text book of dental materials	Hattrik	
3	Restorative dental materials	Craig	
4	Dental materials	Craig	8 Edition
5	Atlas of glass ionomer cement		

	OPERATIVE DENTISTRY		
1	Art & science of op.dentistry	Clifford sturdivant	5th edition
2	Textbook of operative dentistry	Charbenau	3rd edition
3	Textbook of operative dentistry	Marzouk	
4	Textbook of operative dentistry	macghee	
5	Textbook of operative dentistry	Gillmore	4th edition
6	Textbook of operative dentistry	Vimal sikri	2nd edition
7	Mannual of opereative dentistry	Kidd Smith	
8	Pickard's mannual of oprative dentistry	Kidd Smith	
9	Fundamentals of operative dentistry	James Summit	3rd edition
10	Tooth coloured restorative techniques	Harry Albers	9th edition
	ENDODONTICS		
1	Pathways of pulp	Cohen	9th
2	Endodontics	Gulabiwala/stock	9th
3	color atlas of endo		
4	Problem solving in endodontics	Guttmann	
5	surgical Endodontics	Guttmann	
6	why root canal therapy	Burns	

7	The dental pulp	seltzer	
8	Endodontic therapy	Franklin weine	
9	Endodontics	Ingle	6th
	BASIC SCLENCES		
1	Human Anatomy vol 1	Chaurasia	
2	Human Anatomy vol 2	Chaurasia	
3	Human Anatomy vol 3	Chaurasiy	
4	Human Physiology	Guyton	
5	Human physiology	Datta	
6	Pharmacology	Tripathi	
7	Oral pathology	Shafer	
8	Dental Anatomy	Wheelers	
9	Oral Histology	Orbans	
10	General Medicine	Davidson	
11	General Surgery	Das	
12	Human Embryology	Inderbersingh	
13	Microbiology	Ananthnarayan	
	OTHERS		

1	The science of porcelain laminate veneers	Gureel	
2	Contemporary esthetic dentistry	Bruicecripson	
3	Fibre reinforced composites		
4	Complete dental bleaching	Goldstein	
5	Dental instruments pocket guide		

BRANCH – V

ORTHODONTICS & DENTOFACIAL ORTHOPEDICS

1. DEFINITION:

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.

2. AIM:

- a. To train dental graduates to ensure higher competence in both general and special areas of Orthodontics
- b. To prepare a candidate for teaching, research and clinical abilities, including fixed orthodontics, removable orthodontics, orthopaedic appliances, lingual orthodontics, mini – implants and surgical orthodontics.
- c. To prepare the candidate to practice Evidence Based Orthodontics

3. OBJECTIVES:

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

KNOWLEDGE OF:

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

B. SKILLS:

- **To obtain proper clinical history, methodical examination of the patient, perform essential diagnostic procedures, and interpret them and arrive at reasonable diagnosis about the Dentofacial deformities.**
- **To identify clinical problem and acquire most suitable evidence for critical appraisal of the literature to formulate appropriate evidence based treatment protocol.**

- To be competent to fabricate and manage the most appropriate appliance – intra or extra oral, removable or fixed, mechanical or functional, and active or passive – for the treatment of any orthodontic problem to be treated singly or as a part of multidisciplinary treatment of orofacial deformities as per the patient's need and preference.

C. ATTITUDES:

- Develop an attitude to adopt ethical principles in all aspects of Orthodontic practice.
- Professional honesty and integrity are to be fostered.
- Treatment care is to be delivered irrespective of the social status, cast, creed or colleagues.
- Willingness to share the knowledge and clinical experience with professional colleagues.
- 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.
- Respect patient's rights and privileges, including patient's right to information and right to seek a second opinion.
- Develop attitude to seek opinion from allied medical and dental specialists as and when required.

D. COMMUNICATION SKILLS:

Develop communication skills, in particular, to explain treatment option available in management and to make patient partner in evidence based decision making 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.

Develop the ability to communicate with the professional colleagues, in orthodontics or other specialities through various media like correspondence, internet, e-video, conference etc. to render the best possible treatment.

Outcomes: At the end of the course the postgraduate student should be able to obtain proper clinical history, methodical examination of the patient, perform essential diagnostic procedures, and interpret them and arrive at reasonable diagnosis about the dentofacial deformities, competent to fabricate and manage the most appropriate appliance – intra or extra oral, removable or fixed, mechanical or functional, and active or passive – for the treatment of any orthodontic problem to be treated singly or as a part of multidisciplinary treatment of oro-facial deformities.

4. 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 specialities, will equip the trainee with skill and knowledge at its completion to be able to practise basic orthodontics and have the ability to intelligently pursue further apprenticeship towards advanced orthodontics.

5. SPREAD OF THE CURRICULUM:

Six months for completion of pre – clinical exercises. Two and a half years for coverage of all the relevant topics in Orthodontics, clinical training involving treatment of patients and submission of dissertation.

7. SYLLABUS DISTRIBUTION

7.1. PART I: PAPER I: APPLIED BASIC SCIENCES

A. APPLIED ANATOMY

i. Prenatal growth of head

- Stages of embryonic development
- Origin of head
- Origin of face
- Origin of teeth ii. Postnatal growth of head :

- Bones of skull
- The oral cavity
- Development of chin
- The hyoid bone
- General growth of head -Face growth. iii. Bone

growth

- Origin of bone
- Composition of bone
- Units of bone structure
- Schedule of Ossification
- Mechanical properties of bone

- Roentgenographic appearance of bone. iv. **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.

v. Muscles of mastication:

- **Development of muscles**
- **Muscle change during growth**
- **Muscle function and facial development -Muscle**

function and malocclusion. vi. Development of dentition and occlusion:

- **Dental development periods**
- **Order of tooth eruption**
- **Chronology of permanent tooth formation**
- **Periods of occlusal development**
- **Pattern of occlusion.**

vii. Assessment of skeletal age

- **The carpal bones X – rays and carpal index**
- **Cervical vertebrae in cephalogram and CVMS index**
- **Maturation status of developing permanent teeth and CCS Index**

B. APPLIED PHYSIOLOGY

i. Endocrinology and it disorders

-
- Pituitary gland hormones,
- Thyroid gland hormones,
Parathyroid gland hormones ii. Calcium and
its metabolism iii. Nutrition-metabolism and their
disorders

- Proteins
- Carbohydrates
- Fats
- Vitamins
- Minerals iv. Muscle physiology

v. Craniofacial Biology

- Cell adhesion molecules and mechanism of adhesion

vi. Bleeding disorders in orthodontics

- Hemophilia

C. DENTAL MATERIALS

i. Gypsum products

- Dental plaster
- Dental stone and their properties, setting reaction etc. ii.

Impression materials

- Impression materials in general and particularly of alginate
impression material.

iii. Acrylics

- Chemistry, composition physical properties. iv.

Composites

- Composition, types properties, setting reaction

v. Banding and bonding cements

- $\text{Zn (PO}_4)_2$, Zinc silicophosphate
- Zinc polycarboxylate

Resin cements

- Glass ionomer cements vi. Wrought metal alloys
- Deformation, strain hardening
- Annealing recovery
- Recrystallization
- Grain growth properties of metal alloys.

vii. Elastics

- Latex and non-latex elastics.

viii. Applied physics, Bioengineering and metallurgy.

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

D. GENETICS

- i. Cell structure, DNA, RNA, protein synthesis, cell division
- ii. Chromosomal abnormalities.
- iii. Principles of orofacial genetics
- iv. Genetics in malocclusion

-
- v. **Molecular basis of genetics.** vi. **Studies related to**
malocclusion vii. **Recent advances in genetics related to**
malocclusion viii. **Genetic counselling**
ix. **Bioethics and relationship to Orthodontic**
 management of patients.

E. PHYSICAL ANTHROPOLOGY

- i. Evolutionary development of dentition ii.

Evolutionary development of jaws. F.

PATHOLOGY:

- i. Inflammation
- ii. Necrosis G.

BIOSTATISTICS:

- i. Statistical principles ii. Data Collection iii.
- Method of Summarizing iv. Methods of
- analysis – different tests – errors
- v. Sampling and Sampling technique vi.
- Experimental models, design and interpretation.
- vii. Development of skills for preparing clear scientific abstracts and publication.

H. APPLIED RESEARCH METHODOLOGY IN ORTHODONTICS

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

I. ETHICS IN DENTISTRY (REFER SECTION V)

7.2. PART II- PAPER I

A. ORTHODONTIC HISTORY

- i. Historical perspective ii. Evolution of orthodontic appliances iii. Pencil sketch history of Orthodontic peers
- B. HISTORY OF ORTHODONTICS IN INDIA.**

C. CONCEPTS OF OCCLUSION AND ESTHETICS:

- i. Structure and function of all anatomic components of occlusion ii. Mechanics of articulation iii. Recording of masticatory function iv. Diagnosis of occlusal dysfunction
- v. Relationship of TMJ anatomy and pathology and related neuromuscular physiology.

D. ETIOLOGY AND CLASSIFICATION OF MALOCCLUSION:

- i. A comprehensive review of the local and systemic factors in the causation of malocclusion ii. Various classifications of malocclusion
- E. DENTOFACIAL ANOMALIES:**

- i. Anatomical ii. Physiological and pathological development defects of the orofacial structures and the characteristics of major groups.

F. CHILD AND ADULT PSYCHOLOGY:

- i. Stages of child development ii. Theories of psychological development iii. Management of child in orthodontic treatment. iv. Management of handicapped child.

- v. Motivation and psychological problems related to malocclusion / Orthodontics
- vi. Adolescent psychology
- vii. Behavioral psychology and communication

G. DIAGNOSTIC PROCEDURES AND TREATMENT PLANNING IN ORTHODONTICS:

- i. Emphasis on the process of data gathering, synthesis and translating it into a treatment plan.
- ii. Problem cases – analysis of cases and its management.
- iii. Adult cases
- iv. Handicapped and mentally retarded cases and their special problems
- v. Critique of treated cases.

H. CEPHALOMETRICS

- i. Instrumentation
- ii. Image processing
- iii. Tracing and analysis of errors and applications
- iv. Radiation hazards
- v. Advanced Cephalometric techniques.
- vi. Comprehensive review of literature.
- vii. Video imaging principles and application.

I. PRACTICE MANAGEMENT IN ORTHODONTICS

- i. Economics and dynamics of solo and group practices
- ii. Personal management
- iii. Materials management
- iv. Public relations

- v. Professional relationship vi.
- Dental ethics and jurisprudence vii.
- Office sterilization procedures viii.
- Community based Orthodontics

7.3. PART II: PAPER II : CLINICAL ORTHODONTICS

(Including review of current literature of all the topics)

J. MYOFUNCTIONAL ORTHODONTICS

- i. Basic principles ii. Contemporary appliances –
their design and
manipulation iii. Case selection and evaluation of the
treatment
results.
- iv. Review of the current literature

K. B. DENTOFACIAL ORTHOPEDICS

- i. Principles ii. Biomechanics iii. Appliance design and
manipulation iv. Case selection and evaluation of the treatment
results.
- v. Review of the current literature.

L. CLEFT LIP AND PALATE REHABILITATION

- i. Diagnosis and treatment planning ii. Mechanotherapy iii. Special
growth problems of cleft cases iv. Speech physiology, pathology
and elements of therapy as applied to orthodontics

- v. Team rehabilitative procedures. M.

BIOLOGY OF TOOTH MOVEMENT:

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

N. ORTHODONTIC / ORTHOGNATHIC SURGERY:

- i. Orthodontist's role in conjoint diagnosis and treatment planning
- ii. Pre and post-surgical Orthodontics
- iii. Participation in actual clinical cases, progress evaluation and post retention study
- iv. Review of current literature

O. ORTHO / PERIO / PROSTHO INTER RELATIONSHIP

- i. Principles of interdisciplinary patient treatment.
- ii. Common problems and their management

P. BASIC PRINCIPLES OF MECHANOTHERAPY INCLUDES REMOVABLE APPLIANCES AND FIXED APPLIANCES

- i. Design
- ii. Construction
- iii. Fabrication
- iv. Management
- v. Review of current literature on treatment methods and results.

Q. APPLIED PREVENTIVE ASPECTS IN ORTHODONTICS

i. Caries and periodontal disease prevention ii.

Oral hygiene measures iii. Clinical

procedures

R. INTERCEPTIVE PREVENTIVE ASPECTS IN ORTHODONTICS

i. Principles ii. Growth guidance iii.

Diagnosis and treatment planning iv.

Therapy emphasis on

- Dento-facial problems
- Tooth material discrepancies
- Minor surgery for Orthodontics

S. RETENTION AND RELAPSE

i. Mechanotherapy – special reference to stability of results with various procedures ii. Post retention analysis iii. Review of contemporary literature

T. RECENT ADVANCES

i. Use of implants ii.

Lasers iii.

Application of F.E.M.

iv. Distraction Osteogenesis

v. Lingual Orthodontics vi. Thermoplastic vacuum formed sequential removable appliances

7.4.

PART II- PAPER III: DESCRIPTIVE AND ANALYZING TYPE

QUESTION- Any content from Point No. 7.1 to 7.3 can be asked

8. PRE- CLINICAL AND CLINICAL

8.1. PRE – CLINICAL EXERCISES

8.1.1. 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 study models.**
- 7. Cephalometric tracing and various analysis and superimposition methods.**
- 8. Fixed appliance typhodont exercises.**
 - a. Training shall be imparted in Begg technique.**
 - b. Typhodont exercise**
 - i. Band making**
 - ii. Bracket positioning and placement**
 - iii. Different stages of treatment**
- 9. Clinical Photography**
- 10. Computerized imaging**

11. Preparation of surgical splints, and splints for TMJ problems

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

8.1.2. First Year

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

First 6 Months

2. Non-appliance exercises

a. BASIC WIRE BENDING

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

b. CLASPS

1.	$\frac{3}{4}$ Clasps	2
2.	Full clasps	2
3.	Triangular Clasps	2
4.	Adam's clasps – upper molar	2
5	Adams Clasp – lower molar	2
6	Adam's Clasp – Pre-molar	2
7.	Adam's Clasp – Incisor	2
8	Modification of Adam's – With Helix	2
9.	Modification of Adam's – With distal extension	2
10.	Modification of Adam's – With soldered tube	2

c. LABIAL BOWS

1.	Short labial bow (upper & lower)	1
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2.	Long labial bow (upper & lower)	1
3.	Robert's retractor	1
4.	High Labial bow-with apron spring's	1
5	Reverse loop labial bow	1
6.	Retention labial bow soldered to Adam's clasp	1
7.	Retention labial bow extending distal to second molar	1
8.	Fitted labial bow	1
9.	Split high labial bow	1

d. SPRINGS

1.	Finger spring – mesial movement	2
2.	Finger spring-distal movement	2
3.	Double cantilever spring	2
4.	Coffin spring	2
5.	T spring	2

e. CANINE RETRACTORS

1.	U loop canine retractor	2
2.	Helical canine retractor	2
3.	Palatal canine retractor	2



f. APPLIANCES- 1 EACH

1.	Hawely's retention appliance with anterior bite plane
2.	Upper Hawely's appliance with posterior bite plane
3.	Upper expansion appliance with coffin spring
4.	Upper expansion appliance with expansion screw
5.	Habit breaking appliance with tongue crib
6.	Oral screen
7.	Lip bumper
8.	Splint for Bruxism
9.	Catalans appliance
10.	Activator
11.	Bionator
12.	Frankel – FR 2 appliance
13.	Twin block
14.	Lingual arch
15.	TPA
16.	Quad helix
17.	Utility arches
18.	Pendulum appliance

g. SOLDERING EXERCISE

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

h. WELDING EXERCISES

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

i. Impression of upper and lower arches in alginate

j. Study model preparation

k. MODEL ANALYSIS

1. Impression of upper and lower dental arches

2.	PREPARATION OF STUDY MODEL – 1 And all the permanent dentition analysis to be done.
3.	PREPARATION OF STUDY MODEL – 2 And all the permanent dentition analyses to be done.
4.	PREPARATION OF STUDY MODEL – 3 And all the mixed dentition analyses to be done

I. CEPHALOMETRICS

1.	Lateral cephalogram to be traced in five different colors and super imposed to see the accuracy of tracing
2.	Steiner's analysis
3.	Down's analysis
4.	Tweed analysis
5.	Rickett's analysis
6.	Witt's Appraisal
7.	McNamara analysis
8.	Bjork analysis
9.	Cephalometrics for rthognathic surgical cases
10.	Soft tissue analysis

**m. BASIC OF CLINICAL PHOTOGRAPHY INCLUDING
DIGITAL PHOTOGRAPHY**

**n. LIGHT WIRE BENDING EXERCISE FOR THE BEGG
TECHNIQUE.**

Sl. No.	Exercise
1.	Wire bending techniques on 0.016' wire
2. Bonwill-Hawley ideal arch	
3.	Making a standard arch wire
4.	Inter maxillary hooks – Boot leg and inter maxillary type
5.	Upper and Lower arch wire Stage-I
6.	Bending a double back arch wire
7.	Bayonet bends (vertical and horizontal offsets)
8.	Stage – III arch wires
9.	Torquing auxillary (upper)
10.	Reverse Torquing (lower)
11.	Uprighting and rotating spring

o. TYPHODONT EXERCISES: (BEGG'S TECH.)

