SRM UNIVERSITY
(Under section 3 of UGC Act 1956)

MASTER OF DENTAL SURGERY (M.D.S.) DEGREE

REGULATIONS -2005

(For students admitted from 2005 - 2006 onwards)

FACULTY OF MEDICAL AND HEALTH SCIENCES
SRM UNIVERSITY
KATTANKULATHUR – 603 203

MASTER OF DENAL SURGERY (M.D.S.)

REGULATIONS

1. Title of the Course: It shall be called Master of Dental Surgery

2. Branches of Study: The following are the subjects of specializations for the MDS degree:

I. Orthodontics and Dentofacial Orthopaedics
II. Prosthodontics and Crown and Bridge
III. Conservative Dentistry and Endodontics
IV. Oral & Maxillofacial Surgery
V. Periodontology
VI. Oral Pathology and Microbiology

3. Eligibility

A candidate for admission to the MDS course (Master of Dental Surgery) must have a degree of BDS (Bachelor of Dental Surgery) from a college and University recognized by Dental Council of India or an equivalent qualification recognized by MGR University, Tamil Nadu and the Dental Council of India. Candidates not possessing a recognized Dental qualification for the above purpose should secure the prior approval of his/her qualifications by the Dental Council of India before admission to the MDS course.

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

a. BDS pass / degree certificate issued by the University.
b. Marks cards of all the university examinations passed (I to IV BDS year course).
c. Attempt Certificate issued by the Principal.
d. Certificate regarding the recognition of the Dental college by the Dental Council of India.
e. Completion of paid rotatory internship certificate from a recognized college.
f. Registration by any State Dental Council and
g. Proof of SC/ ST or Category I, as the case may be.

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

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

3. Recognition Fee

Candidates who have passed the BDS Degree / Post Graduate Diploma from any other University shall remit a recognition fee as prescribed along with the regular fees.

4. Commencement of Course

The classes for the course shall commence from Ist week of May. Cut-off date for admission shall be 31st of May.

5. Duration of the Course

The course shall be of 3 years duration.

All the candidates for the degree of MDS are required to pursue the recommended course for at least three academic years as full time candidates in an institution affiliated to and approved for Postgraduate studies by MGR University, Tamil Nadu, and recognized by the Dental Council India.

6. Method of training

The training of postgraduate for degree shall be full time with graded responsibilities in the management and treatment of patients entrusted to his/her care. The participation of the students in all facets of educational process is essential. Every candidate should take part in seminars, group discussions, grand rounds, case demonstration, clinics, journal review meetings, CPC and clinical meetings. Every candidate should participate in the teaching and training programme of undergraduate students. Training should include involvement in laboratory and experimental work, and research studies.

7. Attendance, Progress and Conduct

A candidate pursuing degree / diploma course should work in the concerned department of the institution for the full period as a full time student. No candidate is permitted to run a

clinic / work in clinic / laboratory / nursing home while studying postgraduate course.

No candidate shall join any other course of study or appear for any other examination conducted by this university or any other university in India or abroad during the period of registration.

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

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

8. Monitoring Progress of Studies

8.1 Work diary / Log Book :

- Every Post Graduate candidate shall maintain a record of skills [Log Book] he has acquired during the three years training period, certified by the various Heads of Departments he has undergone training.
- The candidate should record of his / her participation in the training programme conducted by the department such as journal reviews, seminars, etc. in the Log book.
- 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 Head of the Department shall scrutinize the Log Book every 3 months.
- At the end of the course, the candidate should summarise the contents and the Log Book certified by the Head of the Department and Head of the Institution.
- The Log Book should be submitted at the time of University practical / Clinical examination for the scrutiny of the board of Examiners.

8.2 Periodic tests:

In case of degree courses of three years duration, the concerned departments may conduct three tests, two of them be annual tests, one at the end of first year and the other in the second year. The third test may be held three months before the final examination. The

tests may include written papers, practical/clinical and viva voce. Records and marks obtained in such tests will be maintained by the Head of the Department and sent to the University, when called for.

8.3 Records:

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

9. Dissertation

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

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

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

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

The dissertation should be written under the following headings:

i. Introduction
ii. Aims or Objectives of study
iii. Review of Literature
iv. Material and Methods
v. Results
vi. Discussion
vii. Conclusion
viii. Summary

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

The completed dissertation should be submitted six months before the final examination as per calendar of events.

The dissertation shall be valued by examiners appointed by the University. Approval of dissertation work is an essential precondition for a candidate to appear in the University examination.

9.1 Guide: The academic qualification and teaching experience required for recognition by this University as a guide for dissertation work is as laid down by Dental Council of India.

9.2 Co-guide: A co-guide may be included provided the work requires substantial contribution from a sister department or from another institution recognised for teaching/training by the Dental Council of India. The co-guide shall be a recognised postgraduate teacher of the University.

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

10. Scheme of Examination

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

a) **Attendance:** Every candidate shall have fulfilled the attendance prescribed by the University during each academic year of the postgraduate course.
b) **Progress and conduct:** Every candidate shall have participated in seminars, journal review meetings, symposia, conferences, case presentations, clinics and didactic lectures during each year as designed by the concerned department.

10.2 Work diary and Logbook:

Every candidate shall maintain a work diary and logbook for recording his/her participation

in the training programmes conducted by the department. The work diary and logbook shall be verified and certified by the Head of the Department and Head of the institution.
The certification of satisfactory progress by the head of the department and head of the institution shall be based on (a), (b) as mentioned above.

10.3 Schedule of Examination:

The University examination for M.D.S. courses will be held at the end of the first academic year (Two papers as mentioned below) and at the end of the third academic year (4 papers).The university shall conduct two examinations in a year, a Regular and a Arrear Examinations in the month of April and October respectively.

The Final year MDS year examination (Theory and Practical) should not be conducted before April of each academic year.

11. University Examination

A. Part I M.D.S. examintion will have 2 papers.

i. Paper 1 is common to all branches and consists of Applied Anatomy, Applied Physiology and Applied Pathology.
ii. Paper 2 will have 3 subjects in which Biostatistics and Research Methodology is common to all the branches where as the other 2 subjects are optional for different branches.

Branch I : Orthodontics and Dentofacial Orthopaedics
a) Dental Materials
b) Nutrition

Branch II : Prosthodontics and Crown and Bridge
a) Dental Materials
b) Nutrition

Branch III : Conservative Dentistry and Dentistry
a) Pharmacology
b) Dental Materials

Branch IV : Oral and Maxillofacial Surgery
a) Pharmacology
b) Genetic, Growth and Development

Branch V : Periodontology
a) Pharmacology
b) Nutrition

Branch VI : Oral Pathology and Microbiology
a) Nutrition
b) Genetics, Growth and Development

The written examination for Paper 1 will be as follows :

- The Paper will be for 120 marks, 3 hours duration consisting of 4 sections [A,B,C,D].
- Section A will be of M.C.Q. - 45 questions, 15 questions from each of the three subjects = 45 marks.
- Section B, C, & D [each section representing one subject] will be of 25 marks, each comprising of 5 short notes of 5 marks each – 3 x 25 = 75 marks.

The written examination for paper 2 will be as follows :

- The Paper will be for 120 marks, 3 hours duration consisting of 3 sections [A, B, C], each section representing one subject.
- Each section will be for 40 marks consisting of 5 short answers, 6 marks each [5 x 6 = 30 marks] and 5 short notes, 2 marks each [5 x 2 = 10 marks].

Marks distribution :

M.D.S. Part I	Total marks : 300
Theory	**- 240 marks**
Paper 1	- 120 Marks
Paper 2	- 120 Marks
Internal Assessment	- 60 Marks [10 Marks for each subject]
Total	- 300 Marks

- A candidate shall secure 50% [150 marks out of 300 marks] for a pass.

MASTER OF DENTAL SURGERY (M.D.S.) DEGREE
MARKS DISTRIBUTION WITH PASSING MINIMUM

M.D.S. PART – I

SUBJECT CODE	SUBJECT TITLE	I.A.	THEORY U.E.	AGGREGATE	
				MIN	MAX
M.D.S - ORTHODONTICS AND DENTOFACIAL ORTHOPAEDICS					
MDS101	APPLIED BASIC SCIENCES	30	120	-	150
MDS102	BIOSTATISTICS AND RESEARCH METHODOLOGY, NUTRITION, MATERIALS USED IN ORTHODONTIA	30	120	-	150
TOTAL IN WRITTEN				150	300
M.D.S - PROSTHODONTICS AND CROWN & BRIDGE					
MDS101	APPLIED BASIC SCIENCES	30	120	-	150
MDS102	BIOSTATISTICS AND RESEARCH METHODOLOGY, NUTRITION, DENTAL MATERIALS	30	120	-	150
TOTAL IN WRITTEN				150	300
M.D.S - CONSERVATIVE DENTISTRY AND ENDODONTICS					
MDS101	APPLIED BASIC SCIENCES	30	120	-	150
MDS102	BIOSTATISTICS AND RESEARCH METHODOLOGY, PHARMACOLOGY, DENTAL MATERIALS	30	120	-	150
TOTAL IN WRITTEN				150	300