Sl. No	Exercise
1.	Teeth setting in Class II division I malocclusion with maxillary anterior proclination and mandibular anterior crowding.
2.	Band pinching, welding brackets and buccal tubes to the bands
3.	Stage – I

4.	Stage – II
5.	Pre Stage – III
6.	Stage – III

OR

TYPHODONT EXERCISES: (EDGEWISE TECH.) OPTIONAL

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.	Levelling
4.	Anchorage Preparation
5.	Canine Retraction
6.	Consolidation
7.	Detailing and finishing

3. CLINICAL WORK:

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

1. Each postgraduate student should start with a minimum of 50 cases of his / her own
2. Additionally he / she should handle a minimum of 20 transferred cases.
 - i. Removable active appliances
 - ii. Class-I malocclusion with crowding
 - iii. Class-I malocclusion with bi-maxillary protrusion
 - iv. Class-II division - 1
 - v. Class – II division – 2.
 - vi. Class-III (orthopedic, surgical orthodontic cases).
 - vii. Inter disciplinary cases
 - viii. Removable functional appliances cases like activator, bionator, functional regulator, twin block and new developments.
 - ix. Fixed functional appliances
 - x. Dento-facial orthopedic appliances like head gears, rapid maxillary expansion.
 - xi. Appliance for arch development such as molar distalization.
 - xii. Fixed mechanotherapy cases (Begg, PEA)
Retention procedures of above treated cases.
4. Field visits: To attend dental camps and to educate the masses once a year.
5. ACADEMIC WORK Refer Section III.

Apart from the above mentioned the following have to be fulfilled-

1. **Finishing and presenting the cases taken up.**
2. **Preparation of finished cases and presenting the cases (to be presented for the examination).**
3. **Book and journal review**

9. SCHEME OF EXAMINATION

9.1. THEORY EXAMINATION: Refer Section I

9.2. PRACTICAL / CLINICAL EXAMINATION: 200 Marks

9.2.1. Exercise No: 1

Functional Case: 50 Marks

Recording of construction bite for functional appliance and fabrication and delivery of the appliance.

9.2.2. Exercise No: 2

Multiband exercise: 50 Marks

1. **III stage with auxillary springs**

OR

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

9.2.3. Exercise No. 3

Display of records of the treated cases (minimum of 7 cases) with suitable supporting evidences (5 own cases + 2 transferred cases)

The details are as follows

5 own cases X 12 marks = 60 Marks

2 transferred cases X 7.5 marks = 15 Marks

Total = 75 Marks

9.2.4. Exercise No: 4

Long case discussions: 25 Marks

No	Exercise	Marks allotted	Approximate time
1.	Functional appliance	50	1 hour (Bite) 1 hour (Delivery)
2.	III stage mechanics / Bonding and arch wire fabrication	50	1 hr 30 min
3.	Display of case records (assessment of minimum of 7 cases treated by the candidate during the course)	75	1 hour
4.	Long case (Clinical case for diagnosis and treatment planning)	25	2 hour

9.3. Viva-voce: (80 Oral Examination + 20 Pedagogy)

Viva voce: as per the university rule

Pedagogy: should be presented incorporating suitable supporting evidence

10. Books Recommended:

	Title	Author	Publisher
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1	An introduction to orthodontics	Laura Mitchel	Oxford Uni.Press
2	Begg orthodontic theory and technique	Begg, Kesling	Saunders
3	Biomechanical&Esthetic Strategies in cli.ortho	Ravindra Nanda	Saunders
4	Biomechanics in clinical Orthodontics	Nanda	Saunders
5	Contemporary Orthodontics	William Proffit	Mosby
6	Contemporary treat. Of dentofacial deformity	Proffit,white,sarver	Mosby
7	Craniofacial Distraction Osteogenesis	Mikhail,Jason	Mosby

8	Dental Instruments pocket guide	Linda Boyd	Elsevier
9	Dentofacial deformity	Epker, Wolford	Mosby
10	Esthetic orthodontia & orthodontic surgery	Sarver	Mosby
11	Facial & Dental planning for ortho.& oral surg.	Arnett,McLaugh.	Mosby
12	Invisible Orthodontics	ScuzzoTakemoto	Quintessence
13	Management of TMJ disorder & Occlusion	Okeson	Mosby
14	Microimplant in orthodontics	Jae-Hyun sung	Dentos
15	Ortho.mngt.of dentition with preadjusted appli.	Bennet,Mclaugh.	Mosby

16	Ortho.mngt.of uncrowded CI-II Div.1in children	John C. bennett	Mosby
17	Orthodontic concepts and stratragies	Van der Luiden	Quintessence
18	Orthodontic principles and practice	T.M.Grabar	A.I.T.B.S
19	Orthodontic:Current principles and tech.	Grabar,Vanarsdal	Mosby
20	Orthodontics,The art and science	S.I.Bhalaji	Arya pub.house
21	Problem solving in orthodontia	Burstone,Marcote	Quintessence
22	Radiographic Cephalometry	Alexander,Jacob	Quintessence

23	Removable Orthodontic appliances	Isaacson, muir	Elsevier
24	Risk Management in Orthodontics	Graber, Athana.	Quintessence
25	Systemised ortho. Treatment mechanics	M.B.T.	Mosby
26	Textbook of Orthodontics	Bishara	Saunders
27	Textbook of Orthodontics	Gurkeerat Singh	Jaypee Bro.
28	Twin Block functional therapy	Clark, Graber	Mosby
29	The design, construction and use of removable ortho.appl.(6Th Edition)	Philip Adams	varghese

30	Textbook of Orthodontics – AIPD	M. S. Rani	AIPD
31	Oral health for orthodontic patients	Heintze, Brinkmann	quintessence
32	Clinical Orthodontics	Fisher	Saunders
33	Removable Orthodontic appliances	Graber, Neumann	Saunders

34	The Alexander discipline	Wick Alexander	Ormco
35	Atlas of advance orthodontics	Anthony D Viazia	Saunders
36	The Tip edge orthodontics	Richard Parkhouse	elseviermosby
37	The orthodontic treatment of impacted teeth	Adrian Becker	informa health care

38	Orthodontic materials thieme Stuttgart	Brantley Elides	Thieme
39	Refined Beggs for modern times	V.Pjayde	
40	Textbook of anatomy with colour atlas	I.B.singh	Jaypee Bro.
41	Human anatomy vol 3	B D chaurasia	CBS
42	Essentials of preventive and community dentistry	Soben peter	Arya(medi)
43	essential pathology for dental students	Harsh mohan	jaypee Bro.
44	Human embryology	I.B.singh	Macmillan
45	Biochemistry	U. Sathya narayan	Books and

			Allied
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46	Anatomy for dental students	Zargar	CBSPD
47	Textbook of human physiology for dental students	Indukhurana	Elsevier
48	Dental materials	Philip Adams	Anusavice
49	Orthodontic prep. Manual	Prem kumar	Elsevier
50	Essentials of Orthodontic Bomechanics	VP Jayade	Liberal Traders
51	State and Art of Orthodontics	Hugo Trevesi	Mosby, Elsevier
52	Essential Orthodontics	Thailander	Willey Black Well
53	Digital planning and custom orthodontic treatment	k. Itero Breuning	Willey Black Well

54	Manual of Wire Bending	EichiroXakajima	Quintessence Book
55	Orthodontic Bracket Placement and Debonding	Haris Khan	Quintessence Book
56	Orhtodontics in the vertical dimension – A case based review	Thomas Southard	E Willey Black Well

BRANCH VI

ORAL AND MAXILLOFACIAL PATHOLOGY AND ORAL MICROBIOLOGY

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

1. AIM:

- To prepare and train dental graduates for teaching and to ensure higher competence in both general and special areas of Oral Pathology and Microbiology. They are trained to prepare their presentations by searching and incorporating related highest level of evidences.**
- To prepare a candidate for research and clinical abilities including prevention of various oral and maxillofacial lesions. This is undertaken through problem based learning. The students are trained to search for gaps in research, formulate a research hypothesis and conduct research. They are also formulate a clinical problem and search for related high level of evidences and come to diagnosis.**

2. 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 peri-oral tissues, to carry out routine diagnostic procedures including hematological, cytological, microbiological, immunological and molecular 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, incorporating different levels of evidences as required.
- He/she is expected to present scientific data pertaining to the field, in conferences both as poster and verbal presentations and or take part in group discussions and be able to critically appraise the literature evidences and discuss its merit and demerits.

Outcomes: At the end of the course the Postgraduate student should be able to examine the patients, investigate the patient systemically, analyze the investigation results, radiology, diagnose the ailment, plan a treatment, communicate it with the patient and execute it, understand the prevalence and prevention of diseases of craniomandibular system, 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, interact with other speciality including medical speciality congenital defects, temporo-mandibular joint syndromes, esthetics, implant supported prosthetics and problems of psychogenic origin, carry out appropriate treatment at higher level of knowledge, training and practice skills currently available in the specialty, identify target diseases and awareness amongst the population.

3. KNOWLEDGE

- Evidence base knowledge is incorporated in routine diagnostic and histopathological studies of general and oral pathology by means of standard searching strategy.
- The candidate should possess knowledge of applied basic sciences including human anatomy, embryology, particularly of head and neck, Physiology & Biochemistry, Pathology and Microbiology, Virology, Health and Diseases Nutrition, Behavioral science, age changes, genetics, Immunology, Congenital defects and syndrome and Anthropology, Bio-medical and Biological Principle.
- Ability to diagnose and plan treatment incorporating relevant available evidences before coming to final diagnosis.
- Ability to read and interpret and discuss a histopathological slide using currently available best evidences.
- Should have updated essential knowledge of applying ethics, laws and Jurisprudence in forensic odontology.
- Identify cases, which are outside the area of speciality / competence and refer those to appropriate speciality.
- Should attend continuing education programs, seminars and conferences related to speciality, thus updating himself.
- Should be competent enough to guide his/her team, colleagues and other students.
- Should be able to use information technology tools and carry out research both basic and clinical, with the aims of publishing his/her work and presenting his/her work at various scientific forums.

- Should have essential knowledge of personal hygiene, infection control, prevention of cross infection and safe disposal waste, keeping in view the risks of transmission of Hepatitis and HIV.
- Should have a sound knowledge for application of pharmacology. Effects of drugs on oral tissue and systems of body and for medically compromised patients.
- Theoretical, Clinical and practical knowledge of all oro-facial lesions, diagnostic procedures pertaining to them and latest information of imaging modules and recent advances in treatment modalities along with the ability to relate and incorporate appropriate levels of evidences in all settings.

4. SKILLS:

- The candidate should be able to examine the patients thoroughly, record history according to prescribed protocols and after appraising evidences of highest levels, be able to suggest necessary investigations keeping in consideration patients' needs.
- Should be able to understand and critically appraise the prevalence and prevention of diseases of oral and maxillofacial region.
- The candidate should be able to interact and discuss the relevant cases with other specialists quoting appropriate literature.
- Should be able to demonstrate the preclinical and clinical competence necessary using prescribed protocols and apply relevant evidences wherever necessary.

- Identify target diseases and be able to create awareness amongst the population, using demonstration tools and different levels of evidences
- Three important skills need to be imparted--
 - Diagnostic skill in recognition of oral and maxillofacial lesions and their management as per protocols.
 - Research skills including critically appraisals in handling scientific problems pertaining to oral treatment.
 - Clinical skill with problem based learning and didactic skills along with incorporating evidences in encouraging younger doctors to attain learning objectives.

5. ATTITUDES :

- Adopt ethical principles in Oral Pathology practice. Professional honesty and integrity are to be fostered. Patient centric treatment to be delivered irrespective of social status, caste, creed or region of patient.
- Willing to share knowledge and clinical experience with professional colleagues.
- Willing to adopt new methods and techniques from time to time based on scientific research, which is in patient's best interest.
- Respect patient's rights and privileges including patient's right to information and right to seek second opinion.
- The positive mental attitude and the persistence of continued learning need to be inculcated.

6. COMMUNICATIVE ABILITIES:

- Develop communication skills, in particular, to explain treatment option with relevant available evidences in management.
- Provide leadership and get the best out of his/her group in a congenial working atmosphere.
- Should be able to communicate in simple understandable language with the patient to explain the principles of Oral Medicine to the patient. He should be able to guide and counsel the patient with regard to various treatment modalities available.
- Develop the ability to communicate with professional colleagues through various media like internet, e-mail, video conference and etc. to render the best possible treatment.

7. SYLLABUS DISTRIBUTION:

7.1. PART I: PAPER-I - APPLIED BASIC SCIENCES:

A. BIO-STATISTICS & RESEARCH METHODOLOGY

- i. Introduction to Bio-Statistics:
- ii. Scope and need for statistical application to biological data.
- iii. Definition of selected terms iv. Methods of collection data.
- v. Research methodology

B. APPLIED GROSS ANATOMY OF HEAD & NECK INCLUDING HISTOLOGY

- i. Temporo-mandibular Joint ii.
- Muscles of mastication iii. Tongue

iv. Salivary glands

v. Maxillary sinus vi. Jaw muscles & facial muscles vii.

Nerve-supply, blood supply, lymphatic & venous drainage viii.

Trigeminal & facial nerve

**-Embryology: Development of face, palate, mandible,
maxilla & tongue.**

C. CELL BIOLOGY

i. Detailed study of structure and function of the mammalian

cell ii. Detailed consideration of intercellular junction iii. Cell

cycle and cell division iv. Cell cycle regulators

v. Cell to cell and vi. Cell-extra cellular matrix

interactions.

D. GENERAL HISTOLOGY

i. Light microscopic and electron microscopic

considerations ii. Histology of epithelial cells including

glands iii. Histology of general and specific connective

tissue including

- Bone**
- Hematopoietic system**
- Lymphatic system**
- Muscle and Nerve tissue**
- Digestive system with special reference to**
 - Stomach, Intestine, Liver, Pancreas**
 - Urinary system including kidney etc.**
 - Endocrinal system including thyroid.**

E. APPLIED PHYSIOLOGY (GENERAL& ORAL)

- i. Saliva ii. Mastication,
Deglutition, Taste iii. Wound healing
- iv. Vitamins
- v. Hormones
- vi. Blood & its constituents vii. Biochemistry
(General) viii. Chemistry & Metabolism of
carbohydrates ix. Lipids and Proteins.
- x. Lipids and Proteins- Biological oxidation xi. Various
techniques applied including - cell filtration, centrifugation,
electrophoresis, spectrophotometer and radioactive
techniques.