M.D.S - ORAL AND MAXILLOFACIAL SURGERY					
MDS101	APPLIED BASIC SCIENCES	30	120	-	150
MDS102	BIOSTATISTICS AND RESEARCH METHODOLOGY, PHARMACOLOGY, GENETIC, GROWTH AND DEVELOPMENT	30	120	-	150
TOTAL IN WRITTEN				150	300
M.D.S - PERIODONTOLOGY					
MDS101	APPLIED BASIC SCIENCES	30	120	-	150
MDS102	BIOSTATISTICS AND RESEARCH METHODOLOGY, NUTRITION, PHARMACOLOGY	30	120	-	150
TOTAL IN WRITTEN				150	300
M.D.S - ORAL PATHOLOGY, MICROBIOLOGY & FORENSIC ODONTOLOGY					
MDS101	APPLIED BASIC SCIENCES	30	120	-	150
MDS102	BIOSTATISTICS AND RESEARCH METHODOLOGY, NUTRITION, GENETIC, GROWTH AND DEVELOPMENT	30	120	-	150
TOTAL IN WRITTEN				150	300

M.D.S. PART – II

SUBJECT CODE	SUBJECT TITLE	THEORY	AGGREGATE	
			MIN	MAX
M.D.S - ORTHODONTICS AND DENTOFACIAL ORTHOPAEDICS				
MDS211A	GROWTH & DEVELOPMENT, ANTHROPOLOGY,ETIOLOGY OF MALOCCLUSION,GENETICS & MATERIALS USED IN ORTHODONTICS	75	-	-
MDS212A	CHILD PSYCHOLOGY AND DIAGNOSIS AND TREATMENT PLANNING	75	-	-
MDS213A	CLINICAL ORTHODONTICS AND MECHANOTHERAPY	75	-	-
MDS214A	ESSAY WITH EMPHASIS ON RECENT ADVANCES	75	-	-
	TOTAL MARKS IN THEORY SUBJECTS		150	300
MDS215A	PRACTICAL	200	-	-
MDS216A	VIVA VOCE	100	-	-
	OVERALL (THEORY, PRACTICAL, VIVA VOCE)		300	600
M.D.S - PROSTHODONTICS AND CROWN & BRIDGE				
MDS221A	COMPLETE DENTURE PROSTHODONTICS, GERIATRIC PROSTHODONTICS INCLUDING OVERDENTURES	75	-	-
MDS222A	FIXED PARTIAL PROSTHODONTICS, AESTHETIC DENTISTRY AND IMPLANTOLOGY	75	-	-
MDS223A	REMOVABLE PARTIAL PROSTHODONTICS, MAXILLOFACIAL PROSTHETICS AND TEMPEROMANDIBULAR JOINT DISORDERS	75	-	-
MDS224A	ESSAY WITH EMPHASIS ON RECENT ADVANCES	75	-	-
	TOTAL MARKS IN THEORY SUBJECTS		150	300
MDS225A	PRACTICAL	200	-	-
MDS226A	VIVA VOCE	100	-	-

	OVERALL (THEORY, PRACTICAL, VIVA VOCE)		300	600
M.D.S - CONSERVATIVE DENTISTRY AND ENDODONTICS				
MDS231A	DENTAL MATERIALS INCLUDING PREVENTIVE DENTISTRY	75	-	-
MDS232A	CONSERVATIVE AND AESTHETIC DENTISTRY	75	-	-
MDS233A	ENDODONTICS	75	-	-
MDS234A	ESSAY WITH EMPHASIS ON RECENT ADVANCES	75	-	-
	TOTAL MARKS IN THEORY SUBJECTS		150	300
MDS235A	PRACTICAL	200		
MDS236A	VIVA VOCE	100		
	OVERALL (THEORY, PRACTICAL, VIVA VOCE)		300	600
M.D.S - ORAL AND MAXILLOFACIAL SURGERY				
MDS241A	ORAL AND MAXILLOFACIAL SURGERY INCLUDING SURGICAL ANATOMY AND PATHOLOGY	75	-	-
MDS242A	MAXILLOFACIAL AND SURGICAL PROCEDURES AND IMPLANTOLOGY	75	-	-
MDS243A	FACIO MAXILLARY TRAUMA AND ANAESTHESIA	75	-	-
MDS244A	ESSAY WITH EMPHASIS ON RECENT ADVANCES	75	-	-
	TOTAL MARKS IN THEORY SUBJECTS		150	300
MDS245A	PRACTICAL	200		
MDS246A	VIVA VOCE	100		
	OVERALL (THEORY, PRACTICAL, VIVA VOCE)		300	600
M.D.S - PERIODONTOLOGY				
MDS251A	NORMAL PERIODONTAL STRUCTURES, GENETICS AND NUTRITION	75	-	-
MDS252A	ETIO-PATHOGENESIS	75	-	-
MDS253A	CLINICAL PERIODONTOLOGY AND ORAL IMPLANTOLOGY	75	-	-

MDS254A	ESSAY WITH EMPHASIS ON RECENT ADVANCES	75	-	-
	TOTAL MARKS IN THEORY SUBJECTS		150	300
MDS255A	PRACTICAL	200	-	-
MDS256A	VIVA VOCE	100	-	-
	OVERALL (THEORY, PRACTICAL, VIVA VOCE)		300	600
M.D.S - ORAL PATHOLOGY, MICROBIOLOGY & FORENSIC ODONTOLOGY				
MDS261A	ORAL PATHOLOGY, MICROBIOLOGY AND FORENSIC ODONTOLOGY (INCLUDING IMMUNOLOGY)	75	-	-
MDS262A	ONCOLOGY (INCLUDING BASIC MOLECULAR BIOLOGY AND GENETICS)	75	-	-
MDS263A	DIAGNOSTIC AND LABORATORY TECHNIQUES	75	-	-
MDS264A	ESSAY WITH EMPHASIS ON RECENT ADVANCES	75	-	-
	TOTAL MARKS IN THEORY SUBJECTS		150	300
MDS265A	PRACTICAL	200	-	-
MDS266A	VIVA VOCE	100	-	-
	OVERALL (THEORY, PRACTICAL, VIVA VOCE)		300	600

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

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

b) Written Examination (Theory): The written examination shall consists of four question papers of 3 hours duration ,total marks for each paper will be 75.Paper I,II,III shall consists of two long essays of 20 marks each and five short essays of 7 marks each.Paper IV will have one essay(either or) for 75 marks.

c) Practical Clinical Examination:

In case of practical examination, it should be aimed at assessing competence and skills of techniques and procedures. It should also aim at testing student's ability to make relevant and valid observations, interpretation and inference of laboratory or experimental or clinical work relating to his / her subject for undertaking independent work as a specialist.
The total marks for practical / clinical examination shall be 200 marks.

d) Viva Voce:

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

	Duration of viva voce for each candidate	-	1hr
i.	Viva voce examination	-	80 marks
ii.	Dissertation/ Pedagogy	-	20 marks

e) Examiners:

There shall be at least four examiners in each branch of study. Out of four, two shall be external examiners and two shall be internal examiners. The qualification and teaching experience for appointment as an examiner shall be as laid down by the University and Dental Council of India from time to time.

f) Qualification & Experience for examiners:

1. He should possess qualification and experience not less than that recommended for a teacher for Post graduate degree programme.
2. No person who is not an active postgraduate teacher in the subject can be appointed as examiner
3. 50% of the external examiners shall be from outside the state.
4. Reciprocal arrangement of examiners should be discouraged, in that,the internal examiner in a subject should not be accepted external examinership for a college from which external examiner is appointed in his subject.
5. No person shall be 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.

(MODEL QUESTION PATTERN)
M.D.S. (PART – I) DEGREE EXAMINATIONS

Time : 3 Hours   Max. Marks : 120

PAPER – I
SECTION – A
PART – A (5 x 2 = 25 Marks)
ANATOMY

Answer All the Questions

1. _____________________________________.
2. _____________________________________.
3. _____________________________________.
4. _____________________________________
5. _____________________________________

PART – B (5 x 6 =25 Marks)
PHYSIOLOGY

Answer All the Questions

6. _____________________________________
7. _____________________________________
8. _____________________________________
9. _____________________________________
10. _____________________________________

PART – C (5 x 5 = 25 Marks)
PATHOLOGY

Answer All the Questions

11. _____________________________________
12. _____________________________________
13. _____________________________________
14. _____________________________________
15. _____________________________________

PART – D (45 x 1 = 45 Marks)

Answer All the Questions

MULTIPLE CHOICE QUESTIONS
(45 QUESTIONS – 15 FROM EACH - ANATOMY, PHYSIOLOGY AND PATHOLOGY)

(MODEL QUESTION PATTERN)
M.D.S. (PART – I) DEGREE EXAMINATIONS

Time : 3 Hours Max. Marks : 120

PAPER – II
SECTION – A, SECTION – B AND SECTION – C OPTIONAL SUBJECTS FOR EACH BRANCH

SECTION – A
BIOSTATISTICS AND RESEARCH METHODOLOGY
PART – A (5 x 2 = 10 Marks)
Answer All the Questions

1. _____
2. _____
3. _____
4. _____
5. _____

PART – B (5 x 6 = 30 Marks)
Answer All the Questions

6. _____
7. _____
8. _____
9. _____
10. _____

SECTION – B
MATERIALS USED IN PROSTHODONTIA
PART – A (5 x 2 = 10 Marks)
Answer All the Questions

11. _____
12. _____
13. _____
14. _____
15. _____

PART – B (5 x 6 = 30 Marks)