F. APPLIED GENERAL PATHOLOGY

- i. Pathogenic mechanism at molecular level ii. Cellular
changes following injury- Degeneration,
Necrosis & Repair iii. Inflammation &
Chemical mediators iv. Oedema, thrombosis
& embolism
- v. Hemorrhage& shock vi. Blood
dyscrasias vii. Carcinogenesis &
Neoplasia

G. GENERAL MICROBIOLOGY

- i. Definition of various types of infections ii.
Routes of infection and spread iii.
Sterilization iv. Disinfection & Antiseptics

- v. **Bacteriology of Staphylococci, Streptococci, Corynebacterium diphtheria, Mycobacteria, Clostridia, Bacteroides & Fusobacteria, Actinomycetes & Spirochetes** vi.

Mycology

- **General properties of fungi**
- **Classification based on disease**
- **Superficial, subcutaneous & deep opportunistic infections**
- **General principles of fungal infections**
- **Rapid diagnosis**
- **Method of collection of sample and examination of fungi** vii.

Virology

- **General properties**
 - **Broad classification of viruses**
 - **Pathogenesis**
 - **Pathology of viral infections-**
 - **Herpes virus**
 - **Hepatitis Virus**
 - **Human Immunodeficiency Virus (H.I.V)** viii.
- Parasitology ix. Basic Immunology in details**
- **Cell mediated and Humoral**

- **Antigen- antibody reactions**
- **Graft versus host reaction, auto immunity.**
- x. Study of the oral, dental and Para-oral tissues**
 - **Ultrastructural, molecular and biochemical aspects**
 - **Development of oral and Para-oral tissues including detailed aspects of tooth**
 - **Dental hard tissues formation**
 - **Study of morphology of permanent and deciduous teeth.**
 - **Applied aspects - influence of hormones, nutrients etc on growth, development and structure of oral soft and hard tissues and para- oral tissues.**

H. BASIC MOLECULAR BIOLOGY AND GENETICS

- i. Detailed molecular aspects of DNA, RNA, Golgi apparatus, endoplasmic reticulum and other intracellular organelles, transcription and transplantation, plasmids and molecular biology techniques.**
- ii. Experimental aspects include: DNA extraction, PCR, Western blotting**
- iii.**

Nutrition & Dietetics

- **General principles,**
- **Balanced diet,**
- **Effect of dietary deficiency,**
- **Protein energy malnutrition,**

- Recommended dietary allowance
- Fluid and electrolyte balance in maintaining homeostasis.

I. BASIC HISTOPATHOLOGY TECHNIQUES AND MICROSCOPY

- i. Theoretical aspects of microscopy light and various other types including microscopy.
- ii. Methods of tissue preparation for - iii. Ground and decalcified sections, iv. Light microscopy and
- v. Electron microscopy.
- vi. Routine staining procedures and Theory of staining

J. ETHICS IN DENTISTRY (Refer section V)

7.2. PART II: PAPER I- ORAL PATHOLOGY, ORAL MICROBIOLOGY & IMMUNOLOGY & FORENSIC ODONTOLOGY

A. BASIC ORAL PATHOLOGY

- i. Development Disturbances of Oral and Para oral Structures
- ii. Dental Caries
- iii. Pulp & Periapical Pathology & Osteomyelitis
- iv. Periodontal Diseases
- v. Salivary Gland Diseases
- vi. Cysts of the Oral & Para oral Region
- vii. Traumatic, Reactive & Regressive lesions of Oral

Cavity.

viii. Pigmentation of Oral & Para oral region &

Discoloration of teeth.

ix. Microbial infections of Oral Soft tissues.

x. Diseases of the Bone and TMJ Joint xi. Systemic

Diseases involving Oral Cavity xii. Mucocutaneous Lesions. xiii.

Diseases of the Nerves.

xiv. Diseases of Maxillary sinus. B. ORAL

ONCOLOGY:

i. Precancerous Lesions and Conditions.

ii. Benign and Malignant Tumors of the Oral Cavity.

C. BIOPSY: TYPES OF BIOPSY

D. PRINCIPLES OF BASIC FORENSIC ODONTOLOGY

i. Introduction, definition, aims & scope.

ii. Sex and ethnic differences in both morphology and histological age estimation. Determination of sex and race groups from buccal mucosa/saliva. Denial DNA methods

iii. Legal procedures like inquest medico-legal evidences, and post-mortem examinations of violence around mouth and neck.

iv. Identification of deceased individual- Mass disaster. Bite marks, rugae pattern and lip prints.

v. Dental importance of poisons and corrosives, overview of Forensic Medicine and Toxicology.

- vi. Sex determination by the use of skull and mandible.
- vii. Identification of person by rugae patterning, bite mark analysis (Bite marks recording swabbing techniques and various types of overlays production and comparison)
- viii. Lip prints recording and analysis
- ix.

Age estimation: Schour arc Maisler's method,

- x. Demerjian's method
- xi. Gustafson's method
- xii. Dentin translucency, Cemental incremental lines, Kvaal and associates radiographic method.

E. ORAL MICROBIOLOGY AND IMMUNOLOGY

- i. Detailed structure of Oral bacteria with molecular and biochemical considerations,
- ii. Microbial genetics and
- iii. Immunologic mechanisms.
- iv. Detailed study of infections of oral and para-oral regions with emphasis on tropical diseases

7.3. PART II: PAPER II - LABORATORY TECHNIQUES & DIAGNOSIS & ORAL ONCOLOGY

- A. Routine hematological tests and clinical significance of the same.
- B. Biopsy procedures for oral lesions.
- C. Processing of tissues for paraffin sections.
- D. Microtome and principles of microtomy.
- E. Routine stains, principles and theories of staining techniques
- F. Microscope principles and theories of microscopy

- G. Light microscopy and various other types including electron microscopy
- H. Methods of tissue preparation for ground sections, decalcified sections.
- I. Special stains and staining techniques for different tissues
- J. Immunohistochemistry
- K. Preparation of frozen sections and cytological smears.
- L. Benign and malignant tumors of oral and paraoral tissues
- M. Tumor markers, tumor immunology

7.4. PART II: PAPER III – DESCRIPTIVE &ANALYZING TYPE QUESTION Any contents from 7.1 to 7.3 can be included in essay

8. YEARLY PRACTICAL / CLINICAL SCHEDULES:

8.1 FIRST YEAR

8.1.1. PRE-CLINICAL/PRACTICAL EXERCISES

- i. Carvings of permanent teeth in wax ii. Identification of Deciduous and Permanent teeth iii. Age estimations by pattern of teeth eruption from plaster casts of different age groups. iv. Ground Sections & Decalcified Sections
- v. Tissue processing & Staining, Sectioning vi. Slide discussions: oral & dental histology vii. Maintaining Record book &Log Book

8.2 SECOND YEAR

8.2.1. PRE-CLINICAL/PRACTICAL EXERCISES

- i. Ground Sections & Decalcified Sections
- ii. Tissue processing & Staining, Sectioning
- iii. Slide discussions: oral & dental histology (Evidence based Slide Discussions: evidence based slide discussions are included in the curriculum of P.G. will discuss the slides as to improve the quality of pathological diagnostic work. P.G. students. And as support into that discussion students will submit evidences in support of that.)
- iv. Maintaining Record book & Log Book
- v. Case histories and clinico-pathology discussions
- vi. One week postings regarding cryostat frozen sections along with their routine postings and postings in oral surgery and oral diagnosis (GCRI).

8.3 THIRD YEAR

- A. Posting – animal experimentation
- B. Reporting of slides
- C. Clinico-pathology discussions **ACADEMIC**

ACTIVITY: Refer Section III

Clinical/Practical work quota is as follows

Sr. No.	Particulars	I MDS	II MDS	III MDS
1.	Hematologic Posting	20	10	10
	a. Blood Sugar estimation	20	10	10

	b. Bleeding time, clotting time	20	10	10
	c. DLC, TLC, Hb	20	10	10
2.	Cytology	30	30	30
3.	Carvings	14	-	-
4.	Ground sections	10	-	-
5.	Decalcified sections	10	-	-
6.	Grossing of tissues	50 (individual)	20 (individu al)	20 (individu al)

7.	Histopathology slide examination with Diagrams	Total 125	175	450 (report writing)
	a. General Histology	50	-	-
	b. Oral Histology	75	-	-
	c. Oral Pathology	-	100	-
	d. PG Slides	-	50	150
	e. Histopathology diagnosis			

		-	25	300
8.	Microbiology			
	a. Culturing	5	10	-
	b. ZN staining	5	10	10
	c. Gram staining	10	20	20
9.	Carving Demonstrations to first Year BDS Students & Slides Discussions	Entire year	-	-
10.	Slides Discussions 2 nd and 3 rd Year BDS Students		Entire year	Entire year
11.	Lectures for BDS Students	-	5	5
12.	Special Staining including	5	5	5
	IHC (Other than Thesis)			
13.	Screening/Camps	1	1	-

9. SCHEME OF EXAMINATION:

- A. THEORY – Refer section I, Point 17**
- B. PRACTICAL / CLINICAL -200 MARKS**

All the practical exercises including clinical examination are to be done according to the prescribed protocols-

i. Case presentation – 30 marks ii. Long case – 20 marks
iii. Short case 10 marks iv. Clinical hematology (any two investigations) – 20 marks

v. Smear presentations – 20 marks

Cytology or microbial smear and staining vi. Paraffin sectioning and H & E Staining – 30 marks vii. Histopathology slide discussion – 100 marks

C. VIVA VOCE – 100 MARKS

i. Viva-voce examination: 80 marks ii.

Pedagogy exercise: 20 marks

10. RECOMMENDED BOOKS

Sr No	Title name	Author	Publishing house	Edition
1	Oral Histology Development, Structure, And Function	Ten Cate, A.P	Harcourt India Pvt Ltd	5th
2	Dental Anatomy Physiology & Occlusion	Ash, Major M	A.I.T.B.S Publishers & Distributors	6th
3	Essentials of Oral Histology & Embryology	Avery, James K	Elsevier	3rd

4	Lab Manual of Normal Oral Histology	Riviere Holliston L	Quintessence Publishing Co, Inc	1st
5	Dental Anatomy	Woelfel ,Julian B	Williams & Wilkins	5th
6	Oral Anatomy Histology And Embryology	Berkovitz , B.K.B.	Mosby	3rd
7	Oral Histology & Embryology	Bhaskar, S.N	Harcourt India Pvt Ltd	11th
8	Orban-S Oral Histology & Embryology	Kumar G S	Elsevier Ltd.	13th
9	Textbook of Dental & Oral Anatomy Physiology & Occlusion With Multiple Choice Question	Chandra Satish	Jaypee Brothers Medical Publishers(P)Ltd .	1st

Textbook of Dental Physiology & Anatomy	
Textbook of Oral And Maxillofacial Anatomy, Physiology And Embryology	
Textbook of Functional Dental Text And Atlas	
Textbook of Pharmacology	
Textbook of Differential Diagnosis	
Textbook of Oral And Maxillofacial Surgery	
Textbook of Pathology of Oral And Jaw	
Textbook of Oral Surgery	
Textbook of Pathology of Oral And Jaw	

Rashmi, G.S.	Jaypee Brother	1st
Prabhu, S. R.	Oxford University Press	1st
Young Barbara	Churchill Livingstone	5th
Mohan Harsh	Jaypee Brothers Medical Publishers(P)Lt d.	2003
Neville, Brad W	Elsevier	South Asian
Cawson, R A	Churchill Livingstone	7th
J.Philip Sapp	Mosby	2nd
Cawson, R A	Wright	1st
Shear Mervyn	Varghese Publishing House	3rd
Odell E.W	Chapman And Hall Medical	1st

8	Oral Pathology Clinical Pathologic Correlations	Regezi Joseph A	Saunders Elsevier	4th
9	Shafer's Textbook of Oral Pathology	Rajendran R	Elsevier	5th
10	Theory & Practice of Histological Techniques	John C Bancraft	Elsevier	5th
11	Basic Pathology	Robins	Elsevier	7th
13	Oral Pathology	Reichartphilipsen	Elsevier	1st
14	Cysts Of The Oral And Maxillofacial Regions	Shear, Mervyn	Blackwell Scientific Publication	4th
15	Oral And Maxillofacial Pathology	Marx Robert E	Quintessence Publishing Co, Inc	1st
16	Diagnostic Surgical Pathology of The Head And Neck	Gnepp, Douglas R.	Saunders Elsevier	2nd
17	Textbook of Forensic Odontology	Promod K.Dayal	Paras Publishing	1st

18	Clinical Outline of Oral Pathology	Eversole, Lewis R.	People's Medical Publishing House	4th
19	Microscopic 3e Haematology	Rozenberg Gillian	Churchill Livingstone	3rd
20	Essential Microbiology for Dentistry	Samaranayake Lakshman	Churchill Livingstone	4th
21	Textbook of Medical Laboratory Technology	Godkar Praful B.	Mumbai	3rd

BRANCH VII PUBLIC HEALTH DENTISTRY

Definition:

Public health dentistry is the science and art of preventing and controlling dental diseases and promoting dental health through organized community efforts.

1. AIM

- **To train dental graduates as to ensure higher competence in both general and special areas of public health dentistry**
- **To prepare a candidate for teaching, research and clinical abilities, including prevention, curative and rehabilitative skills with evidence- based approach.**

2. GENERAL OBJECTIVES OF THE COURSE

- **To provide comprehensive academic, research and field training programme in public health dentistry in order to enable the student achieve knowledge and skill in theoretical and field work, attitude, communicative skills and ability to research with understanding of social, cultural, educational and environmental background of the society.**
- **To ensure that the course emphasizes on acquisition of adequate knowledge and understanding of applied basic and systemic medical science, knowledge in general and particularly of head and neck.**
- **To train the postgraduate to provide comprehensive oral care for patients with competence and working knowledge with understanding of applied medical, behavioral and clinical science that are beyond the treatment skills of the general BDS graduate and MDS graduate of other specialties, to demonstrate evaluative and judgment skills in making appropriate evidence-**

based decisions regarding prevention, treatment, after care and referral to deliver comprehensive care to patients.

Outcomes:

At the end of the course the Postgraduate student should be able to take history, conduct clinical examination including all diagnostic procedures to arrive at diagnosis at the individual level and conduct survey of the community at state and national level of all conditions related to oral health to arrive at community diagnosis, plan and perform all necessary treatment, prevention and promotion of oral health at the individual and community level, plan appropriate community oral health program, conduct the program and evaluate, at the community level,

use of knowledge of epidemiology to identify causes and plan appropriate preventive and control measures, develop appropriate person power at various levels and their effective utilization, conduct survey and use appropriate methods to impart oral health education, develop ways of helping the community towards easy payment plan, and followed by evaluation for their oral health care needs, develop the planning, implementation, evaluation and administrative skills to carry out successful community oral health programs.

3. KNOWLEDGE

To teach and facilitate students to:

- Apply basic sciences knowledge regarding etiology, diagnosis and management of the prevention, promotion and treatment of all the oral conditions at the individual and community level.
- Identify social, economic, environmental and emotional determinants as evident through scientific systematic appraisal of literature, 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 evidence-based 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), generate evidence, present and publish the outcome at various scientific conferences and journals, both national and international level.

4. SKILLS:

By virtue of training, the candidate should be able to:

- 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, search and appraise evidence to arrive at the most appropriate community treatment plan.
- Plan and perform all necessary treatment, prevention and promotion of Oral Health at the individual and community level.
- Plan appropriate Community Oral Health Program, conduct the program and evaluate, at the community level.

- Ability to make use of knowledge of epidemiology to identify causes and plan appropriate preventive and control measures.
- Develop appropriate person power at various levels and their effective utilization.
- Conduct survey and use appropriate methods to impart Oral Health Education.
- Develop ways of helping the community towards easy payment plan, and followed by evaluation for their oral health care needs.
- Develop the planning, implementation, evaluation and administrative skills to carry out successful community Oral Health Programs.

5. VALUES:

To embed value in the learning process so as to enable the student to:

- Adopt ethical principles in all aspects of Community Oral Health Activities.
- To apply ethical and moral standards while carrying out epidemiological researches.
- Develop communication skills, in particular to explain the causes and prevention of oral diseases to the patient.
- Respect patient's rights and privileges including patient's right to information and right to seek a second opinion.