Answer All the Questions

16. _
17. _
18. _
19. _
20. _

SECTION – C

NUTRITION

PART – A (5 x 2 = 10 Marks)

Answer All the Questions

21. _
22. _
23. _
24. _
25. _

PART – B (5 x 6 = 30 Marks)

Answer All the Questions

26. _
27. _
28. _
29. _
30. _

FOR MDS PAPER I , II, AND III
(MODEL QUESTION PATTERN)
M.D.S. (PART –II) DEGREE EXAMINATIONS
SRM UNIVERSITY

Time : 3 Hours
Max. Marks : 75

PART – A (2 x 20 = 40 Marks)
Answer All the Questions

1. _
2. _

PART – B (5 x 7 = 35 Marks)
Answer All the Questions

3. _
4. _
5. _
6. _
7. _

******

FOR MDS PAPER IV
(MODEL QUESTION PATTERN)
M.D.S. (PART –II) DEGREE EXAMINATIONS
SRM UNIVERSITY

Time : 3 Hours
Max. Marks : 75

PART – A (1 x 75 = 75 Marks)
Answer All the Questions

1. _

[OR]

2. _

g) Criteria for declaring as Pass:

To pass in the university examination, a candidate shall secure in both theory examination and in the practical / clinical including viva voce independently an aggregate of 50% of total marks allotted [150 marks out of 300 marks for theory and 150 marks out of 200 marks for clinical + 100 marks for viva voce together].

h) Criteria for declaring as Pass:

A candidate who scores 360 marks & more out of the total 600 marks will be declared as passed with First class. A candidate who scores 450 marks and more out of the total 600 marks will be declared as pass in first class with distinction.

i) Number of passes:

i. A candidate registered for MDS Post Graduate Dental course must qualify in the examinations within six years of the date of his / her admission.
ii. The candidate should have successfully cleared Part I MDS Exams before appearing for Part II MDS Exams.

SYLLABUS

Part I :

MDS101	Paper 1 APPLIED BASIC SCIENCES

Applied Anatomy, Applied physiology, Applied pathology : (common to all branches).

APPLIED ANATOMY

- Development and growth of face, teeth and jaws, Age changes and evaluation of mandible in detail.
- Congenital abnormality of orofacial regions
- Paranasal sinuses and associated atructures and their anomalies
- Surgical anatomy of scalp , temple and face
- Anatomy and its applied aspects of triangles of neck
- Deep structures of neck
- Cranial facial bones and surrounding soft tissues
- Cranial nerves
- Tongue
- Temporal and infratemporal region and Temperomandibular joint in detail
- Orbits and its contents
- Muscles of face and neck
- Thyroid and parathyroid glands
- Larynx, Trachea and oesophagus
- General consideration of the structure and function of brain and applied anatomy of intracranial venous sinuses
- Cavernous sinus and superior sagital sinus
- Brief consideration of autonomous nervous system of head and neck
- Functional anatomy of mastication
- Deglutition, Speech
- Respiration and circulation
- Histology of skin, oral mucosa, connective tissue, bone, cartilage, cellular elements of blood vessels, Lymphatic , Nerves, Muscles
- Tooth and its surrounding structures
- Cross – sectional Anatomy of the head and neck, as applied in CT, MRI Interpretation.
- Salivary glands – Anatomy, Embryology and Histology

APPLIED PHYSIOLOGY

- Nervous system – physiology of nerve conduction, pain pathway, sympathetic and parasympathetic nervous system, hypothalamus and mechanism of controlling body temperature.
- Blood - its composition hemostasis, blood dyscrasias and its management, hemorrhage and its control, blood group9ing, cross matching, blood component therapy, complications of blood transfusion, blood substitutes, auto transfusion, cell savers.
- Digestive system - composition and functions of saliva, mastication, deglutition, digestion, assimilation, urine formation, normal and abnormal constituents.
- Respiratory system – respiration control of ventilation, anoxia, asphyxia, artificial respiration, hypoxia – type and management
- CVS - cardiac cycle, shock, heart sounds, blood pressure, hypertension
- Endocrinology - metabolism of calcium , endocranial activity and disorder relating to thyroid gland, parathyroid gland, adrenal gland, pituitary gland, pancreas and gonads.
- Nutrition – general principles balanced diet, effect of dietary deficiency, protein energy malnutrition, kwashiorkor, marasmus, nutritional assessment, metabolic responses to stress, need for nutritional support ,entrails nutrition, roots of access to GIT, parenteral nutrition, access to central veins, nutritional support
- Fluid and electrolytic balance / acid base metabolism – the body fluid compartment, metabolism of water and electrolytes, factors maintaining hemostasis causes for treatment of acidosis and alkalosis.

APPLIED PATHOLOGY

- Inflammation – acute and chronic inflammation, repair and regeneration, necrosis and gangrene and role of component system in acute inflammation, role of arachidonic acid and its metabolites in acute inflammation, growth factors in acute inflammation role of NSAIDS in inflammation, cellular changes in radiation injury and its manifestations.
- Wound management - wound healing factors influencing healing, properties of suture materials, and appropriate uses of sutures.

- Hemostasis - role of endothelium in thrombogenesis, arterial and venous thrombi, disseminated intravascular coagulation.
- Hypersensitivity - shock and pulmonary failure, types of shock, diagnosis, resuscitation, pharmacological support , ARDS and its causes and prevention, ventilation and support
- Neoplasia - classification of tumours, carcinogens and carcinogenesis, spread of tumors, characteristics of benign and malignant tumors, grading and staging of tumours various laboratory investigation.
- Chromosomal abnormalities with oro-facial manifestations.
- Basics of immunology – primary and acquired immunodeficiencies.

MDS102	PAPER – II - BIOSTATISTICS AND RESEARCH METHODOLOGY AND TWO ELECTIVES

BIOSTATISTICS AND RESEARCH METHODOLOGIES:

Over all Objectives:

To enable the students to apply the basic concepts of statistics and principles of scientific enquiry in planning and evaluating the results of dental practice and participate in and conduct descriptive exploratory and survey students in dental and evaluate apply results of research studies in health, dental medicine and related fields in the practice of dental.

Behavioural Objectives:

The student is able to

- Design a study, identifying a population and methods of selection of the sample required
- Present data in appropriate tables, graphs and diagrams.
- Calculate averages, variations, linear correlation and regression.
- Calculate the confidence intervals and simple tests of significance using normal "t" and chi-square distributions.
- Compute commonly used vital and health statistical and estimate population using arithmetic progression methods
- Construct instruments for eliciting data through questioning observation and measurement methods and techniques.
- Quantify, analyze, describe and interpret data.
- Critique dental studies.
- Select and write clear statement of a researchable problem.
- Search and analyze the literature for facts and theory relating to problem.
- Identify and state relevant assumptions and hypothesis.
- Make recommendations on the findings for application to nursing and further research.
- Prepare and write a scientific report of the study

Units	Description
I	Introduction and overview of Biostatistics Scope of biostatistics Biostatistics in Dentistry Applying study results to patient care
II	2.1 Review of descriptive statistics (Central tendency, dispersion, plotting) 2.2 Correlation and regression
III	3.1 Testing of statistical Hypothesis 3.2 Statistical interference with mean proportion and normal deviate 3.3 Sampling distributions
IV	4.1 ANOVO (one way & Two way Classification) 4.2 Non-parametric tests a) Sign test b) Wilcoxon signed rank rests c) Main Whitney Run Test d) Wald Wolfwith Run test e) Krushl Wallis test
V	5.1 Concept of research & Research process 5.2 Principles and various Methods of research process 5.3 Utilization of research, result section of a research report & Conclusions 5.4 The Checklist for the reading literature

MATERIALS IN ORTHODONTICS

- Structure and properties of orthodontic material – (i) Metallic,
- (ii) Ceramic, (iii) Polymeric.
- Mechanics and mechanical testing of orthodontic materials.
- Orthodontic wires – (i) General terminology – a) Resiliency, b) Stiffness,
- Stress, d) Strain, e) Proportional limit, f) Deflection, g) Contact point, Range of action.
- Desirable properties of wires.
- Manufacturing.
- Wire alloys – gold alloys, stainless steel wires, cobalt chromium nickel wires, nickel titanium wires, alpha and beta titanium wire.
- Clinical selection of orthodontic wires.
- Comparison of contemporary arch wires.
- Effect of diameter and cross section.
- Effect of length and attachments.

- Bonding Types and principles.
- Enamel etching and bond strength.
- Orthodontic adhesive resins and composites – (i) Adhesives –
- Composition, b) Modifications – 1) Generation, 2) Self-etching primer,
- 3) Light cure primer – Hydrophobic, Hydrophilic, 4) MIP.
- Composite – (i) Composition, (ii) Self curing – Types, (iii) Light curing –Types.
- Principles of adhesion bonding to non conventional surfaces.
- Recent advances in bonding materials.
- Cements in orthodontics.
- Impression materials.
- Elastic materials and the production of orthodontic force – (i) The Basic properties, (ii) Rubber and plastic source of elastic forces, (iii) Elastomeric ligatures and chain – (a) Properties, (b) Types, (c) Use, (d) Force degradation.
- Causes of failure.
- Orthodontic bracket – (i) Metallic brackets, (ii) Aesthetic brackets, (iii) Lingual brackets.
- Debonding – (i) Techniques, (ii) Enamel damage, (iii) Magnets as a source of orthodontic force – a) Properties and composition, b) Types, c) Uses, Advantages and disadvantages, e) Modifications.
- Soldering and welding.
- Principles of biocompatibility.
- Allergic reactions and safety concerns.
- Recent advances in orthodontic materials.

NUTRITION IN DENTISTRY

Course Description : The course is designated to assist the students to acquire knowledge of nutrition for maintenance of optimal health at different stages of life and its application for practise of nursing.

Learning Objectives :

- Describe the relation between nutrition and health care.
- Describe the classification, functions, sources and recommended daily allowances [RDA] of carbohydrates.
- Describe the classification, functions, sources and recommended daily allowances [RDA] of proteins.
- Describe the classification, functions, sources and recommended daily allowances [RDA] of fats.
- Describe the daily calorie requirement for different categories of people.

- Describe the classification, functions, sources and recommended daily allowances [RDA] of vitamins.
- Describe the classification, functions, sources and recommended daily allowances [RDA] of minerals.
- Describe the sources, functions and requirements of water and electrolytes.
- Describe the cookery rules and preservation of nutrients.
- Prepare and serve simple beverages and different types of people.
- Describe and plan balanced diet for different categories of people.
- Describe various national programmes related to nutrition.
- Describe the role of nurse in assessment of nutritional status and nutrition education.

Unit I : Introduction

- Role Of Nutrition In Maintaining Health
- Role Of Food & Its Medicinal Value
- Classification Of Food
- Calorie, BMR

Unit II : Carbohydrates

- Classification
- Caloric Value
- Dietary Sources
- Digestion, Absorption & Storage, Metabolism Of Carbohydrates
- Malnutrution : Deficiences & Over Consumption

Unit III : Fats

- Classification
- Caloric Value
- Dietary Sources
- Functions
- Malnutrition : Deficiences & Over Consumption

Unit IV : Proteins

- Classification
- Caloric Value
- Recommended Daily Allowances
- Dietary Sources

- Functions
- Digestion, Absorption, Metabolism & Storage
- Malnutrition : Deficiences & Over Consumption

Unit V : Energy

1. Energy Requirements Of Different Categories Of People
2. Body Mass Index [Bmi] & Basic Metabolism
3. Basal Metabolic Rate [Bmr] – Determination & Factors Affecting

Unit VI : Vitamins

- Classification
- Recommended Daily Allowances
- Dietary Sources
- Functions
- Absorption, Synthesis, Metabolism, Storage & Excretion
- Deficiences
- Hypervitaminosis

Unit VII : Minerals

- Classification
- Recommended Daily Allowances
  - Dietary Sources
  - Functions
  - Absorption, Synthesis, Metabolism, Storage & Excretion
  - Deficiences
- Over Consumption And Toxicity

Unit VIII : Water & Electrolytes

- Water : Daily Requirement, Regulation Of Water Metabolism, Distribution of Body Water
- Electrolytes : Types, Sources, Composition Of Body Fluids
- Maintenance Of Fluid & Electrolyte Balance
- Over-Hydration, De-Hydration & Water Intoxication
- Electrolyte Imbalances

MATERIALS IN PROSTHETICS:

INTRODUCTION:

Objectives, Goals, History, Oral Environment, Characteristics of Ideal Dental Materials.

CHARACTERISTICS OF DENTAL MATERIALS.

Classification, Structure, Physical Characteristics, Mechanical Characteristics, Biological Characteristics of Dental Materials.

MATERIALS FOR INLAYS.ONLAYS, CROWN AND BRIDGES

Classification of Metal and Alloys.

Structure, Composition Properties, and Application.

IMPRESSION MATERIALS

Objectives, Composition, Mixing and Handling Characteristic, Disinfection, and Applications of Impression Materials.

GYPSUM PRODUCTS

Objectives, Composition, Types Handling, Characteristic and Application of Gypsum Products.

PROVISIONAL RESTORATIONS.

MATERIALS FOR CAST RESTORATIONS

Waxes, Die Materials, Investment.

POLYMERS FOR PROSTHETICS

Objectives, All Resins.

ABRASION AND POLISHING.

LUTING CEMENTS.

DENTAL IMPLANTS.

PHARMACOLOGY

TOPICS

Definition of terminologies used.

Dosage and mode of administration of drugs

Action and fate of drugs in the body

Drug addiction, tolerance and hypersensitive reactions.

I. Chemotherapy of Microbial diseases:

1. Beta-Lactam Antibiotics
2. Quinolones
3. Tetracyclines and Chloramphenicol

4. Amino-Glycosides
5. Nitroimidazoles
6. Macrolide Antibiotics
7. Cotrimoxazole
8. Miscellaneous anti-microbial drugs
   a) Clindamycin
   b) Linezolid
9. Probiotics
10. Anti-Fungal agents
11. Anti-Viral Agents – with specific emphasis on treatment of viral infections affecting the oral cavity and anti-retroviral therapy
12. Chemotherapy of Tuberculosis
13. Chemotherapy of Leprosy

II. Drugs acting on Central nervous System

1. Non-steroidal anti-inflammatory drugs
2. Opioid Analgesics and antagonists
3. Sedative Hypnotics
4. Skeletal Muscle relaxants – Centrally and peripherally acting agents
5. Local Anaesthetics
6. Pre-Anaesthetic Medication and intravenous anaesthetics
7. Drug Therapy of Neuralgias
8. Drug Therapy of Migrane

III. Drugs acting on Endocrine system

1. Adreno-corticosteroids
2. Anti Diabetic drugs
3. Drugs affecting Calcium Homeostasis

IV. Drugs acting on the cardio-vascular system

1. Anti-Hypertensive drugs
2. Drug Therapy of shock

V. Drugs acting on blood

1. Coagulants, Styptics and Anti-coagulants
2. Anti-Platelets drugs

VI. Drugs acting on Gastro-Intestinal System

1. Drugs used in the treatment of Peptic Ulcer disease
2. Anti-Emetics

VII. Autocoids

1. Anti Histamines – H1 receptor blockers

VIII. Adverse Drug Effects – Oral Manifestations

IX. Medical Emergencies

1. Status Asthmaticus
2. Status Epilepticus
3. Hypertensive emergencies
4. Acute Myocardial Infarction
5. Acute attack of Angina pectoris

X. Miscellaneous Agents

1. Enzymes in dentistry
2. Immuno-Modulator drugs in dentistry
3. Antiseptics and disinfectants
4. Vitamins B complex , C, A, D, E & K
5. Anti-Oxidants
6. Fluorides
7. Haematinics
8. Sialogogues and Anti-sialogogues

MATERIALS IN CONSERVATIVE DENTISTRY

1. Performance standards for dental materials

To gain an understanding of dental materials, a basic knowledge of their atomic or molecular structure, their behavior during handling and use in the oral environment.

2. Structure of matter and Principals of Adhesion

This chapter presents a short review of matter as a foundation for basic understanding of dental materials.

3. Properties of Dental Materials

Physical and Mechanical properties of materials are based on the laws of mechanics, acoustics, optics, thermodynamics, electricity, magnetism, radiation, atomic structure or nuclear phenomena. These properties have been discussed in relation to the dental environment.

4. Biocompatibility of Dental Materials

Biocompatibility is a fundamental requirement for any restorative material. This chapter presents an overview of the types of biological responses that materials may cause, and the anatomical aspects of the oral cavity that influence or modify biological responses to materials.

5. Hydrocolloid Impression Materials

Hydrocolloid refers to a colloid that contains water as a dispersion phase. Agar and Alginate are referred to as reversible and irreversible hydrocolloids respectively. This Chapter deals with their extensive usage in dentistry along with their composition, properties and method of manipulation.

6. Nonaqueous Elastomeric Impression Materials

Elastomers are a group of rubbery polymers, which are either chemically or physically cross-linked. They can be easily stretched and rapidly recover their original dimensions when the applied stress is released.

7. Inelastic Impression Materials

Inelastic impression materials exhibit an insignificant amount of elastic deformation when subjected to bending or tensile stresses. These materials include impression plaster, impression compound and ZOE impression paste.

8. Gypsum Products

Gypsum products are used in dentistry for the preparation of study models for oral and maxillofacial structures and as important auxillary materials for dental laboratory operations that are involved in the production of dental prostheses. Various types of gypsum products, their working and setting times and their roles in different clinical situations have been discussed

9. Chemistry of Synthetic Resins

This chapter deals with the chemistry involved in polymerization of different synthetic resins, their formation of byproduct and also the various advantages and disadvantages of various resins.

10. Restorative Resins

Restorative resins or dental composites are highly crosslinked polymeric materials reinforced by a dispersion of glass, crystalline or resin filler particles and /or short fibers bound to the matrix by silane coupling agents. Various aspects related to dental composites have been discussed in length.

11. Bonding

The importance of bonding, various techniques involved in bonding of dental materials in different situations has been elaborated in this chapter. A brief outline of evolution of dental adhesives has also been discussed.

12. Solidification and Microstructure of Metals

Microstructure refers to the structural appearance of a metal revealed by microscopic imaging of the chemically or electrolytically etched surface of a flat, polished specimen. This chapter discusses the microstructure and solidification of various metals used in dentistry.

13. Constitution of Alloys

This chapter deals with the various equilibrium phases present in an alloy.