6. COMMUNICATIVE ABILITIES:

The learning environment must be such that the student will be able to:

- Develop communication skills, in particular, to explain prevention and promotion of oral health.
- Provide leadership and get the best out of his group in a congenial working atmosphere.
- Communicate in simple understandable language with the patient to explain the principles of health education to the patient.
- Guide and counsel the patient with regard to various treatment modalities available.
- Develop the ability to communicate with professional colleagues through various media like Internet use protocol, use of search engines, databases, email, Video-conference, and etc. to render the best possible services.

7. SYLLABUS DISTRIBUTION:

7.1 PART I PAPER I: APPLIED BASIC SCIENCES:

A. Applied Anatomy and Histology

- i. Development of face.
- ii. Brachial arches and embryology of face, palate , tongue, maxilla and mandible
- iii. Muscles of facial expression.
- iv. Muscles of mastication.
- v. Temporo Mandibular Joint.
- vi. Salivary glands.
- vii. Tongue.
- viii. Hard and soft palate, Infra temporal fossa.
- ix. Paranasal air sinuses.
- x. Cranial nerves - with emphasis on trigeminal, facial, glossopharyngeal and hypoglossal nerve.
- xi. Blood supply of head and neck.
- xii. Lymphatic system of head and neck, Osteology of head and neck.
- xiii. Structure and relations of alveolar process and edentulous mouth.
- xiv. Genetics-fundamentals.
- xv. Oral Histology:

- Development of dentition, Innervation of dentin and pulp.
- Periodontium-development, histology, blood supply, nerve supply and lymphatic drainage.
- Oral mucous membrane.
- Pulp-periodontal complex.

B. Applied Physiology and Biochemistry

- i. Mastication and deglutition.
- ii. Cell
- iii. Food and nutrition.
- iv. Metabolism of carbohydrates, proteins and fats.
- v. Vitamins and minerals.

- vi. Pain pathway and its mechanism. vii. Fluid and electrolyte balance viii. Blood composition, function, clotting mechanism, erythropoiesis, ix. Blood groups and transfusions, dynamics of blood flow.
- x. Pulse and blood pressure.
- xi. Cardiovascular system – homeostasis, heart sounds.
- xii. Respiratory system- normal physiology and variations in health and diseases asphyxia and artificial respiration.
- xiii. Endocrinology: thyroid, parathyroid, adrenals, pituitary, pancreas and sex hormones and pregnancy, endocrine regulation of blood sugar.

C. Applied Pathology

- i. Inflammation and chemical mediators ii. Pathogenic mechanism at molecular level. iii. Cellular changes following injury.
- iv. Histopathology and pathogenesis of dental caries, periodontal disease, Oral mucosa, malignancies, HIV.
- v. Oedema, thrombosis and embolism.
- vi. Hemorrhage and shock. vii. Neoplasia and metastasis. viii. Blood disorders. ix. Propagation of dental infection

D. Microbiology

- i. Microbial flora of oral cavity.
- ii. Bacteriology of dental caries and periodontal disease
- iii. Methods of sterilization. iv. Virology of HIV, herpes and hepatitis.
- v. Basic immunology - basic concepts of immune system in human body at cellular, humoral level, antigen-antibody system, vi. Hypersensitivity.
- vii. Autoimmune diseases

E. Applied Pharmacology

- i. Definitions, scope, relations with other branches, mode of action, bioassay, standardization, pharmacodynamics, pharmacokinetics. ii. Chemotherapy of bacterial and viral infections. iii. Local anesthesia. iv. Analgesics and anti-inflammatory drugs.
- v. Emergency drugs in dental practice. vi. Vitamins and haemopoietic drugs. vii. Hypnotics and tranquillizers and antipyretics.
- viii. Important hormones ACTH, cortisone, insulin, oral antidiabetics.
- ix. Drug addiction and tolerance.
- x. Important pharmacological agents in connection with autonomic nervous system, adrenaline, noradrenaline, atropine.
- xi. Antihypertensive drugs.

F. Oral Pathology

i. Histopathology and pathogenesis of dental caries, periodontal disease and oral mucosal lesions.

ii. Disease affecting oral mucosa, teeth supporting tissues and jaws. iii. Developmental disorders of oral and maxillafacial complex

G. PHYSICAL AND SOCIAL ANTHROPOLOGY:

i. Introduction and definitions, ii.

Evolution of human race iii. Various anthropological studies.

iv. Appreciation of the biological basis of health and disease.

H. Research Methodology

i. Research methodology- definitions, types of research, designing protocol for research, objectivity in methodology, quantification, records and analysis, Quality of research, evidence hierarchy and levels of evidence. ii. Biostatistics: introduction, applications, uses, and limitations, 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, rail and calibration.

I. Computers and Health informatics : Basic understanding

of computers and its components, operating software(windows),Microsoft office, preparation of teaching materials like slides, project, multimedia knowledge, searching and retrieval of evidence .Basic operative skills in analysis of data and knowledge of multimedia.

J. Ethics in dentistry (Refer section V)

MDS Internal examination:

For 1st year MDS Internal Practical exam, introduction of Journal article Comprehension and interpretation exercise and Library Dissertation discussion, the scheme of practical marks for 1st MDS Internal Practical Exam proposed is as follows:

Comprehensive Long Case	Indices	Journal article comprehension and interpretation	Library Dissertation discussion	Grand Viva	Total
60 Marks	60 Marks	50 Marks	50 Marks	80 Marks	300 Marks

7.2 PART II PAPER I: PUBLIC HEALTH

A. Public Health

- i. Introduction to Public Health.
- ii. Definition, concepts and philosophy of dental health.
- iii. History of public health in India and at international level.
- iv. Terminologies used in public health.
- v. Health
 - Definition, concepts and philosophy of health.

- Health indicators.
- Community and its characteristics and relation to health. vi. Disease
- Definition, concepts.
- Multifactorial causation, natural history, risk factors.
- Disease control, eradication, evaluation and causation, infection of specific diseases.
- Vaccines and immunization.

B. General Epidemiology

- i. Definition, aims and general principles, Multi factorial causation, natural history, risk factors.
- ii. Methods in epidemiology, descriptive, analytical, experimental and classic epidemiology of specific diseases. iii.

Uses of epidemiology. iv.

Duties of epidemiologist.

v. General idea of method of investigating chronic diseases mostly non-infectious in \nature, vi. Epidemic, endemic, and pandemic.

vii. Ethical concerns, challenges and dilemma in research viii.

New knowledge regarding ethical subjects.

- ix. Screening of diseases and standard procedures. C.

Public Health Education:

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

D. Environment and Health

- i. Impact of important components of the environment on health.
 - ii. Principles and methods of identification, evaluation and control of iii. such health Hazards. iv. Pollution of air, water, soil, noise and food.
 - v. Water purification and international standards of water.
 - vi. Domestic industrial toxins and ionizing radiation.
 - vii. Occupational hazards.
 - viii. Waste disposal- various methods and sanitation.
- E. Public Health Practice and Administration System in India**
- F. Ethics and Jurisprudence:**
- i. Basic principles of law.
 - ii. Contract laws- dentist - patient relationships and Legal forms of practice.
 - iii. Dental malpractice. iv. Person identification through dentistry.
 - v. Legal protection for practicing dentist.
 - vi. Consumer Protection Act.
- G. Nutrition in Public Health**
- i. Study of science of nutrition and its application. ii. Nutritional surveys and their evaluation.

iii. Influence of nutrition and diet on general and oral health (dental caries, periodontal disease and oral cancer). iv. Dietary constituents and cariogenicity.

v. Guidelines for nutrition.

H. Behavioral Sciences

i. Definition and introduction.

ii. Sociology: social class, social group, family types, communities, social relationships And culture.

iii. Psychology: definition, development of child psychology, anxiety, and phobia iv. Intelligence learning, motivation, personalities, fear dentist patient relationship, Modeling and experience

I. Hospital Administration

i. Departmental Maintenance And Organizational Structure.

ii. Types of Practice. iii. Biomedical Waste Management

J. Health Care Delivery System

i. International oral health care delivery systems – Review.

ii. Central and state system in general and oral health care delivery system. iii. National oral health policy. iv. National health programme.

v. Primary health care - concepts, oral health in

Primary Health Center and its implications. vi. National
and international health organizations. vii. Dentists Act
1928, Dental council of India,

Ethics, Indian Dental Association. viii. Role of W.H.O.
and Voluntary organizations in
Health Care for the Community.

K. Oral Biology And Genetics

i. A Detailed Study Of cell structure ii. Introduction to
genetics, gene structure, DNA,

RNA

iii. Genetic counseling, gene typing iv. Genetic approaches in
the study of oral;
disorders

v. Genetic engineering-answer to current health problems.

7.3 PART II - PAPER II: DENTAL PUBLIC HEALTH

A. Dental Public Health

i. History ii. Definition and concepts of dental public health

iii. Differences between clinical and community
dentistry..

iv. Critical review of current practice.

v. Dental problems of specific population groups such as
chronically ill, handicapped and

institutionalized group.

A. Epidemiology Of Oral Diseases And Conditions

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

B. Oral Survey Procedures

- i. Planning**
- ii. Implementation**
- iii. WHO basic oral health methods 1997,2013**
- iv. Indices for dental diseases and conditions**
- v. Evaluation**

C. Delivery of Dental Care

- i. Dental person power - dental auxiliaries.**
- ii. Dentist- population ratio. iii. Public dental care programs.**
- iv. School dental health programs- Incremental and comprehensive dental care.**
- v. Private and group practice.**
- vi. Oral health policy- National and international policy.**

D. Payment for Dental Care

- i. Prepayment**
- ii. Post-payment**
- iii. Reimbursement plans**
- iv. Voluntary agencies**
- v. Health insurance**

E. Evaluation of Quality of Dental care

- i. Problems in public and private oral health care system program.**
- ii. Evaluation of quality of services and governmental control.**

F. Preventive Dentistry

- i. Levels of prevention.**

- ii. Preventive oral health programs screening, health education and motivation.
- iii. Prevention of dental diseases-dental caries, periodontal diseases, oral cancer, malocclusion and Dentofacial anomalies
- iv. Role of dentist in prevention of oral diseases at individual and community level
- v. Fluoride
 - History
 - Mechanism of action
 - Metabolism
 - Fluoride toxicity
 - Fluorosis
 - Systemic and topical Fluorides
 - Update regarding Fluorides
 - Epidemiological studies
 - Defluoridation techniques
- vi. Plaque control measures
- Health Education -Personal oral hygiene.
 - Mechanical plaque control.
 - Chemical plaque control.
 - Dentifrices, mouth rinses.
- vii. Pit and fissure sealant, Atraumatic Restorative Treatment (ART)
- viii. Preventive oral health care for medically compromised individual. ix. Update on recent preventive modalities
- x. Caries vaccines
- xi. Diet counseling

G. Practice Management

- i. Definition
- ii. Principles of management of dental practice and types
- iii. Organization and administration of dental practice
- iv. Ethical and legal issues in dental practice

7.4 PART II - PAPER III: DESCRIPTIVE AND ANALYSING TYPE QUESTION

Any contents from 7.1 to 7.3 can be included

8. Academic and Practical/ Clinical Schedule:

A. Academic work: Refer Section III, page

B. Clinical training

i. I MDS

-Learning different criteria and instruments used in various oral indices (5 cases each)—

- Oral Hygiene Index-Greene and Vermillion.
- Oral Hygiene Index – Simplified ○DMF-DMF(T), DMF (S) ○deft/s
- Fluorosis Indices - Dean's Fluorosis Index, Tooth Surface Index for Fluorosis, Thylstrup and Fejerskov Index ○Community Periodontal Index of Treatment Needs (CPITN) ○Plaque Index-Silness and Loe○Recording WHO Oral Health Assessment Form -1997 ○Carrying out treatment (under comprehensive oral health care,-10 cases)

-FIELD PROGRAMME

- Carrying out school dental health education
- School based preventive programs ○Topical fluoride application- sodium fluoride, stannous fluoride, acidulated phosphate fluoride, fluoride varnishes, fluoride mouth rinses.
- Pit and fissure sealants,
- Minimal invasive treatment-preventive resin restorations(PRR), atraumatic restorative treatment.
- Organizing and conducting dental camps both in rural and urban areas.
- Visit to slum water treatment plant sewage treatment plant and milk dairy, public health institute, anti tobacco cell, primary health centre and submitting reports.
- In addition the post graduate shall assist and guide the undergraduate students in their clinical and field programmes.

ii. II MDS

- Clinical assessment of patient

- Learning different criteria and instruments used in various oral indices
 - Oral Hygiene Index-Greene and Vermillion
 - Oral Hygiene Index – Simplified
 - DMF-DMF(T), DMF (S)
 - deft/s
 - Fluorosis Indices - Dean's Fluorosis Index, Tooth Surface Index for Fluorosis, Thylstrup and Fejerskov Index
 - Community Periodontal Index of Treatment Needs (CPITN)
 - Plaque Index-Silness and Loe
 - Recording WHO Oral Health Assessment Form -1997/2013
 - Carrying out treatment (under comprehensive oral health care,-10 cases)

-FIELD PROGRAMME AND CONTINUATION OF FIELD PROGRAMMES

- Carrying out school dental health education.
- School based preventive programs
 - Topical fluoride application in clinics- sodium fluoride, stannous fluoride, acidulated phosphate fluoride, fluoride varnishes, fluoride mouth rinses.
 - Pit and fissure sealants in clinics,
 - Minimal invasive treatment-preventive resin restorations (PRR), atraumatic restorative treatment.
 - Organizing and conducting dental camps both in rural and urban areas.
- Assessing oral health status of various target groups like school children, expectant mothers, handicapped, under privileged and geriatric populations. Planning dental man power and financing dental health care of the above group.
- Application of the following preventive measures in the clinic-10 cases each, Topical fluoride application sodium fluoride, stannous fluoride, acidulated phosphate fluoride, fluoride varnishes, Pit and fissure sealants.
- Planning total health care for school children in an adopted school
 - Periodic surveying of school children
 - Incremental dental care
 - Comprehensive dental care
 - Organizing and conducting community oral health surveys for all oral conditions-3 surveys

- In addition the post graduate shall assist and guide the undergraduate students in their clinical and field programs. ○Caries Risk Assessment as part of planning Preventive

Procedures in target group or patient.

iii. III MDS

- Clinical assessment of patient
- Learning different criteria and instruments used in various oral indices-5 cases each
- Oral Hygiene Index-Greene and Vermillion. ○Oral Hygiene Index – Simplified. ○DMF-DMF(T), DMF (S). ○deft/s.
- Fluorosis Indices - Dean's Fluorosis Index, Tooth Surface Index for Fluorosis, Thylstrup and Fejerskov Index.
- Community Periodontal Index of Treatment Needs (CPITN). ○Plaque Index-Silness and Loe.
- Recording WHO Oral Health Assessment Form -1997/2013 ○Carrying out treatment (under comprehensive oral health care,10 cases)
- Carrying out school dental health education. -School based preventive programs
- Topical fluoride application- sodium fluoride, stannous fluoride, acidulated phosphate fluoride, fluoride varnishes, fluoride mouth rinses.
- Pit and fissure sealants ○Minimal invasive treatment-preventive resin restorations (PRR), atraumatic restorative treatment.
- To take lecture classes (Minimum2) for under graduate students in order to learn teaching methods(pedagogy) on assigned topics.
- Exercise on solving 10 community health problems
- Application of the following preventive measures in clinic-10 cases each
- Topical fluoride application- sodium fluoride, stannous fluoride, acidulated phosphate fluoride, fluoride varnishes, fluoride mouth rinses.
 - Pit and fissure sealants,
- Dental health education training of school teachers, social workers, health workers, posting at dental satellite centre/nodal centers.
- Caries Risk Assessment as part of planning Preventive

Procedures in target group or patient.

Minimum Requirements for each student:

1. Epidemiological indices-55 per year
2. Comprehensive cases- 10 per year
3. Caries Risk Assessment– 05

9. SCHEME OF EXAMINATIONS

A. THEORY (Refer section I point 17)

B. PRACTICALS: (OUT OF 200 MARKS)

Detailed case history and comprehensive treatment planning with evidence-based substantiation for primary preventive interventions
(50 MARKS)

Short case history/preventive procedure (According to evidence- based protocol) (50 MARKS)

Critical evaluation of journal article (with critical appraisal of evidence check-list) (50 MARKS)

Community oriented problem solving exercise (with Evidence- based solutions) (50 MARKS)

C. VIVA VICE & PEDAGOGY (100 MARKS)

Pedagogue (Evidence based Pedagogy exercise) (20 MARKS)

Viva- voce (80 MARKS): as per the university rules

10. LIST OF RECOMMENDED BOOKS

1. Dentistry dental practice and the community. Stiffler
2. Primary preventive dentistry. Harroson
3. Community dental health. Jong
4. Principles of dental public health. Dunning
5. Dental public health; An introduction to community dentistry, Slack

6. Fluorides in dentistry. Fejerskov
7. Fluorides and dental caries. Tiwari.
8. Dental health education. WHO
9. Text book of preventive and social medicine. Mahajan
10. Text book of preventive and social medicine. Park
11. Metabolism and toxicity of fluoride. Whitford
12. Epidemiology, biostatistics and preventive dentistry. Jekel.
13. Introduction to oral preventive medicine. Muhlman.
14. Text book of preventive medicine. Stallard
15. Handbook of dental jurisprudence and risk management. Pollack
16. Fluorides and human health. WHO
17. Appropriate use of fluorides for human health. Murray
18. Community health. Green
19. Prevention of dental diseases. Murray.
20. Health research design and methodology. Okolo
21. Oxford text book of public health. Holand
22. Guidelines for drinking water quality
23. Dentistry dental practice and community. Burt and eklund
24. Biostatistics; methods and techniques. Mahajan.
25. Laws and ethics in dentistry. Shear
26. Epidemiology, biostatistics and preventive medicine. Katz
27. Fluorides in caries prevention. Murray.
28. Preventive dentistry. Forrest
29. Planning oral health services. WHO
30. Community oral health. Pine
31. Oral health survey; Basic methods. WHO
32. Essentials of preventive and community dentistry. Soben Peter
33. Text book of community dentistry. Joseph John.
34. Text book of preventive and community dentistry. Hiremath SS

BRANCH VIII

PEDIATRIC AND PREVENTIVE DENTISTRY

DEFINITION:

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

1.AIMS

- **To train dental graduates as to ensure higher competence in both general and special areas of Paedodontics by means of gathering & implementing highest levels of available evidence.**
- **To prepare a candidate for teaching, research and clinical abilities, including prevention and after care in Paedodontics by means of gathering & implementing highest levels of available evidence.**

2.OBJECTIVES:

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

- **Create not only a good oral health in the child but also a good citizen tomorrow.**
- **Instill a positive attitude and behavior in children.**
- **Understand the principles of prevention and preventive dentistry right from birth to adolescence.**
- **Prevent and intercept developing malocclusion.**
- **Able to gather and incorporate the highest levels of evidence pertaining to any case he/she comes across.**

Outcomes: at the end of the course the Postgraduate students should be able to 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, be competent to treat dental diseases which are occurring in child patient, manage to repair and restore the lost / tooth structure to maintain harmony between both hard and soft tissues of the oral cavity, manage the disabled children effectively and efficiently, tailored to the needs of individual requirement and conditions, to acquire skills in managing efficiently life threatening conditions with emphasis on basic life support measure.

3. KNOWLEDGE

- The candidate should possess knowledge of applied basic and systemic medical sciences on human anatomy, embryology, histology, applied in general and particularly to head and neck, Physiology & Biochemistry, Pathology and Microbiology, Virology, Health and Diseases Nutrition, Behavioral science, age changes, genetics, Immunology, Congenital defects and syndrome and Anthropology, Bioengineering, Bio-medical and Biological Principle and applications to Dental material science.
- Ability to diagnose and plan treatment for patients requiring a Paedodontic therapy using the latest & best feasible evidence.
- Ability to read and interpret a radiograph and other investigations for the purpose of diagnosis and treatment plan.
- Should have essential knowledge on ethics, laws and Jurisprudence, forensic odontology and gathering the best evidence in Pedodontics.
- General health conditions and emergency as related to Paedodontic treatment.
- Identify cases, which are outside the area of his/her specialty/ competence and refer those to appropriate specialists.

- Advice regarding case management involving surgical, interim treatment etc.
- To have acquired adequate knowledge and understanding of applied basic and systematic medical science knowledge in general and particular to head and neck.
- Should attend continuing education programs, seminars and conferences related to Paedodontics, thus updating himself.
- Teach and guide his/her team, colleague and other students based on evidence based dentistry.
- 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 with best possible evidence.
- Should have essential knowledge of personal hygiene, infection control, prevention of cross infection and safe disposal of waste, keeping in view the risks of transmission of Hepatitis and HIV.
- Should have the ability to plan and establish Paedodontics clinic/hospital teaching department and practice management.
- Should have a sound knowledge for evidence based application of pharmacology effects of drugs on oral tissue and systems of body and for medically compromised patients.
- The postgraduates will be able to provide evidence based Paedodontic therapy for patients with competence and working knowledge with understanding of applied medical, behavioral and clinical science that are beyond the treatment skills of the general BDS graduate and MDS graduate of other specialties, to demonstrate evaluative and judgment skills in making appropriate decisions regarding prevention, treatment, after care and referral to deliver comprehensive care to patients.

4.SKILLS:

- Obtain proper clinical history, collection of evidence related to the ailment, methodological examination of the child patient, perform

essential diagnostic procedures and interpret them, and arrive at a reasonable diagnosis and treat appropriately.

- Be competent to treat dental diseases which are occurring in child patient.
- Manage to repair and restore the lost / tooth structure to maintain harmony between both hard and soft tissues of the oral cavity.
- Manage the disabled children effectively and efficiently, tailored to the needs of individual requirement and conditions.
- To acquire skills in managing efficiently life threatening conditions with emphasis on basic life support measure.

5.ATTITUDES:

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

6.COMMUNICATIVE ABILITIES:

- Develop communication skills, in particular with the child patient and also with the parents, to explain treatment option available in management.
- Provide leadership and get the best out of his group in a congenial working atmosphere.
- Should be able to communicate in simple understandable language with the patient to explain the principles of Paedodontics to the patient. He should be able to guide and counsel the patient with regard to various treatment modalities available.
- Develop the ability to communicate with professional colleagues through various media like Internet, e-mail, videoconference etc. to render the best possible treatment.

7.SYLLABUS DISTRIBUTION:

7.1 PART I – PAPER I - APPLIED BASIC SCIENCES:

A. Applied Anatomy & genetics

- i. Development of teeth and occlusion
- ii. Craniofacial bones and their growth
 - Skull
 - Maxilla
 - Mandible
- iii. Comparison of adult and fetal skull
- iv. Muscles of mastication and their development
- v. Muscles of face
- vi. Triangle of neck
- vii. Cranial nerves and their applied anatomy (5th, 7th & 9th nerves)
- viii. Arteries of face
- ix. Parotid region
- x. Submandibular region
- xi. Temporal and infratemporal fossa
- xii. Nose and pharynx

- xiii. Development of face and tongue
- xiv. Chromosomes
- xv. Applied aspect of genetics
- xvi. Orofacial syndromes

B. Applied Physiology

- i. Blood
- ii. Endocrine
- iii. Saliva
- iv. Protein, carbohydrates, lipid metabolism
- v. Immunity
- vi. Pathways of pain
- vii. Cardio vascular system of children
- viii. Respiratory system of children
- ix. Excretory system

C. Applied Pathology

- i. Inflammation - acute and chronic
- ii. Healing and repair of oral wounds
- iii. Hypersensitivity and allergies
- iv. Hemorrhage, shock, dehydration, reaction of body to injury
- v. Circulatory disturbances and hypertension
- vi. Pathology of viral, bacterial and fungal infections
- vii. Common diseases of bone
- viii. General biology of tumors spread of malignant tumors
- ix. Clinical pathology comprising of anemia and their laboratory investigations, blood disorders including leukemia, bleeding disorders and their investigations

D. Nutrition and Dietetics:

- i. Diet and dental caries
- ii. Nutritional requirements affecting oral health in females, healthy pregnancy and lactation
- iii. Nutritional requirements through the life cycle and eating

habits affecting oral health

- iv. Dietary recommendations and guide lines for growth**
- v. Toddler and preschool children**
- vi. Children with special needs**
- vii. School age children**
- viii. Adolescents**
- ix. Vitamins, water and minerals required for oral soft tissues, calcified structures and salivary glands**

E. Growth & Development:

- i. Prenatal and Postnatal development of cranium**
- ii. Face, jaws, teeth and supporting structures**
- iii. Chronology of dental development and development of occlusion**
- iv. Dimensional changes in dental arches**
- v. Cephalometric evaluation of growth**

F. Microbiology & Immunology as related to Oral Diseases in Children:

- i. Basic concepts**
- ii. Immune system in human body**
- iii. Auto Immune diseases**
- iv. Histopathology**
- v. Pathogenesis**
- vi. Immunology of dental caries**
- vii. Periodontal diseases**
- viii. Tumors**
- ix. Oral Mucosal lesions**

G. Dental Plaque:

- i. Definition**

ii. Initiation iii. Pathogenesis iv.

Biochemistry

v. Morphology & Metabolism

H. ETHICS IN DENTISTRY (Ref Section V)

6.3PART II – PAPER I - CLINICAL PEDODONTICS

A. Sedation

- i. Conscious Sedation
- ii. Deep Sedation
- iii. General Anesthesia in Paediatric Dentistry
- iv. Drugs used in sedation and general anesthesia
- v. Synergic & antagonistic actions of various drugs used in Children

B. Gingival & Periodontal diseases in children:

- i. Normal gingiva& periodontium in children
- ii. Gingival & Periodontal diseases – etiology and pathogenesis
- iii. Prevention & management

C. Pediatric Operative dentistry:

- i. Principal of Operative Dentistry along with modifications of materials/past, current & latest including tooth colored materials
- ii. Modifications required for cavity preparation in primary and young permanent teeth
- iii. Various Isolation Techniques
- iv. Mininal Invasive Dentistry. Chemo-mechanical caries excavation
- v. Restorations of decayed primary, young permanent and permanent teeth in children using various restorative materials like glass ionomers, composites, silver amalgam & latest material (gallium)

- vi. Stainless steel, polycarbonate & resin crowns / Veneers & fibre post systems**

D. Pediatric Endodontics:

□Primary Dentition:

- **Diagnosis of pulpal diseases and their management**
- **Pulp capping**
- **Pulpotomy**
- **Pulpectomy**
- **Materials & Methods, Controversies & recent concepts** □**Young permanent teeth and permanent teeth:**
- **Pulp capping**
- **Pulpotomy**
- **Apexogenesis**
- **Apexification**
- **Concepts, Techniques and Materials used for different procedures**
- **Recent advances in Pediatric diagnosis and endodontics**
- **Regenerative/ Revascularization in Endodontics**
- **Paediatric Rotary Endodontics**
- **Minimal Invasive Endodontics in pediatric dentistry**

E.Traumatic Injuries in Children:

- i. Classifications & reaction of teeth to trauma**
- ii. Management of Traumatized teeth with latest concepts**
- iii. Management of jaw fracture in children.**

F. Prosthetic consideration in Pediatric dentistry:

G. Interceptive Orthodontics:

i. Concepts of occlusion and esthetics:

- **Structure and function of all anatomic components of occlusion.**

- Mechanics of articulations.
 - Recording of masticator function
 - Diagnosis of Occlusal dysfunction
 - Relationship of TMJ anatomy and pathology and related neuromuscular physiology
- ii. A comprehensive review of the local and systemic factors in the causation of malocclusion
- iii. Recognition and management of normal and abnormal developmental occlusions in primary, mixed and permanent dentitions in children
- (Occlusal guidance) iv. 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
- v. Myofunctional appliances:
- Basic principles
 - Contemporary appliances
- vi. Removable appliances:
- Basic principles
 - Contemporary appliances
 - Design & Fabrication
- vii. Case selection & diagnosis in interceptive Orthodontics (cephalometrics, image processing, tracing, radiation hygiene, video imaging & advanced cephalometric techniques)
- viii. Space Management: Etiology, diagnosis of space problems, analysis, biomechanics, planned extraction in interceptive orthodontics
- H. Oral Habits in Children:
- i. Definition, etiology & classification
- ii. Clinical features of digit sucking, tongue thrusting, mouth

breathing & various other secondary habits
iii. Management of oral habits in children

I. Dental care of Children with special needs: Definition, etiology, classification, behavioral, clinical features & management of children with:

i. Physically handicapping conditions ii.

Mentally compromising conditions iii.

Medically compromising conditions iv.

Genetic disorders

J. Oral manifestations of Systemic conditions in children & their Management

K. Management of Minor Oral Surgical Procedures in Children

L. Dental Radiology as related to Pediatric Dentistry

M. Pediatric Oral Medicine & Clinical Pathology:

i. Recognition & Management of developmental dental anomalies

ii. Teething disorders iii. Stomatological conditions iv.

Mucosal lesions

v. Viral infections etc.

N. Congenital Abnormalities in Children:

i. Definition

ii. Classification

iii. Clinical features & Management

O. Dental Emergencies in Children and their Management

P. Dental Materials used in Pediatric Dentistry

Q. Case History Recording:

- i. Outline of principles of examination
- ii. Diagnosis & treatment planning

R. Setting up of Pedodontics & Preventive Dentistry Clinic

6.4PART II – PAPER II - PREVENTIVE AND COMMUNITY DENTISTRY AS APPLIED TO PEDIATRIC DENTISTRY

A. Child Psychology:

- i. Development & Classification of behavior
 - ii. Personality
 - iii. Intelligence in children
 - iv. Stages of psychological child development
 - v. Fear & anxiety
 - vi. Apprehension & its management
 - vii. Theories of child psychology
- B. Behavior Management:**
- i. Non-pharmacological
 - ii. Pharmacological methods

C. Child Abuse & Dental neglect:

- i. Definition and types of child abuse and neglect
- ii. Identification and management of child abuse and neglect

D. Preventive Pedodontics:

- i. Concepts
- ii. Chair side preventive measures for dental diseases

- iii. High-risk caries including rampant & extensive caries – recognition, features & preventive management
- iv. Pit and fissure sealants v. Oral hygiene measures
- vi. Correlation of brushing with dental caries and periodontal diseases
- vii. Diet & nutrition as related to dental caries
- viii. Diet counseling

E. Cariology:

- i. Historical background
- ii. Definition, etiology& pathogenesis
- iii. Caries pattern in primary, young permanent and permanent teeth in children.
- iv. Rampant caries, early childhood caries and extensive caries. Definition, etiology, pathogenesis, clinical features, complications & management.
- v. Role of diet and nutrition in Dental Caries
- vi. Dietary modifications & diet counseling
- vii. Subjective & objective method of caries detection with emphasis on caries activity tests, caries prediction, caries susceptibility & their clinical applications.