14. Corrosion

Basic understanding of corrosive process will help the clinicial to formulate a restoration which can withstand corrosion for a longer period of time. This chapter deals with the types, causes and the various methods employed to prevent corrosion**.**

15. Dental Amalgam

i. Structure and Properties

ii. Technical Consideration

Dental amalgam constitutes the track record of longest serving restoration in the history of mankind. This chapters provides a lucid presentation of different composition of dental amalgams with their properties and manipulation technics

16. Direct Filling Gold and Its Manipulation

This chapter provides an insight into the various types of direct filling gold available for restorative purpose in dentistry. Also the various technical factors involved in manipulation have also been discussed.

17. Dental Casting alloys

Dental casting alloys represent the noble and base metal alloys. These alloys have been dealt extensively in this chapter.

18. Inlay Casting Wax

Inlay wax is a specialized dental wax that can be applied to dies to form direct or indirect patterns for the lost-wax technique used for casting metals or hot pressing of ceramics. Various properties of inlay wax along with their method of application for direct and indirect techniques for taking wax pattern have been discussed.

19. Investments for Small Casting

This chapter discusses the different types of investments used for different types of alloy, their properties and various techniques employed to compensate for the alloy shrinkage.

20. Casting Procedure for Dental Alloys

Basic knowledge and understanding of the casting procedures is a guiding force for the long-term success of the metal restorations. This chapter deals extensively with the casting procedures, casting failures and their probable cause and methods to overcome various casting failures.

21. Dental Cements for Restorations and Pulp Protection

Dental cements forms the mainstay in dental applications and therefore a detailed understanding of the properties and their uses in various clinical situations have been extensively covered in this chapter.

22. Dental Cements for Bonding Application

Dental cements that can bond to the tooth structure includes, Glass Ionomer cement, Zinc Polycarboxylate and Silicate cements. This chapter discusses the evolution of cements used for bonding with their properties and uses alongwith their advantages and disadvantages.

23. Dental Ceramics

Dental ceramic is an inorganic compound with nonmetallic properties typically consisting of oxygen and one or more metallic or semi-metallic elements that is formulated to produce the whole or part of a ceramic based dental prosthesis. This chapter presents an overview of the evolution of dental ceramics, advances in the ceramic technology and their various processing methods.

24. Finishing and Polishing Materials

Finished and polished restorations provides good oral care, optimum function and enhanced esthetics. This chapter provides an insight into the various finishing and polishing materials available in the field of dentistry and also their method of application for longevity of the restoration.

GENETICS, GROWTH AND DEVELOPMENT:

Genetics

- Principle of Oro – Facial genetics
- Molecular basis of genetics
- Counseling
- Dento – Facial anomalies
- Anatomical, Physiological and Pathological characteristics of major groups of development defects of the oro – facial structures

Growth and Development

- Pre – natal and Post natal development of cranium, face and jaws
- Teeth and supporting structures
- Chronology of dental development and development of occlusion
- Dimensional changes in dental arches
- Cephalometric evaluation of growth

MATERIALS IN PEDODONTICS AND PREVENTIVE DENTISTRY

- Introduction, Characteristics & ideal requirements of Dental materials
- Classification, structure, physical mechanical chemical & biological characters of Dental materials.
- Classification of metals (structure, composition, properties)
- Impression materials (classification, composition, mixing & handing disinfection, application of impression material)
- Gypsum products:- objectives, composition, types, handling, characteristics & application ofgypsum products.
- Resins, abrasive & polishing agents / luting cement

M.D.S - ORTHODONTICS AND DENTOFACIAL ORTHOPAEDICS

SCHEME OF EXAMINATION:

PG PART II

Paper I - Growth & Development, Anthropology, Etiology of Malocclusion, Genetics & Materials used in Orthodontics

Paper II - Child Psycology & Diagnosis and Treatment Planning

Paper III - Clinical Orthodontics and Mechanotherapy

Paper IV –Essay with Emphasis on Recent Advances

PRACTICAL EXAMINATION:

Day 1

Schedule	Duration	Time
Display of cases treated by candidate	3 ½ hrs	9-12:30 am
Lunch break(12:30 -1:30 pm)		
Functional appliances cases: Diagnosis, Treatment planning, Bite registration	2 hrs	1-3 pm
Display of Preclinical works, Seminars and Library Dissertation	1 hr	3-4 pm

Day 2

Schedule	Duration	Time
Functional appliance case: Delivery and discussion	1 hr	9-10 am
Fixed appliance case: Fabrication and insertion of arch wire	2 ½ hrs	10-12:30 am
Lunch break(12:30 -1:30 pm)		
Presentation of Dissertation and their best case discussion Allotment of long case	3 hrs	1-4 pm

Day 3

Schedule	Duration	Time
Viva voce & Long case discussion	3 hrs	9-12 am

MDS PART – II SYLLABUS

GROWTH AND DEVELOPMENT

1) Growth pattern, variability and timings.
2) Methods of studying physical growth – Measurement approach – Experimental approach :
   - Nature of skeletal growth.
   - Primary cartilage.
   - Secondary cartilage.
   - Growth center.
   - Growth site.
3) Pre natal growth – Cranial vault :
   - Cranial base.
   - Maxilla.
   - Mandible.
4) Post natal growth – Cranial Vault :
   - Cranial base.
   - Maxilla.
   - Mandible.
5) Wolfe's law of transformation.
6) Trajectories of forces.
7) Theories of growth – Genetic theory :
   - Sutural theory.
   - Cartilage theory.
   - Functional Matrix theory.
   - Enlow's V principle.
   - Van Limborg theory.
   - Cybernetics.
   - Servosystem – Auxological groups – Arborization – Drift versus displacement.
8) Growth rotations.
9) Implications of growth.
10) Growth spurts.
11) Early stages of development – Embryologic development :
   - Late foetal development and birth.
12) Infancy and early childhood :
   - The primary duration years.
   - Physical development in preschool years.

13) Maturation of oral function – Buccinator mechanism :

- Infantile swallow.
- Transitional swallow.
- Adult swallow – Eruption of primary teeth late childhood – Physical development in late childhood – Exception of permanent teeth – Space relationship in replacement of incisors – incisor liability – Space relationship in replacement of canine and primary molar – Development of dentition – Normal occlusion – Development of occlusion – Skeletal maturity indicators.
- Cervical vertebra.
- Hand wrist X-ray methods.
- Miscellaneous.

14) Later stages of development – Adolescence :

- Early permanent dentition.
- Limitation of adolescence.
- Timing of puberty – Growth patterns in dentofacial complex.
- Dimensional changes.
- Rotation of jaws – Maturation and ageing.
- Changes in teeth and supporting structure.
- Changes in alignment and occlusion soft tissue changes in ageing – Facialgrowth in adults – Development of palate and clinical implications –Development of tongue – Development of cleft palate – Dynamics of facial growth – Differential growth – Functions of the stomatognathic system – Development of T.M.J. – Maturation of orofacial musculature.
- Orofacial muscles.
- Basic concepts of oro facial neuromuscular physiology.
- Reflex determinants of mandibular registration position.
- Growth and adaptation of orofacial muscles – Interaction of orofacial muscles with development of craniofacial skeletal and dentition – Role ofcraniofacial skeletal growth in Orthodontics – Growth prediction – Arcial growth – Malocclusion associated with syndrome – Mandibular skeletal jaw dysmorphology – Mechanism of bone growth – Mechanism of bone transformation – Embryologic origin of the cartilage replacement mechanisms of the head – Law of electrogenesis – Synchondroses – Principles of bone growth – Theories of tooth eruption – Functional Matrix revisited –Mitosis – Meiosis – Recent advances.

Physiology of the stomatognathic system – Myology :

- The buccinators mechanism.
- Functional movements.
- Temporomandibular joint – its disorders and management, Functions of the stomatognathic system.
- Mastication.
- Deglutition.
- Respiration.
- Speech.

ANTHROPOLOGY

- Ontogeny.
- Phylogeny.
- Evolution of human face.
- Evolution of T.M.J.
- Evolution of mandible.
- Vestigial organs.
- Evolution of dentition.
- Dryopaethicus.
- Anthropometric studies.

NUTRITION

- Role of vitamins.
- Role of hormones.
- Calcium and phosphorus homeostasis.
- Enzymology.
- Balanced diet.
- Role of nutrition.
- Nutrition of malocclusion.

EPIDEMIOLOGY OF MALOCCLUSION

- Classification of malocclusion.
- Need for Orthodontic treatment.
- Demand for Orthodontic treatment.
- Why is malocclusion so prevalent?

ETIOLOGY

- Specific causes of malocclusion :-
- Disturbances in embryologic development.
- Skeletal growth disturbances.
- Muscles dysfunction.
- Acromegaly and hemimandibular hypertrophy.
- Disturbances of dental development.
- Genetic influences.
- Environmental theory and development of the dental occlusion :-
- Functional influences on dentofacial development.
- Etiology in contemporary perspective :-
- Changing views of etiology possibilities.
- Etiology of crowding and malalignment.
- Etiology of skeletal problems.

GENETICS

- Principles and terminology.
- Laws of inheritance.
- Mode of inheritance.
- Twin studies.
- Mutation.
- Recent advances in genetics and molecular biology.
- Role of homeobox genes.
- Molecular genetics in oral and craniofacial dysmorphology.
- Heritability of skeletal malocclusion.
- Heritability of local occlusal variables.
- Genetic influence on tooth number, size and morphology.
- Clinical implications.
- Chromosomal aberrations.
- Recent advances.