F. Preventive Dentistry:

- i. Definition
- ii. Principles & Scope
- iii. Types of prevention
- iv. Different preventive measures used in Paediatric Dentistry including fissure sealants and caries vaccine

G. Dental Health Education & School Dental Health Programmers

H. Dental health concepts:

- i. Effects of civilization and environment
- ii. Dental Health delivery system

- iii. Public Health measures related to children along with principles of Paediatric Preventive Dentistry

I. Fluorides:

- i. Historical background
- ii. Systemic & topical fluorides
- iii. Mechanism of action
- iv. Toxicity & management
- v. Defluoridation techniques

J. Medico legal aspects in Paediatric Dentistry with emphasis on informed consent

K. Counseling in Paediatric Dentistry

L. Epidemiology:

- i. Concepts
- ii. Methods of recording & evaluation of various oral diseases
- iii. Various national & global trends of epidemiology of oral diseases

M. Comprehensive Infant Oral Health Care

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

O. Comprehensive cleft care management with emphasis on counseling:

- i. Feeding, naso-alveolar bone remodeling
- ii. Speech rehabilitation

P. Emerging concepts in Paediatric Dentistry, scope of lasers / minimum invasive procedures

6.5 PART II – PAPER – III – DESCRIPTIVE AND ANALYSING TYPE QUESTION

Any contents from 8.1 to 8.3 can be included in essay

7 YEARLY PRACTICAL/CLINICAL SCHEDULE:

7.3FIRST YEAR-FIRST TERM-PRECLINICAL EXERCISES

(One on Each Exercise)

- **Pre surgical Naso-alveolar molding**
- **Fabrication of Open Cap Splint**

A. Carving of all deciduous teeth

B. Basic wire bending exercises

C. Fabrication of

- i. **Maxillary bite plate / Hawley`s**
 - ii. **Maxillary expansion screw appliance**
 - iii. **Canine retractor appliance**
 - iv. **All habit breaking appliances**
 - **Removable type**
 - **Fixed type**
 - **Partially fixed and removable**
 - v. **Two myofunctional appliances**
 - vi. **Feeding appliances**
 - vii. **Pre surgical Naso-alveolar molding**
 - viii. **Fabrication of Open Cap Splint**
- D. Basic soldering exercise I – making of a lamp post of stainless steel wire pieces of different gauges soldered on either side of heavy gauge main post.**
- E. Fabrication of space maintainers**
- i. **Removable type:**
 - **Unilateral Non – Functional space maintainer**
 - **Bilateral Non – Functional space maintainer**
 - **Unilateral functional space maintainer**
 - **Bilateral functional space maintainer**

F. Space regainers:

- i. Hawley`s appliances with Helical space regainer
- ii. Removable appliance with Slingshot space regainer
- iii. Removable appliance with dumbbell space regainer

G. Fixed Space maintainers:

- Band & long loop space maintainer
- Band & short loop space maintainer
- Mayne`s space maintainer
- Transpalatal arch space maintainer
- Nance Palatal holding arch
- Nance Palatal holding arch with canine stoppers
- Gerber space regainer
- Distal shoe appliance
- Active space maintainers

- For guiding the eruption of first permanent molar

- Arch holding device

- Functional space maintainer

H. Basics for spot welding exercise

I. Collection of extracted deciduous and permanent teeth

- i. Sectioning of the teeth at various levels and planes
- ii. Drawing of section and shapes of pulp
- iii. Phantom head exercises: performing ideal cavity preparation for various restorative materials for both Deciduous and permanent teeth
- iv. Performing pulpotomy, root canal treatment and apexification procedures
 - Tooth preparation and fabrication of various temporary and permanent restorations on fractured anterior teeth.
 - Preparation of teeth for various types of crowns, laminates / veneers
 - Bonding & banding exercise

J. Performing of behavioral rating and IQ tests for children

K. Computation of:

- i. Caries index and performing various caries activity tests
 - ii. Oral Hygiene Index
 - iii. Periodontal Index
 - iv. Fluorosis Index
 - v. Dental aesthetic index
- L. Surgical Exercises:**

- i. Splinting
- ii. Wiring
- iii. Suturing

M. Radiographic Exercises:

- i. Taking of periapical, occlusal, bitewing radiographs of children
- ii. Developing and processing of films, thus obtained
- iii. Tracing of soft tissue dental and skeletal landmarks as observed on cephalometric radiographs and drawing of various planes and angles, further interpretation of Cephalometric radiographs is analysis.
- iv. Mixed dentition cast analysis

N. Fracture fragment attachment

7.4 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 Examination:

No.	Clinical Work	Total	7 - 12 Months	13 - 24 Months	25 - 36 Months
1.	Behavior Management of different age groups children with complete records.	17	2	10	5

2.	Detailed Case evaluation with complete records, treatment planning and presentation of cases with chair side and discussion	17	2	10	5
3.	Step-by-step chair side preventive dentistry scheduled for high risk children with gingival and periodontal diseases & dental caries	11	1	5	5
4	Practical application of Preventive dentistry concepts in a class of 35-50 children & dental health education & motivation.	7	1	4	2
5.	Pediatric operative dentistry with application of recent concepts. (a). Management of Dental Caries				
	(I) Class I	50	30	10	10
	(II) Class II	100	40	50	10
	(III) Other restorations	100	20	50	30
	(b). Management of traumatized anterior teeth	15	04	06	05
	(i) Regenerative endodontics	02		01	01
	(c) Aesthetic restorations	25	05	10	10

	Pediatric endodontic procedures - Deciduous teeth Pulpotomy / Pulpectomy - Permanent molars - Permanent incisors - Apexification & apexogenesis	150 20 15 20	30 03 02 02	50 07 03 08	70 10 10 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 sealant applications with complete follow-up and diet counseling	20	08	08	04
12.	Special Assignments (i) School Dental Health Programs	03	01	01	01
	(ii) Camps etc.,	02	01	01	-
13.	Pharmacological behavioral management	04	01 assistance	01	02

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

Evidence based clinical decision making: The post graduate students are encouraged to diagnose the clinical problems and to determine the best available

treatment plan including the type of latest materials and techniques available based on the substantial evidence and the available resources in the department after discussion with the staff member. Standard protocols incorporating latest evidence are followed for treating the clinical cases in the department.

7.5 ACADEMIC WORK: (Refer to SECTION III Page 14)

8SCHEME OF EXAMINATION:

A. Theory Exams: Refer Section 1 point 17

B. PRACTICAL EXAMINATION: 200 Marks.

First Day:

i. Case Discussion, Pulp Therapy i.e. Pulpectomy on Primary Molars.

Case Discussion : 20 marks

Rubber Dam application : 10 marks

Working length X-ray : 20 marks

Obturation : 20 marks

Total : 70 marks

ii. Case Discussion, Crown preparation on a primary molar for Stainless Steel crown and cementation of the same.

Case Discussion : 10 marks

Crown Preparation : 20 marks

Crown selection & cementation : 20 marks

Total : 50 marks

Bioethics as applied to Pediatric dentistry in PG case presentation

- iii. **Case Discussion, Band adaptation for fixed type of Space maintainer and impression making.**

Case Discussion : 20 marks

Band Adaptation : 20 marks

Impression : 20 marks

Total : 60 marks

Second Day:

- iv. **Evaluation of fixed space maintainer and cementation : 20 marks**

C. Viva – Voce & Pedagogy Exercise: 100 marks

- **Viva voice examination: 80 marks**

As per the university rules

- **Pedagogy Exercise: 20 marks As per the university rules**

9 RECOMMENDED BOOKS:

	Author`s name	Title of the book
	McDonald	Dentistry for the child and adolescent
	Shobha tandon	Text Book of Pedodontics

	Finn	Clinical Pedodontics
	Peter Heasman	Master dentistry vol-II
	Nikiforuk.	Understanding of dental caries
	Declan Millett	Clinical problem solving in orthodontics and pediatric dentistry
	Angus.C. Cameron	Hand Book of Pediatric Dentistry
	Pinkham	Pediatric Dentistry
	Arthi rao	Principles and practice of pedodontics
	M.E.J. Curzon	Kennedy`s pediatric operative dentistry
	S.G.Damle	Text Book of Pediatric Dentistry
	Marie Therese Hosey	Paediatric dentistry orthodontics
	Barbara L. Chadwick	Child taming: how to manage children in dental practice
	Richard J. Mathewson	Fundamentals of pediatric dentistry
	Mitsuhiro Tsukiboshi	Treatment planning for traumatized teeth
	Wright	Behaviour management
	Stephen H. Wei.	Clinical use of fluorides
	Kenneth. D.	Handbook of clinical pedodontics
	M.S. Rani	Removable orthodontic appliances
	Soben Peter	Essentials of preventive and community dentistry
	Grossman	Endodontic practice

	K.D. Tripathi	Essentials of medical pharmacology
	Antonio Nanci	Ten Kate's oral histology
	Ash & Nelson	Wheeler's dental anatomy physiology and occlusion
	Samuel Selzer	The dental pulp
	Greenberg	Burket's oral medicine
	Gurkeerat singh	Textbook of orthodontics
	Melamed	Handbook of local anesthesia
	Franklin S. Weine	Endodontic therapy
	B.D. Chaurasia	Human anatomy vol 3
	Anusavice	Phillips' science of dental materials
	K. Sembulingam	Essentials of medical physiology
	Inderbir Singh	Human embryology
	White & Pharoah	Oral radiology principles and interpretation
	Newman	Carranza's clinical periodontology
	Harsh Mohan	Essential pathology for dental students
	R. Ananthanarayan, Paniker	Text book of microbiology
	Boon	Davidson's principles & practice of medicine
	Vimal Sikri	Community Dentistry
	Kaban	Pediatric oral and maxillofacial surgery

	Castaldi, Brass	Dentistry for the adolescent
	Smith`s Graham	Recognizable patterns of human deformation.
	Andreasen	Traumatic injuries to the teeth.
	Nelson	Text book of pediatrics volume-1& volume-2

BRANCH - IX

ORAL MEDICINE AND RADIOLOGY

Oral Medicine:

Oral Medicine is the Specialty of Dentistry that is concerned with the Oral Health care of Medically Compromised patients and with the Diagnosis and Nonsurgical management of Medically related disorders or conditions affecting the Oral and Maxillofacial region. Oral Medicine specialists are concerned with the Nonsurgical medical aspects of dentistry. These specialists are involved in the primary diagnosis and treatment of oral diseases that do not respond to conventional dental or maxillofacial surgical procedures. The practice of Oral Medicine will provide optimal health to all people through the diagnosis and management of oral diseases.

Oral Diagnosis:

Oral Diagnosis is art of using scientific knowledge of identifying oral disease process and distinguishing one disease from other.

Oral Radiology:

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

1. AIM

- **To train the Dental graduates to ensure higher competence in both general and special areas of Oral Medicine and Radiology.**
- **To prepare a candidate for teaching, research and clinical abilities including prevention of various Oral and Maxillofacial lesions.**
- **To train the students so as to apply Evidence based knowledge for the Diagnosis and Treatment of Oral Diseases.**

2. GENERAL OBJECTIVES OF THE COURSE

At the end of THREE years of training, the Postgraduate Student shall be able to acquire -

- **Training programme in Oral Medicine, Diagnosis and Radiology is structured to achieve knowledge and skill in theoretical and clinical laboratory, attitude, communicative skills and ability to research with understanding of social, cultural, educational and environmental background of the society.**
- **Have acquired adequate knowledge and understanding of applied basic and systemic medical science, knowledge in general and particularly of head and neck.**
- **The postgraduates will be able to provide medicinal 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.

- **Knowledge on Evidence based approach for management of Orofacial diseases.**

Outcomes: at the end of the course, the Postgraduate student should be able to have knowledge of all oral mucosal lesions skeletal involvement of maxillofacial region, diagnostic procedures pertaining to them and latest information of imaging modules, recognize oral diseases with radiographic imaging and their management, handling scientific problems pertaining to oral treatment, encourage younger doctors to attain learning objectives.

3. KNOWLEDGE

- **The student shall 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 Nutrition, Behavioural science, age changes, genetics, Immunology, Congenital defects and syndrome and Anthropology, Bioengineering, Bio-medical and Biological Principle and applications to Dental material science.**
- **Ability to diagnose and plan the treatment.**
- **Ability to read and interpret a Radiograph and other investigations for the purpose of diagnosis and treatment plan.**
- **Shall have essential knowledge on ethics, laws and Jurisprudence and forensic odontology.**
- **Identify cases, which are outside the area of his speciality / competence and refer those appropriate specialists.**

- To have acquired adequate knowledge and understanding of applied basic and systematic medical science knowledge in general and particular to head and neck.
- Shall attend continuing education programs, seminars and conferences related to Speciality, thus updating himself.
- Teach and guide his/her team, colleague and other students.
- Theoretical knowledge of evidence based dentistry.
- Shall be able to use information technology tools and carry out research both basic clinical, with the aims of publishing his/her work and presenting his/her work at various scientific forums.
- Shall have essential knowledge of personal hygiene, infection control, prevention of cross infection and safe disposal waste, keeping in view the risks of transmission of Hepatitis and HIV.
- Shall have a sound knowledge for application of pharmacology. Effects of drugs on oral tissue and systems of body and for medically compromised patients.
- Theoretical, Clinical and practical knowledge of all oro-facial lesions, diagnostic procedures pertaining to them and latest information of imaging modules and recent advances in treatment modalities

4. SKILLS:

- The student shall be able to examine the patients, investigate the patient systemically, analyze the investigation results, radiology, diagnose the ailment, plan a treatment, communicate it with the patient and execute it.
- Understand the prevalence and prevention of diseases of Craniomandibular system.

- The student shall be able to restore lost functions of stomatognathic system namely mastication, speech, appearance and psychological comforts. By understanding biological, biomedical, bioengineering principles and systemic condition of the patient to provide a quality health care of the craniofacial region.
- The student shall be able to interact with other speciality including medical speciality congenital defects, Temporomandibular joint syndromes, esthetics, implant supported prosthetics and problems of psychogenic origin.
- The student shall 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 the specialty.
- Identify target diseases and awareness amongst the population.
- Three important skills need to be imparted -
 - Diagnostic skill in recognition of oral lesions and their management.
 - Research skills in handling scientific problems pertaining to oral treatment.
 - Clinical and Didactic skills in encouraging younger doctors to attain learning objectives.
- Evidence based diagnostic skills in using the latest goldstandard investigative procedures.
- Evidence Searching Skills using various databases for treatment protocol of various oral diseases.
- Implementation of best clinical evidence in the management of individual patients.

5. ATTITUDES :

- **Adopt ethical principles in Oral Medicine Practice. Professional honesty and integrity are to be fostered. Treatment to be delivered irrespective of social status, caste, creed or region of patient.**
- **Willing to share knowledge and clinical experience with professional colleagues.**
- **Willing to adopt new methods and techniques from time to time based on scientific research, which is in patient's best interest.**
- **Respect patient's rights and privileges including patient's right to information and right to seek second opinion.**
- **The positive mental attitude and the persistence of continued learning need to be inculcated.**
- **Inculcating positive approach towards newer learning methodologies and treatment modalities based on clinical evidence**

6. COMMUNICATIVE ABILITIES :

- **Develop communication skills, in particular, to explain treatment option available in management.**
- **Provide leadership and get the best out of his group in a congenial working atmosphere.**
- **Shall be able to communicate in simple understandable language with the patient to explain the principles of Oral Medicine to the patient. He should be able to guide and counsel the patient with regard to various treatment modalities available.**

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

7. COURSE :

The Postgraduate student shall undergo training for **THREE Academic Years** with satisfactory attendance above 80% for Each Year.

- 7.1** The course includes epidemiology and demographic studies, research and teaching skills.
- 7.2** Ability to prevent, diagnose and treat with after care for all patients for control of diseases and / or treatment related syndromes with patient satisfaction for restoring functions of stomatognathic system.
- 7.3** The program outline addresses the knowledge, procedural and operative skills needed in Masters Degree in Oral Medicine, Diagnosis and Radiology. A minimum of Three years of formal training through a graded system of education as specified will enable the trainee to achieve Masters Degree, 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-

8. SYLLABUS DISTRIBUTION:

8.1 PART I- PAPER I APPLIED BASIC SCIENCES :

A. APPLIED ANATOMY

- i. Gross Anatomy of the Face:**
 - Muscles of Facial Expression and Muscles of Mastication.
 - Temporo- Mandibular Joint.
 - Facial nerve.

- Facial artery.
- Facial vein.
- Major and Minor salivary glands.

ii. Neck Region:

- Triangles of the neck with special reference to Carotid, Digastric triangles and midline structures.
- Facial spaces.
- Carotid system of arteries, Vertebral Artery, & Subclavian arteries.
- Jugular system - Internal jugular, External jugular.
- Lymphatic drainage.
- Cervical plane.
- Muscles derived from Pharyngeal arches.
- Endocrine glands.
- Sympathetic chain.
- Cranial nerves- V, VII, IX, XI, & XII.

iii. Oral Cavity :

- Vestibule and oral cavity proper.
- Tongue and teeth .
- Palate -soft and hard.

iv. Nasal Cavity :

- Nasal septum.
- Lateral wall of nasal cavity.

- v. Pharynx**

- vi. Paranasal air sinuses**
 - **Maxillary sinus**
 - **Frontal sinus**
 - **Sphenoidal sinus**
 - **Ethmoidal sinus**

- vii. Gross salient features of brain and spinal cord with references to attachment of cranial nerves to the brain stem.**

- viii. Detailed study of the cranial nerve nuclei of**
 - **Cranial nerve I**
 - **Cranial nerve II**
 - **Cranial nerve III**
 - **Cranial nerve IV**
 - **Cranial nerve V**
 - **Cranial nerve VI**
 - **Cranial nerve VII**
 - **Cranial nerve VIII**
 - **Cranial nerve IX**
 - **Cranial nerve X**
 - **Cranial nerve XI**

- **Cranial nerve XII ix. Osteology**
- **Comparative study of fetal and adult skull**
- **Development**
- **Ossification**
- **Age changes and evaluation of Maxillo-facial bones and mandible**

x. Embryology :

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

xi. Histology :

- **Study of epithelium of oral cavity and the respiratory tract.**
- **Connective tissue.**
- **Muscular tissue.**
- **Nervous tissue.**
- **Blood vessels.**

- Cartilage.
- Bone and tooth.
- Tongue.
- Salivary glands.
- Tonsil, thymus, lymph nodes.

B. PHYSIOLOGY :

i. General Physiology :

- Cell.
- Body Fluid Compartments.
- Classification.
- Composition.
- Cellular transport.
- RMP and action potential.

ii. Muscle Nerve Physiology :

- Structure of a neuron and properties of nerve fibers.
- Structure of muscle fibers and properties of muscle fibers.
- Neuromuscular transmission.
- Mechanism of muscle contraction.

iii. Blood :

- RBC and Hemoglobin.
- WBC -Structure and functions.

- Platelets -functions and applied aspects.
- Plasma Proteins.
- Blood Coagulation with applied aspects.
- Blood groups.
- Lymph and applied aspects.

iv. 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 and decreased barometric pressure.

v. Cardio-Vascular System:

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

vi. Excretory system:

□Renal function tests.

vii. Gastro- intestinal tract:

- Composition, functions and regulation of -
- Saliva.
- Gastric juice.
- Pancreatic juice.
- Bile and intestinal juice.

viii. Endocrine system:

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

ix. Central Nervous System:

- Ascending tract with special references to pain pathway
- Special Senses: Gustation and Olfaction.

C. BIOCHEMISTRY:

i. 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. ii. Lipids
- Fatty acids – Essential / Non essential.
- Metabolism of Fatty acids- oxidation, ketone body formation, utilization and ketosis.
- Outline of cholesterol metabolism- synthesis and products formed from Cholesterol.

iii. 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.

iv. 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 functional.

v. Minerals

- Calcium & Phosphorus metabolism
- Iron metabolism.
- Iodine metabolism.
- Trace elements in nutrition.

vi. Energy Metabolism

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

D. PATHOLOGY:

i. Inflammation:

- Repair and regeneration, necrosis and gangrene.
- Role of complement system in acute inflammation.
- Chronic inflammation.
- Role of arachidonic acid and its metabolites in acute inflammation.
- Growth factors in acute inflammation.
- Role of molecular events in cell growth and intercellular signaling cell surface receptors.

- Role of NSAIDS in inflammation.
- Cellular changes in radiation injury and its manifestations. ii.

Homeostasis :

- Role of Endothelium in thrombo -genesis.
- Arterial and venous thrombi.
- Disseminated Intravascular Coagulation. iii. Shock :
- Pathogenesis of Hemorrhagic, Neurogenic, Septic and Cardiogenic shock.
- Pathogenesis of Circulatory disturbances.
- Pathogenesis of Ischemic Hyperemia.
- Pathogenesis of Venous congestion, Edema, Infarction. iv.

Chromosomal Abnormalities :

- Mar fan's syndrome.
- Ehler's Danlos Syndrome.
- Fragile X Syndrome.

v. Hypersensitivity :

- Anaphylaxis.
- Type II Hypersensitivity.
- Type III Hypersensitivity.
- Cell mediated Reaction and its clinical importance.
- Systemic Lupus Erythematosus.
- Infection and Infective Granulomas.

vi. Neoplasia :

- **Classification of Tumors.**
- **Carcinogenesis & Carcinogens -Chemical, Viral and Microbial.**
- **Grading and Staging of Cancer, Paraneoplastic Syndrome.**
- **Spread of tumors.**
- **Characteristics of Benign and Malignant tumors.**

vii. Others :

- **Sex linked agama-globulinemia.**
- **AIDS.**
- **Management of Immune deficiency patients requiring surgical procedures.**
- **De George's Syndrome.**
- **Ghons complex.**
- **Post primary pulmonary tuberculosis - pathology and pathogenesis.**

E. PHARMACOLOGY :

- i. Definition of terminologies used.**
- ii. Dosage and mode of administration of drugs.**
- iii. Action and fate of drugs in the body.**
- iv. Drugs acting on the CNS.**

v. Drug addiction, tolerance and hypersensitive reactions.

vi. General and local anesthetics, hypnotics, analeptics, and & tranquilizers.

- vii. Chemotherapeutics and antibiotics. viii. Analgesics and Anti – pyretics. ix. Antiseptics, Sialogogues, and Anti –Sialogogues.
- x. Haematinics. xi. Antacids. xii. Antiviral drugs. xiii. Anti –diabetics.
- xiv. Vitamins – A, B Complex, C, D, E, K.
- xv. Steroids.

F. Environmental Science

□Biomedical Waste Management

- Introduction
- What is Bio-Medical Waste
- Risk from Bio-Medical Waste
- Environmental Hazard
- Occupational Hazard
- Public Health Hazard
- Legal Provision
- Salient Features of Bio-Medical Waste (Management and Handling)
- Categories of Bio-Medical Waste
- Treatment and Disposal Methodology
- Segregation, Packaging, Storage and Transportation
- Occupational Safety and Health of Health Care Workers

□Radiographic Waste Disposal

- Introduction
- What is Radiographic Waste
- Risk from Radiographic Waste
- Disposal of Lead Waste
- Disposal of X-ray system cleaners
- Disposal of Processing solutions
- Disposal of Dental Films

G. Ethics in Dentistry (Refer section V)

8.2 PART II- PAPER I

DIFFERENTIAL DIAGNOSIS, DIAGNOSTIC METHODS & ORAL AND MAXILLOFACIAL RADIOLOGY

A. DIFFERENTIAL DIAGNOSIS AND DIAGNOSTIC METHODS:

- i. Introduction
- ii. General Principles of Differential Diagnosis.
- iii. History and Examination of the patient.
- iv. Correlation of Gross Structure and Microstructure with Clinical features.
- v. The diagnostic sequence.
- vi. Soft Tissue Lesions:
 - Solitary red lesions.

- **Generalized Red Conditions and Multiple Ulcerations.**
- **Red Conditions of the Tongue.**
- **White lesions of the Oral Mucosa.**
- **Red and White lesions.**
- **Peripheral Oral Exophytic lesions.**
- **Solitary Oral Ulcers and Fissures.**

vii. Intraoral Brownish, Bluish, or Black Conditions. viii.

Pits, Fistulae and Draining Lesions. ix. Yellow

conditions of the oral mucosa.

x. Bony Lesions -

- **Radiolucencies of the Jaws - □Anatomic Radiolucencies.**
- **Periapical Radiolucencies.**
- **PericoronalRadiolucencies.**
- **Interradicular Radiolucencies.**
- **Solitary Cyst like Radiolucencies not necessarily contacting teeth.**
- **Multilocular Radiolucencies.**
- **Solitary Radiolucencies with Ragged and Poorly Defined Borders.**
- **Multiple Separate, Well defined Radiolucencies□Generalized rarefactions of the jaw bones.**

xi. Mixed Radiolucent – Radiopaque Lesions of the Jaws -

- **Mixed Radiolucent – Radiopaque lesions associated with teeth.**

- **Mixed Radiolucent – Radiopaque lesions not necessarily contacting teeth.**

xii. Radiopacities Of The Jaw Bones - □Anatomic Radiopacities of the jaws

- **Periapical Radiopacities**
- **Solitary Radiopacities not necessarily contacting teeth**
- **Multiple separate Radiopacities**
- **Generalized Radiopacities**

xiii. Lesions By Region- □Masses in the Neck

- **Lesions of the Facial Skin**
- **Lesions of the Lips**
- **Intraoral Lesions by Anatomic Region e.g. Palate, Floor of mouth etc.**

xiv. Diagnostic Methods and Normal values for Laboratory tests

- **Methods of clinical diagnosis of oral and systemic diseases as applicable to oral tissue including modern diagnostic techniques**
- **Laboratory investigations including special investigations of oral and oro –facial diseases**

B. ORAL AND MAXILLOFACIAL RADIOLOGY:

i. Basics of Radiology

- **History of Radiology**
- **Structure of x-ray tube**
- **Production and properties of x-rays.**
- **Units of radiation**

ii. The Physics of Ionizing Radiation

□ **Radiation Physics**

iii. Biologic Effects of Radiation

□ **Radiation Biology**

iv. Radiation Safety And Protection

□ **Health Physics**

v. Imaging Principles And Techniques

- **X-Ray Film, Intensifying Screens, Filtration of collimation and Grids**
- **Projection Geometry**
- **Processing of Image in radiology**
- **Design of x -ray dept., dark room & use of automatic processing units**
- **Localization by radiographic techniques.**
- **Faults of dental radiographs and concept of ideal radiograph**
- **Radiographic Quality Assurance and Infection Control**
- **Intraoral Radiographic Techniques**
- **Normal Radiographic Anatomy**
- **Panoramic Imaging**
- **Extra oral Imaging techniques**
- **Digital Imaging**
- **Advanced imaging technique like CT, MRI, Ultrasound & Thermography**
- **Radionuclide techniques.**

- **Contrast radiography in Salivary gland, TMJ & other Radiolucent pathologies.**
- **Guidelines for Prescribing Dental Radiographs**
- **Art of radiographic report, writing and descriptors preferred in reports.**

vi. Radiographic Interpretation of Pathology

- **Principles of Radiographic Interpretation**
- **Dental Caries**
- **Periodontal Diseases**
- **Dental Anomalies**
- **Inflammatory Lesions of the Jaws**
- **Cysts of the Jaws**
- **Benign Tumors of the Jaws**
- **Malignant Lesions of the Jaws**
- **Diseases of Bone Manifested in the Jaws.**
- **Systemic Diseases Manifested in the Jaws.**
- **Diagnostic Imaging of the Temporo-mandibular Joint.**
- **Paranasal Sinuses.**
- **Soft Tissue Calcification and Ossification.**
- **Trauma to Teeth and Facial Structures.**
- **Developmental Disturbances of the Face and Jaws.**
- **Salivary Gland Radiology.**
- **Orofacial Implants.**

vii. Radiography In Forensic Odontology

- Radiographic Age Estimation
- Post-Mortem Radiographic Methods.

viii. Principles And Complications of Radiotherapy of Oro-Facial Malignancies **ix. Knowledge of Radio-**

Active Isotopes

x. Cone Beam Computed Tomography (CBCT)

- Introduction
- Principle and functioning of CBCT
- Radiation dose and Optimization
- Anatomical Structures
- Advantages and Disadvantages
- Applications in Dentistry
- Interpretation and Report Writing

8.3 PART II- PAPER II

ORAL MEDICINE, THERAPEUTICS & LABORATORY INVESTIGATIONS

A. Introduction and History of Oral Medicine.

B. Principles of Diagnosis

i. The Practice of Oral Medicine

ii. Evaluation of the Dental Patient: Diagnosis and Medical

Risk Assessment iii. Maxillofacial

Imaging

C. Diagnosis And Management Of Oral Diseases

**i. Ulcerative, Vesicular, and Bullous Lesions. ii. Red and
White Lesions of the Oral Mucosa. iii. Pigmented
Lesions of the Oral Mucosa.**

iv. Benign Tumors of the Oral Cavity.

v. Oral Precancer vi. Oral Cancer.

D. Oral Manifestations of Systemic Diseases

i. Metabolic Disorders ii.

Endocrine Disorders iii.

Nutritional Disorders

E. Principles of Medicine

i. Diseases of the Respiratory Tract ii.

Diseases of the Cardiovascular System. iii.

Diseases of the Gastrointestinal Tract iv. Renal

Disease

v. Hematologic Diseases vi.

Bleeding and Clotting Disorders.

vii. Immunologic Diseases viii.

Transplantation Medicine ix.

Infectious Diseases

x. Diabetes Mellitus. xi.

Endocrine Disease. xii.

Neuromuscular Diseases.

xiii. Geriatrics xiv.

Pediatrics

F. Hematological, Dermatological, Metabolic, Nutritional, & Endocrinal conditions with oral manifestations

G. Orofacial Pain

i. Pain arising from diseases of oro-facial tissues ii.

Pain arising due to CNS diseases iii. Referred pain

H. Congenital and Hereditary disorders involving structures of oro-facial region.

I. Spread of infection

i. Inflammation and infection ii.

Focus of infection iii. Focal

infection iv. Facial space infections

v. Oral sepsis and its effect on general system

J. Neuromuscular diseases affecting oro-facial region

i. Nerves

- **Neuropraxia**
- **Neurotemesis**
- **Neuritis**
- **Facial nerve Paralysis including Bell's palsy, Heerfordt's syndrome, Melkerson Rosentheil Syndrome and Ramsay Hunt Syndrome**
- **Neuroma**
- **Neurofibromatosis**
- **Frey's syndrome ii. Muscles**
- **Myositis Ossificans**
- **Myofascial pain dysfunction syndrome**
- **Trismus**

K. Salivary Gland disorders

- i. **Development disturbances ii. Functional disturbances iii. Inflammatory conditions iv. Cysts and Tumors**
- v. **Miscellaneous**

L. Tongue in Oral and Systemic diseases.

- i. **Developmental ii. Inflammatory**
- iii. **Nutritional and Metabolic**
- iv. **Neoplastic**
- v. **Miscellaneous**

M. TMJ dysfunction and diseases

i. Developmental Disorders ii.

Inflammatory Disorders iii.

Traumatic Disorders iv.

Neoplastic Disorders

v. Loose Joint Bodies

N. Sexually Transmitted Diseases

i. Bacterial ii.

Viral iii.

Parasitic

O. Allergy and other miscellaneous conditions

i. Hypersensitivity Reactions ii.

Localized Anaphylaxis iii.

Generalized Anaphylaxis iv.

Latex Allergy

v. Oral Allergy Syndrome vi. Immune Complex Diseases:

Serum Sickness and vii. Erythema Multiforme viii. Delayed

Hypersensitivity: Oral Lichenoid Reactions

P. Psychosomatic aspects of oral diseases

i. Mood Disorders ii. Anxiety

Disorders iii. Somatoform

Disorders iv. Other conditions

Q. Management of Medically compromised patients including medical emergencies in the dental practice

i. Cardiovascular disorders ii.

Respiratory system disorders iii.

Renal disorders

iv. Hepatic disorders

v. Blood disorders vi. Gastrointestinal

disorders vii. Nervous system disorders

R. Maxillary Sinus Disorders

i. Developmental Disorders ii.

Inflammatory Disorders iii.

Cystic Disorders iv.

Neoplasm

v. Trauma vi.

Miscellaneous

S. Forensic Odontology

i. Medico legal aspects of Orofacial injuries ii.