ORTHODONTIC MATERIALS

- Structure and properties of orthodontic material – (i) Metallic, (ii) Ceramic, (iii) Polymeric.
- Mechanics and mechanical testing of orthodontic materials.

- Orthodontic wires – (i) General terminology – a) Resiliency, b) Stiffness,Stress, d) Strain, e) Proportional limit, f) Deflection, g) Contact point, h) Range of action.
- Desirable properties of wires.
- Manufacturing.
- Wire alloys – gold alloys, stainless steel wires, cobalt chromium nickel wires, nickel titanium wires, alpha and beta titanium wire.
- Clinical selection of orthodontic wires.
- Comparison of contemporary arch wires.
- Effect of diameter and cross section.
- Effect of length and attachments.

BONDING

- Types and principles.
- Enamel etching and bond strength.
- Orthodontic adhesive resins and composites – (i) Adhesives –Composition, b) Modifications – 1) Generation, 2) Self-etching primer, 3) Light cure primer – Hydrophobic, Hydrophilic, 4) MISP.Composite – (i) Composition, (ii) Self curing – Types, (iii) Light curing –Types.
- Principles of adhesion bonding to non conventional surfaces.
- Recent advances in bonding materials.
- Cements in orthodontics.
- Impression materials.
- Elastic materials and the production of orthodontic force – (i) The Basic properties, (ii) Rubber and plastic source of elastic forces, (iii) Elastomeric ligatures and chain – (a) Properties, (b) Types, (c) Use, (d) Force degradation.
- Causes of failure.
- Orthodontic bracket – (i) Metallic brackets, (ii) Aesthetic brackets, (iii) Lingual brackets.
- Debonding – (i) Techniques, (ii) Enamel damage, (iii) Magnets as a sourceof orthodontic force – a) Properties and composition, b) Types, c) Uses,Advantages and disadvantages, e) Modifications.
- Soldering and welding.
- Principles of biocompatibility.
- Allergic reactions and safety concerns.
- Recent advances in orthodontic materials.

CHILD PSYCHOLOGY

1) Learning and development of behaviour :

- Classical conditioning.
- Operant conditioning.
- Observational conditioning.

2) Stages of emotional and cognitive development :

Emotional development:-

- Sigmund Freud's Psychoanalytic theory of personality development.
- Erik Eriksson's eight stages of emotional development.

Cognitive development:-

- Jean Piaget's
- Assimilation and accommodation.
- Four periods of cognitive development.
- Sensorimotor.
- Pre operational.
- Concrete operational.
- Period of formal operations.
- Elkinel imaginary audience.
- Personal fable. Behavioural Sciences:-
- The adolescent patient.
- The compliant adult patient.
- The orthodontist. Social Psychology of Orthodontics.Orthodontic motivational Psychology.Educational Psychology :
- Learning patterns.
- Sensitivity threshold.
- Patient-oriented Approach. Psychologic outcomes of Orthodontic treatment :
- Self-concept.
- Self-esteem.
- Body images. Management of handicapped child in Orthodontic office. Kinds of Behaviour :
- Fear.
- Anxiety.
- Cry. Behaviour Rating Scales. Psychological aspects of Habits. Child abuse.

ORTHODONTIC DIAGNOSIS

The development of a problem list – The problem – Oriented Approach :

- Questionnaire / Interview – (i) Chief complaint, (ii) Medical and Dental History, (iii) Physical Growth Evaluation, (iv) Social and Behavioural Evaluation.
- Clinical Evaluation – (i) Evaluation of Oral Health, (ii) Evaluation of jaw and occlusal function, (iii) Evaluation of facial proportions, (iv) Which diagnostic records are needed?
- Analysis of Diagnostic Records – (i) Cast analysis – symmetry and space,(ii) Cephalometric analysis.
- Orthodontic Classification – (i) Development of classification systems, (ii) Classification by the characteristics of malocclusion.
- Development of a problem list.

RADIOLOGY

- Properties of X-rays.
- Evolution of X-rays.
- X-ray film.
- Bitewing.
- IOPA – (i) Paralleling, (ii) Bisecting angle techniques.
- General Radiology :
- Radiation Hazards.
- Radiation Protection.
- Xero Radiography.
- O.P.G.
- Focal trough.
- T.M.J. imaging.
- C.T. scan.
- M.R.I. scan.
- Soft tissue filter.
- Collimator, grids and intensifying screens.
- Radiographic diagnosis of impacted tooth.
- Shift cone technique.

CEPHALOMETRY

1) Significations of Radiographic Cephalometry :
   - Contribution factors to facial disharmony.
   - Limitations of classification of malocclusion from dental cases.
   - Incisor inclination.
   - Importance of differential diagnosis in Class – II and Class – III.
   - Growth and Maturation.
2) Twenty centuries of Cephalometry :
   - Classifying physique.
   - Measurement and Proportion.
   - Renaissance to Twentieth Century.
   - The Divine proportion.
   - A search for an ideal.
3) Radiographic Cephalometric techniques :
   - Factors affecting Cephalometric Radiographs.
   - Patient positioning.
   - X-ray grids.
   - Film / screen combinations.
   - X-ray generators.
   - Film processing.
   - Radiographic protection principles.
4) Tracing Techniques and identification of landmarks :
   - Tracing techniques.
   - Identification of Cephalometric landmarks.
5) Downs Analysis.
6) Steiner Analysis.
7) Ricketts Analysis.
8) Wits Appraisal.
9) Mc. Namara Analysis.
10) Pitchfork's Analysis.
11) Bjork's Analysis.
12) Tweed's Analysis.
13) Schwarz Analysis.
14) COGS Analysis.
15) The Geometry of Cephalometry.

16) The complexity of facial growth analysis :
    - Analysis of growth changes.
    - Prediction.
17) Superimposition of Cephalometic Radiographs :
    - Natural head position – The key to Cephalometry.
18) The continuous and Dynamic measurement of Natural Head posture and position.
19) Proportional Analysis of the human face in a mesh coordinate system.
20) Template Analysis.
21) The Proportional template.
22) Soft tissue evaluation :
    - Frontal view.
    - Profile view.
23) The Holdaway soft tissue analysis.
24) Advances in Cephalometric prediction.
25) Videocephalometry.
26) Facial analysis in two and three dimensions.
27) Reliability of Cephalometric prediction.
28) Records and transfer case guidelines :
    - Guidelines for Temperomandibular dysfunction assessment.
29) Possibilities and limitations of various Cephalometric variables.
30) Sources of Error in Cephalometry.
31) Postero anterior (frontal) Cephalometry.
32) Finding Pathology in Cephalometric Radiographs.
33) Clinical Research Applications of Cephalometry.
34) Cephalometric Assessment of Craniocervial angulation.
35) Pharyngeal relationships, soft palate dimensions, hyoid bone and tongue position.
36) Other Analyses :
    - Colben craniofacial and dentition Analysis.
    - Di Paolo's Quadrilateral Analysis.
    - Farkas and coworkers Analysis.
    - Harvold Analysis.
    - Hassund (Bergen) Analysis.
    - Jarabak Analysis.
    - Legan and Burrstone soft tissue Analysis for Orthodontic Surgery.
    - Ricketts comprehensive computer description analysis.

- Riedel Analysis.
- Sassouni Analysis.
- Wylie Analysis.
- Arnett and Bergman soft tissue Analysis.

37) Soft Tissue Analysis :

- Profile Analysis.
- Reference points used in profile analysis.
- Assessment of total profile.
- Lip Analysis.
- Reference planes for lip profile assessment analysis of tongue position by cephalometric radiology.
- Analysis of tongue position by cephalometric radiography.
- Tongue parametes.
- Average findings.
- Functional Analysis based on Cephalometric Radiography.

38) Cephalometric Radiography and Growth :

- Prediction of growth.
- Methods of prediction of growth.
- Sources of Error in growth prediction.
- Post Treatment growth changes.
- Fine adjustment of occlusion after treatment.
- Holdaway growth prediction.

ORTHODONTIC TREATMENT PLANNING

- Timing of treatment.
- Treatment planning of preschool children (primary dentition) – Alignment problems.
- Incisor protrusion – retries.
- Cross bit.
- Anteropostenor discrepancies.
- Vertical problems – (i) Treatment Planning for preadolescents (early mixed dentition), (ii) Treatment Planning for adolescents (late mixed and early permanent dentition), (iii) Treatment Planning for Orthodontic problems in adults.
- Limitations, controversies and special problems.
- Extraction in the treatment of malocclusion.
- Growth modifications in the treatment of skeletal problems.
- Skeletal problems in older patients, camouflage Vs surgery.
- Treatment Planning in special circumstances.
- Patients with systemic diseases.
- Anomalies and injuries.
- Cleft lip and palate patient.

PREVENTIVE ORTHODONTICS

- Maintenance of a normal occlusion.
- Space maintenance.
- Abnormal resorption.

INTERCEPTIVE ORTHODONTICS

- Development schedule and guidance of occlusion.
- Equilibration of occlusal disharmony.
- Habits and its management.
- Muscle exercise.
- Serial extraction.
- Surgical uncovering of impactions, positioning and transpositioning.

CORRECTIVE ORTHODONTICS

1) Removable appliance – Active plate :

- Parts of the appliance.
- Classification of removable appliances.

- Clasps.
- Active elements – (i) Labial bows, (ii) Springs, (iii) Screws, (iv) Elastics.
- Fabrication of plates.

2) Functional appliances – Concepts of functional jaw orthopaedics.

- Definitions, History.
- Scientific concepts and validation of functional appliances – (i) Research methodology and findings in Applied Craniofacial growth studies, (ii) Studies of functional appliance therapy.
- Principles of functional appliances.
- Cephalometric diagnosis for functional appliance therapy.
- A detailed knowledge of mechanism of action, principles, indications,advantages, disadvantages, modifications, fabrication, management, parts,construction bite, effects and studies on following appliances –Activator and its modifications, (ii) Bionator, (iii) Frankel, (iv) Twin block, (v) Magnetic functional system, (vi) Combined extra oral and functional appliances, (vii) Fixed functional appliances, (viii) Maxillary retraction and intrusion splints, (ix) Combined fixed and removable appliances.
- Management of Class – II, Class – III and open bite malocclusions with functional appliances.

3) Dentofacial Orthopedics Headgears – Principles :

- Biomechanics of headgear.
- Orthopaedic forces.
- Types.
- Role of headgear in skeletal and dental correction.
- Studies on headgear effects.

FIXED APPLIANCES :

1) Tip edge – Principles :

- Bracket system and newer modifications.
- Stages of treatment.
- NiTi torque bar.
- Finishing.
- Advantages.
- Recent advances.
- Straight edge.

2) Pre Adjusted Edgewise – Principles :

- Bracket system.
- Wire sequencing.
- Different modes of retraction.
- Variations in different extractions patterns, clinical management, anchorage, recent advances in the following techniques – (i) Andrews, (ii) Roth, (iii) VSD, (iv) MBT, (v) Bio-progressive therapy, (vi) Combination techniques, (vii) Other PAE systems.

3) Begg Mechnaotherapy – Evolution :

- Principle.
- Stages of treatment – (i) Stage – I Principles, (ii) Stage – II Principles, (iii) Stage – III Principles.
- Bracket – (i) Types, (ii) Modification.
- Springs – (i) Uprighting, (ii) Rotation, (iii) Torquing.
- Wires – (i) Types, (ii) Dimensions, (iii) Uses.
- Modern Begg – (i) Stages, (ii) Wires, (iii) Auxiliaries – a) Springs,Lock pins, c) Wires.
- Mechanical aspects of anchorage control – (i) Frictional effects, (ii) Changes in auxiliary morphology.

COMBINED SURGICAL AND ORTHODONTIC TREATMENT

1) Indications for surgery – Development of orthognathic surgery :

- Severity as an indication for orthognathic surgery: the envelope of discrepancy.
- Esthetic and psychosocial considerations.
- Psychological reactions to orthognathic surgery.

2) Surgical procedure and treatment possibilities – Correction of anteroposterior relationships.

- Correction of vertical relationships.
- Correction of transverse relationships.
- Genioplasty in orthognathic treatment.
- Integration of orthognathic and other facial surgery.

3) Timing and sequencing of surgical treatment – Early Vs Later Surgery.

- Treatment sequencing.

4) Integration of surgical and orthodontic treatment – Interactive treatment planning :

- Pre-surgical orthodontics.

5) Patient management at surgery – Surgical management :
- Post-surgical orthodontics.

6) Post-surgical stability and clinical success.

ADULT ORTHODONTICS :
- Adult Orthodontics Treatment Objective.
- Ideal Orthodontic treatment goal and the Adult patient.
- Diagnostic considerations in Adult patients.
- Periodontal Diagnosis.
- Diagnosis of Temperomandibular Joint Dysfunctions.
- Adult Orthodontic Treatment Planning.
- Adult Patient Management.
- Concept of treatment sequencing.
- Management of Dentofacial Deformities.
- Retention and Stability after active comprehensive therapy.

TISSUE REACTIONS
- Tooth supporting tissues – Gingival, Periodontal ligament, Root cementum, Alveolar bone, Bone physiology and metabolism.
- Physiologic tooth movement – eruption of teeth, occlusal equilibrium.
- Orthodontic tooth movement – tissue response in periodontium, transmission of mechanical influence into cellular reaction, biomechanical factors and tissue reaction in periodontium.
- Orthodontic forces : Types of forces – interrupted force, intermittent force, magnitude of forces, and duration of force.
- Types of tooth movements : tipping, torque, bodily movement, rotation, intrusion, extrusion.
- Theories of tooth movement.
- Tissues reaction to certain types of tooth movements.
- Tissue response in sutures – structure of suture, suture responsible to orthopaedic forces.
- Tissue response in the temperomandibular joint region – structure of T.M.J, T.M.J. response to orthopaedic forces.
- Drug effects on response to orthodontic force.
- Iatrogenic response of supporting tissues in orthodontics – Damages to periodontal tissues – Gingival inflammation, Alveolar bone loss, Marginal bone

recession, Damage to tooth enamel surfaces, pulpal reaction, Root resorption – root resorption not related to orthodontic, Root resortion caused by orthodontics – (Superficial resorption, Apical resorption), Factors affecting root resorption – (Tooth vulnerability, orthodontic, appliances, magnitude of force, duration of force, direction of tooth movement), Risk of temperomandibular dysfunction.

- Post treatment stability.
- Recent Advances.

BIOMECHANICS

- Introduction.
- Principles of engineering and biophysics.
- Sign conventions.
- Biomechanics of tooth movement – centers of rotation, Force magnitudeand rate of tooth movement, Relationship of force magnitude to pain and tooth mobility, optimal force and stress.
- The orthodontic appliances – Active and reactive members, moment to force ration, load deflection rate, maximal elastic moment, manner of loading.
- Clinical correlations: Biomechanics of space closure, overbite control, transverse control.
- Anchorage and its control: Definition, Anchorage types, Principles, Situations, Significance of anchor loss, Adjuncts used in anchorage conservation, management of anchorage in transverse, Vertical and sagittal planes of space.
- Recent Advances.

RETENTION AND RELAPSE

- Definition.
- History of Retention.
- Importance of Retention.
- Basic theorems.
- Periodontal and gingival reorganization.
- Occlusal stability.
- Tooth size discrepancy.
- Axial inclinations.
- Transverse discrepancies.
- Relationship of third molars.
- Growth factors.

- Further implications of growth.
- Duration of Retention.
- Retention appliances.
- Relapse – Definition.
- Causes of Relapse.
- Recovery after Relapse.

MISCELLANEOUS –

- Practice Management.
- Orthodontic Office Design.
- Community Orthodontic Care.
- Iatrogenic Effects of Orthodontic Treatment.

M.D.S - PROSTHODONTICS AND CROWN & BRIDGE

GOALS:

The goal of postgraduate training course would be train dental graduates who will.

- Practice prosthodontics efficiently based on scientific knowledge and skill.
- Exercise a sympathetic and caring attitude maintaining high professional and ethical standards.
- Should continue to evince keen interest in prosthodontics whether in a leading institution or practicing.
- Should be a motivated teacher in prosthodontics who will be keen to share his knowledge and skills with colleagues, juniors or any learner.
- Should be able to carry out a scientific study, case presentation and research project suitable for publication.

OBJECTIVES OF THE COURSE:

General objectives:

The post graduates will be able to provide restorative care for patients with complex problems that are beyond the treatment skills of the general dentist and to demonstrate evaluative and judgment skills in making appropriate decisions regarding prevention, treatment and referral to deliver comprehensive care to patients.

- Knowledge.
- Skills.
- Attitude.
- Communication abilities.

Knowledge:

The candidate should possess basic and systematic knowledge on the following subjects.

- Complete denture prosthodontics, removable partial dentures prosthodontics, fixed prosthodontics, maxillofacial prosthetics, implant prosthesis, aesthetic dentistry biomaterials, applied basic medical sciences.
- Nutritional status of patients.
- General health conditions as related to prosthodontics treatment.
- Identify social economic, environmental and emotional determinants in any case and consider them in planning the treatment.
- Identify cases, which are outside the area of his specialty / competence and refer them to appropriate specialists.

- Advice regarding case management involving surgical, interim treatment etc.
- Should attend continuing education programs, seminars and conferences related to prosthodontics in thus updating himself.
- Teach a 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 fora.
- 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 & HIV.

Skills:

- The candidate should be able to examine the patients with prosthodontic problems clinically, investigate the patient systematically, analyze the investigation results, diagnose the ailment, plan a treatment, communicate it with the patient and execute it.
- Should be a fully qualified specialist demonstrating the clinical competence necessary to carry out appropriate treatment at level of knowledge, training and practice currently available in their specialty area.
- Perform clinical and laboratory procedures with understanding of biomaterials, tissue conditions related to prosthesis and have competent dexterity for performing clinical and laboratory procedures in fixed, removable, impact and maxillofacial prosthodontics.
- Laboratory technique management based on skills. Dental materials and dental equipment management.

Attitude:

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

Communicative Abilities:

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

COURSE CONTENT:

The program out line addresses the knowledge, procedural and operative skills needed in prosthodontic practice. A minimum of 3 years of formal training through a graded system of education as specified will enable the trainee to practice prosthodontics competently and have the necessary skills / knowledge to update themselves with advancements in the field. The course content have been identified and categorized as Essential Knowledge as given under.

Essential Knowledge:

The topics to be considered are.