**Identification of Bite marks. iii. Determination of Age
and Sex**

**iv. Identification of cadavers by Dental Appliances,
Restorations and Tissue Remnants**

v. Role of Dentist in Forensic Science

T. Therapeutics in oral medicine – clinical pharmacology

U. Computers in oral diagnosis and imaging

V. Evidence based oral care in treatment planning

W. Harmful oral Habits and its Intervention skill and knowledge

X. Genetics

Y. Transplant Medicine

Z. LASERs in Oral Mucosal Lesions

- i. Introduction ii. Principle and Mechanism
of Action iii. Types of LASER iv. Applications
in Dentistry**
- v. Advantages and Disadvantages**

**8.4 PART II-PAPER III DESCRIPTIVE &ANALYZING TYPE QUESTION Any
content from 8.1 to 8.3 can be included in essay**

9. PRACTICALS / CLINICALS:

- A. The Student is Trained to arrive at Proper Diagnosis by following a Scientific and Systematic procedure of History taking and Examination of the Oro-facial region. Training is also imparted in management wherever possible. Training also shall be imparted on Advanced and Specialized diagnostic procedures.**
- B. Training shall be imparted in various Radiographic procedures, Interpretation of Radiographs and Specialized imaging techniques.**

- C. Use of LASER in the treatment of Oral Mucosal lesions**
- D. Hands on Training on Cone Beam Computed Tomography (CBCT) machine**
- E. Bone Scintigraphy machine and Positron Emission Computed Tomography(PET Scan)**
- F. Community Outreach Programs focusing on Oral Precancer and Oral Cancer screenings.**
- G. The Postgraduate student should Observe, Assist and Perform Procedural and Operative Skills under Supervision of MDS Teacher / Staff.**
- H. In view of the above, Each student shall maintain a Record of work done, which shall be Evaluated at the time of University Practical examination**
- I. In Treatment planning for patient: The Postgraduate student applies the best available Evidence (Diagnostic and Therapeutic) in treatment planning for every patient reporting to the department having oral and maxillo-facial diseases.**
- J. Monitoring Learning Progress-**
 - It is essential to monitor the learning progress of each student through continuous appraisal and regular assessment. It not only helps teachers to evaluate students, but also students to evaluate themselves. The monitoring should be done by the Postgraduate staff of the department based on participation of students in various teaching / learning activities. It may be structured and assessment should be done using checklists that assess various aspects.**
 - Other then the routine daily OPD and Radiographs taking procedure, The following is the Minimum Prescribed work to be completed and Recorded in the Log / Record Book before appearing in the subject at the University Examination. The Academic and Clinical work record as well as the**

Radiographs should be preserved in good condition and shall be produced at the time of Final MDS Practical Examination.

G. Minimum Requirement

- i. Academic work quota: REFER SECTION III pg no. 14 page
- ii. Clinical Work to be carried out by the Postgraduate (MDS) Student of Oral Medicine and Radiology in Each Year: (**Amendment are highlighted in Red. Vide Notification no. 1.KMSDCH/BOS/03/2023 Date:08/02/2023 2. SVDU/R/2431-B/2022-23 May 29, 2023"**)

Sr. No.	Particulars	FIRST YEAR	SECOND YEAR	THIRD YEAR
1	IOPA of Important cases	400	50	100

2	Other Intra oral Radiographs of Important cases	100(Bitewing 50 + Occusal50)	25	100(Bitewing 50 + Occusal50)
3	Tracing anatomical landmarks on various radiographs	One set of IOPAR ☐ One set of Bitewing (Premolar & Molar) ☐ One set of Occlusal projections (Maxillary & Mandibular)	OPG - 01 ☐ Paranasal Sinus view (PNS) – Open and Close mouth – 01 each ☐ SMV& Jug handle - 01 each ☐ All TMJ views - 01 each ☐ All Lateral oblique views - 01 each ☐ Reverse 4Towne view -	

			01 ☐ Postero - Anterior view - 01 ☐ Lateral Cephalogram - 01 ☐ Full volume CBCT - 01	
4	Age estimation using radiographs	Age estimation using Orthopantomogram - 06 ☐ Age estimation using CBCT images - 04		
5	RVG of Important cases	25	25	25
6	Extra oral Radiographs of Important cases	10	OPG - 10 ☐ PNS view - 02 ☐ TMJ view - 03 ☐ SMV view - 02 ☐ Lateral Cephalogram - 01 ☐ PA view - 01 ☐ Reverse Townes view - 01	OPG - 50 nos. ☐ PNS views - 07 nos. ☐ TMJ views - 08 nos. ☐ SMV views - 03 nos. ☐ Lateral Cephalogram - 02 nos. ☐ PA views - 03 nos. ☐ Reverse Townes view - 02 nos
7	Digital / Advance Imaging of Important cases	10	Implant assessment - 01 ☐ Cyst assessment - 01 ☐ Tumor (Benign / Malignant) - 01 ☐ Endodontic special cases - 01 ☐ Trauma cases - 01	Implant assessment - 01 ☐ Cyst assessment - 02 ☐ Tumor(Benign / Malignant) - 02 ☐ Endodontic special cases - 02 ☐ Trauma cases - 01

				☐ Temporo-mandibular joint assessment - 02 D. Interpretations of Advanced imaging ☐ CT, MRI and USG interpretations
8	Long case History (major)	10	10	10
9	Short case History (minor)	15	15	15
10	Biopsy-Incisional / Excisional	25	25	25
11	FNAC	15	15	15
12	Administration of intra muscular and intravenous injections	05	10	10
13	Administration of oxygen and life saving drugs to the patients	05	05	05
14	Clinical Demonstrations to Third and Fourth Year BDS Students	10	10	10
15	Lectures for Third and Fourth Year BDS Students	04	04	04
16	Dental Cast/Model preparations	05	05	05
17	IAOMR Conference	01	01	01

18	National PG Symposium	01	01	01
19	Other Conferences/ Symposium/ Update (Optional)	01	01	01
20	Paper Presentation in conferences	01	01	01
21.	Poster / Model Display in Conferences	01	01	01
22.	Article Publication in National / International Journal	01	01	01

10. SCHEME OF UNIVERSITY MDS EXAMINATION

A. Theory: 300 marks Ref section I page 16

B. Practical/ Clinical Examination : 300 Marks

1st Day :

Clinical Case Presentation:

- 1. Two Spotters = 10 Marks (2 x 05 mks.)**
- 2. Two Short Cases = 40 Marks (2 x 20 mks.)**
- 3. One Long Case = 50 Marks (1 x 50 mks.)**

Total = 100 Marks

2nd Day :

- 1. Radiology Exercise :**

Including Technique, processing and Interpretation

- 1. One Intra Oral Periapical Radiograph = 10 Marks**
- 2. One Occlusal Radiograph = 20 Marks**
- 3. Two Extra Oral Radiograph = 50 Marks (2 x 25 mks.)**

- 2. Multimedia Presentation and Discussion of Main Dissertation :**

= 20 Marks

Total = 100 Marks

- 3. Pedagogy Exercise = 20 Marks**
- 4. Viva Voce = 80 Marks**

As per the university norms

11. BOOKS RECOMMENDED:

I. ORAL DIAGNOSIS, ORAL MEDICINE & ORAL PATHOLOGY

- 1. Burkit – Oral Medicine – J.B. Lippincott Company**
- 2. Coleman – Principles of Oral Diagnosis – Mosby Year Book**
- 3. Jones – Oral Manifestations of Systemic Diseases – W.B. Saunders company**
- 4. Mitchell – Oral Diagnosis & Oral Medicine**
- 5. Kerr – Oral Diagnosis**
- 6. Miller – Oral Diagnosis & Treatment**
- 7. Hutchinson – Clinical Methods**
- 8. Oral Pathology – Shafers**
- 9. Sonis.S.T., Fazio.R.C. and Fang.L - Principles and practice of Oral Medicine**
- 10. Goaz& Wood – Differential Diagnosis of Oral & Maxillofacial Lesions.**
- 11. S.N.Bhaskar -- Synopsis of Oral Pathology**
- 12. H.M.Worth – Principles and Practice of Radiographic Interpretation**
- 13. William Young- Atlas of Oral Pathology**
- 14. Fali Mehta-Tobacco related Oral Mucosal Lesions and Conditions 15.**
S.N.Bhaskar -- Radiographic Interpretation for the Dentist

II. ORAL AND MAXILLOFACIAL RADIOLOGY

- 1. White & Goaz – Oral Radiology – Mosby year Book**
- 2. Wuehrmann – Dental Radiology – C.V. Mosby Company**
- 3. Stafne – Oral Roentgenographic Diagnosis – W.B.Saunders Co.,**
- 4. Rita Mason – A guide to Dental Radiography**
- 5. McCall & Wald—Clinical Dental Roentgenology, Technique & Interpretation**

III. FORENSIC ODONTOLOGY

- 1. Derek H Clark –Practical Forensic Odontology - Butterworth-Heinemann (1992)**
- 2. C Michael Bowers, Bell –Manual of Forensic Odontology-Forensic Pr (1995)**

SECTION V

ETHICS IN DENTISTRY

INTRODUCTION:

There is a definite shift now 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 specialist like the other health professional are confronted with many ethical problems. It is therefore absolutely necessary for each and everyone in the health care delivery to prepare themselves to deal with these problems. To accomplish this and develop human values, it is desired that all the trainees undergo ethical sensitization by lectures or discussion on ethical issues, discussion of cases with an important ethical component.

COURSE CONTENT:

Introduction to ethics –

- What are ethics?
- What are values and norms?
- How to form a value system in one's personal and professional life?
- Hippocratic Oath
- Declaration of Helsinki, WHO Declaration of Geneva, International code of ethics, DCI Code of Ethics.

Ethics of the individual

- The patient as a person
- Right to be respected
- Truth and confidentiality
- Autonomy of decision

- **Doctor patient relationship**

Professional ethics –

- **Code of conduct**
- **Contract and confidentiality**
- **Charging of fees, fee splitting**
- **Prescription of drugs**
- **Over-investigating the patient**
- **Malpractice and negligence**

Research ethics –

- **Animal and experimental research/humanness**
- **Human experimentation**
- **Human volunteer research – informed consent**
- **Drug trials**
- **Ethical workshop of cases**
- **Gathering all scientific factors**
- **Gathering all value factors**
- **Identifying areas of value – conflict, setting of priorities**
- **Working out criteria towards decisions**

RECOMMENDED READING:

1. **Francis C.M.; Medical Ethics, 2nd Edin, 2004, Jaypee Brothers, New Delhi.**
2. **Ethical guidelines for Biomedical Research on Human Subjects, Indian Council of Medical Research, New Delhi, 2000.**

**SECTION VI
ANNEXURES**

**ANNEXURE I
CHECKLIST FOR EVALUATION OF JOURNAL REVIEW PRESENTATIONS**

Name of the Trainee :

Date :

Name of the Faculty / Observer :

Title:

Sr. 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 and objectives of the paper by the candidate					
3	Whether cross- reference have been 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					
	Total score					

Signature of faculty:

ANNEXURE II

MODEL CHECK LIST FOR EVALUATION OF SEMINAR PRESENTATIONS

Name of the Trainee :

Date :

Name of faculty/ observer

Topic:

Sr. no	Items for observation during presentation	Poor 0	Below average 1	Average 2	Good 3	Very good 4
	1.Completeness of preparation					
	2.Clarity of presentation					
	3.Understanding of subject					

4. Whether other relevant publications consulted					
5. Whether cross references have been consulted					
6. Ability to answer the question					
7. Time scheduling					
8. Appropriate use of					

	audio-visual aids					
9.	Overall performance					
10	Any other observation					
	Total score					

Sr no	Items for observation during presentation	Poor 0	Below average 1	Average 2	Good 3	Very good 4
1	Regularity of attendance					
2	Punctuality					
3	Interaction with colleagues and supportive staff					
4	Maintenance of case records					

Signature of faculty:

ANNEXURE III

(A) MODEL CHECK LIST FOR EVALUATION OF CLINICAL WORK INOPD

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

Name of the Trainee :

Date :

Name of the Unit Head :

5	Presentation of cases					
6	Investigations work up					
7	Chair- side manners					
8	Rapport with patients					
9	Overall quality of clinical work					
	Total					

Signatur
e of
faculty:

A
NNEX
URE
III

(

Sr . n o	Items for observation during presentation	Poo r 0	Below averag e 1	Average 2	Good 3	Very Good 4
1	Completeness of history					
2	Accuracy of general physical examination					

B)
EVALUATI
ON OF
CLINICAL
CASE
PRESENT
ATION

Name of the
Trainee :

Name of
the

Faculty / Observer :

Title of the case:

3	Diagnosis: whether it follows logically from history and findings					
4	List of Investigations required with Interpretation of investigations					
5	Ability to defend diagnosis					
6	Treatment planning					
7	Execution of treatment plan					
8	Adequacy of the supporting evidence					
9	Adequacy of records					
10	Clarity of presentation					
11	Ability to answer questions					
12	Time scheduling					
	Total score					

Signature of faculty:

ANNEXURE IV

Sr. no	Items for observation during presentation	Poor	Below average	Average	Good	Very Good
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MODEL CHECK LIST FOR EVALUATION OF INTERDISCIPLINARY PRESENTATION

Name of the Trainee: -

Date:

Name of the Faculty/Observer:

Topic:

		0	1	2	3	4	
1	Completeness of history						Signature of faculty: <u>A</u> <u>NN</u> <u>EX</u> <u>UR</u> <u>IV</u> <u>M</u> <u>ODEL</u> <u>CHECK</u> <u>LIST</u> <u>FOR</u> <u>EVALU</u> <u>ATION</u> <u>OF</u> <u>TEACHI</u> <u>NG</u> <u>SKILL</u> Name of the Trainee : Name of the Faculty / Observer :
2	Accuracy of general physical examination						
3	Diagnosis: whether it follows logically from history and findings						
4	List of Investigations required with Interpretation of investigations						
5	Ability to defend diagnosis						
6	Treatment planning						
7	Execution of treatment plan						
8	Adequacy of the supporting evidence						
9	Adequacy of records						
10	Clarity of presentation						
11	Ability to answer questions						
12	Time scheduling						
	Total score						
Sr	Items for observation	Poor	Below average	Average	Good	Very	

n	during presentation	0	ge	e 2	3	good
0			1			4
1	Communication of the purpose of the talk					
2	Evokes audience interest in the subject					
3	The introduction					
4	The sequence of ideas					
5	The use of practical example and/or illustrations					
6	Speaking style					
7	Attempts audience participation					
8	Summary of the main points at the end					
9	Asks questions					
10	Answers questions asked by the audience					
11	Rapport of speaker with his audience					
12	Effectiveness of the talk					
13	Uses audio-visual aids appropriately					
	Total score					

Signature of faculty:

ANNEXURE V

(A) MODEL CHECKLIST FOR DISSERTATION SYNOPSIS
PRESENTATION

Name of the Trainee :

Date :

Name of the Faculty /

Observer :

Sr. no	Prints to be considered	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					
	Total score					

Signature of faculty:

ANNEXURE V

(B) CONTINUOUS EVALUATION OF DISSERTATION WORK

Name of the Trainee :

Date :

Name of Faculty/Observer:

Sr. no	Items for observation during presentation	Poor 0	Below average 1	Average 2	Good 3	Very good 4
1	Periodic consultation with guide/co-guide					
2	Regular collection of case material					
3	Depth of analysis/discussion					
4	Quality of final output					
5	Others					
	Total score					

Signature of Guide:

ANNEXURE VI

OVERALL ASSESSMENT SHEET

Date :

Sl. No.	Faculty Member	Name of Trainee and Mean Score									
		A	B	C	D	E	F	G	H	I	J
1											
2											
3											

Signature of Head of the Department

Signature of Principal

Note: The overall assessment sheet used along with the logbook shall form the basis for certifying satisfactory completion of course of study, in addition to the attendance required.

KEY:

Faculty member : Name of the faculty doing the assessment.

Mean score: **Sum total of all the scores of checklists.**

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