- Basic sciences.
- Prosthodontics.
- Specialty topics.

Basic Sciences:

- A thorough knowledge on the applied aspects of Anatomy, Physiology, Biochemistry, Pathology and Microbiology, Biomaterial Sciences and Research Methodology as related to prosthodontics.
- It is desirable to have adequate knowledge in Biostatistics Research Methodology, Nutrition and use of computers and to develop necessary teaching skills in prosthodontics.

Prosthodontics:

- Removable and fixed Prosthodontics.
- Maxillofacial Prosthetics.
- Implants.
- Temporo Mandibular disorders and Prosthodontics management.

TEACHING AHD LEARNING ACTIVITIES:

Lectures:

Lectures are to be kept to a minimum. The following lecturers should be integrated which are common topics to all specialties.

1. Bio Statistics.
2. Use of Library.
3. Research Methods.
4. Code of Conduct and Ethics.
5. Communication skills.
6. Computer Skills.
7. Photography.

These topics should be taken during first 6 months of the first year.

Journal Club:

Recommended to be held twice a week. All the Postgraduate students are expected to attend and actively participate in the discussion and enter relevant details in the Logbook. Each student should present at least 15 articles from the selected journals during the 3 years. A timetable with name of student and the moderator should be announced earlier.

Subject Seminar:

Subject Seminar should be held twice in a week. All PG students are expected to attend and actively participate in the discussion and enter relevant details in the Logbook. Each candidate must present on selected topics at least four times in a year and a total of 12 seminars presentations in three years. A timetable for the seminar with the name of the student is required and the moderator should be scheduled earlier.

Students Symposium:

Students Symposium recommended as an optional multi disciplinary program. The evaluation may be similar to that described for subject seminar.

Inter Departmental Meeting:

Strongly recommended in the following subjects.

- Periodontics.
- Oral surgery.
- Orthodontics.
- Radiology.
- Conservative & Endodontics.

Teaching Skills:
The Postgraduate students should teach Under Graduate students, in the subject of Dental materials, practical & clinical Prosthodontics.

A minimum of four Demonstrations & six Lectures / Tutorials - must be addressed by the Postgraduate.
Continuing Dental Education Program: (C.D.E)
Should attend at least 4 C.D.E. programs related to prosthodontics.
Conferences:
Participation in conferences / Presentation of papers.
Minimum of one specialty conference.
Minimum of one paper presentation.
Clinical discussions:
Should be conducted on prosthodontic treatment planning prosthodontic clinical procedures and alternate prosthodontic techniques and selected research.
Rotation & Postings in other Department:
It is desirable that the Post Graduate students attendance postings minimum of one week.
a. Plastic Surgery Clinic.
b. TMJ Clinic.
c. Radio Therapy & Radio Diagnostic Clinics.
d. Cancer Clinic.

SCHEME OF EXAMINATION:

PART II THEORY
There shall be One Examination which will be held at the end of the Third year.
This Examination consists of 4 Papers.

PAPER I:	Complete Denture Prosthodontics, Geriatric prosthodontics including Over Dentures.
PAPER II:	Fixed Partial Prosthodontics, Aesthetic Dentistry and Implantology
PAPER III:	Removable Partial Prosthodontics, Maxillofacial Prosthetics and Tempero Mandibular joint Disorders.
PAPER IV:	Essay with Emphasis on recent advances.

CLINICAL EXAMINATION REQUIREMENT:

On the examination day each candidate appearing for M.D.S. Prosthodontics Should bring the following to Clinics.

CASE I:

Complete Denture:

1. A patient, study models, Diagnostic casts and Radiographs.
2. Semi adjustable articulator with face-bow
3. Custom Tray
4. Record bases with Occlusal Rims
5. Gothic arch tracers attached to a set of maxillary and mandibular rims.

CASE II:

Fixed Partial Dentures:

1. Patient, Diagnostic casts, radiographs.
2. Custom Trays/stock trays.
3. Articulated Models.
4. For temporization: Template / putty impression / Temporary Bridge work.

The candidate can arrange a chair side assistant.

The candidate should also bring:

1. Pre-clinical work completed.
2. Slides and relevant materials for presentation and discussion of thesis Dissertation.
3. Photographic albums of the cases completed.
4. Work completion Record during Postgraduate training.
5. Attendance Certificate of conferences attended and presentations made during conferences.

The Clinical, Practical, viva voce and dissertation presentation is of three days duration.

CLINICAL EXAMINATION SCHEDULE.

1st Day:

SCHEDULE	DURATION	TIME
Complete Denture. Diagnosis, treatment planning & preliminary impression.	60mts.	9 - 10am.
Border molding and final impression. (Custom trays to be kept ready)	90mts.	10 - 11.30am.
TEA BREAK (15 MTS) 11.30 - 11.45 am.		
Occlusal rims to be adjusted Recording of – ➢ Orientation Jaw Relation ➢ Vertical Jaw Relation and ➢ Tentative Centric Relation. (securing maxillary cast to the articulator)	90mts.	11.45 - 1.15am.
LUNCH BREAK (45MTS) 1.15 - 2PM.		
Fixed Partial Denture Diagnosis, treatment planning & case presentation.	30mts.	2 - 2.30pm.
Tooth preparation for three-unit anterior /posterior bridge.	90mts.	2.30 - 4pm.
Gingival retraction, impressions and inter-occlusal record and Temporization.	60mts.	4 - 5pm.

2nd Day:

SCHEDULE	DURATION	TIME
Gothic arch tracing or other suitable methods for measuring true centric.	120mts.	9 - 11am.
TEA BREAK (15 MTS) 11- 11.15am		
Adjustment of articulators, arrangement of teeth and try in.	135mts.	11.15-1.30pm
LUNCH BREAK (30MTS) 1.30 - 2PM.		
(Continue the adjustment of articulators, arrangement of teeth and try in.)	**180mts.**	**2 - 5pm.**

3rd Day:

Evaluation of wax patterns for Fixed partial denture.	60mts	9 - 10am.
Surveying and Design for a Removable partial denture.	90mts	10 - 11.30am.
BREAK (45MTS) 11.30 - 12 PM.		
Presentation of Thesis dissertation & discussion.	15mts/candidate.	12pm. Onwards for a maximum of 6 candidates.
Viva Voce.	30mts/candidate.	

MARKS SCHEME

PRACTICAL EXAMINATION	- 200 MARKS.
Viva-Voce	- 80 MARKS
Dissertation / Pedagogy	- 20 MARKS.
CLINICAL EXAMINATION	
Complete Dentures.	-100 Marks.
Removable Partial Dentures-Survey & Design.	- 25 Marks.
Fixed Partial Dentures	- 75 Marks.
	Total - 200 Marks

MDS PART - II SYLLABUS

1. COMPLETE DENTURES

Basic Anatomy and Physiology.

1. Biomechanics of the edentulous state.
2. Residual ridge resorption.

Communicating with the patient

1. Understanding the patients.
2. Instructing the patient

Diagnosis and treatment planning for patients-

1. With some teeth remaining.
2. With no teeth remaining.

a) Mental attitude.
b) Systemic status.
c) Local factor.
d) The geriatric patient.
e) Diagnostic procedures.

Articulators- discussion in detail, including historical perspective.

Improving the patient's denture foundation and ridge relation.

a) Pre-operative examination.
b) Initial hard tissue & soft tissue procedure.
c) Secondary hard & soft tissue procedure.
d) d)v Implant procedure.
e) Congenital deformities.
f) Postoperative procedure.

Rehabilitation of the edentulous patient.

1. Impressions.
    a) Muscles of facial expression.
    b) Biologic considerations for maxillary and mandibular impression including anatomy landmark and their interpretation.
    c) Impression objectives.
    d) Impression materials.
    e) Impression techniques.
    f) Maxillary and mandibular impression procedures.
        i. Preliminary impressions.
        ii. Final impressions.
    g) Laboratory procedures involved with impression making.

2. Biological consideration in jaw relation & jaw movements- Cranio mandibular relations.
a) Mandibular movements.
b) Maxillo -mandibular relation including vertical and horizontal jaw relations.
c) Concept of occlusion.
d) Gnathology.
3. Record bases and occlusion rims.
a) Materials & techniques.
b) Useful guidelines and ideal parameters.
c) Recording and transferring bases and occlusal rims.
4. Relating the patient to the articulator.
    a) Hinge axis location techniques.
    b) Terminal hinge axis and arbitrary hinge axis
    c) Face bow detailed discussion - types & uses.
    d) Face bow transfer procedure.
5. Recording maxillo mandibular relation.
    a) Vertical relations.
    b) Centric relation records.
    c) Eccentric relation records.
    d) Lateral relation records.
6. Tooth selection and arrangement.
    a) Anterior teeth.
    b) Posterior teeth.
    c) Esthetic and functional harmony.
7. Relating inclination of teeth to concept of occlusion.
    a) Neutrocentric concept.
    b) Balanced occlusal concept.
8. Trial dentures.
9. Laboratory procedure.
    a) Wax contouring.
    b) Investing of dentures.
    c) Preparing of mold.
    d) Preparing & packing acrylic resin.
    e) Processing of dentures.
    f) Recovery of dentures.
    g) Lab remount procedures.
    h) Recovering the complete denture from the cast.
    i) Finishing and polishing the complete denture.

j) Plaster cast for clinical denture remount procedure.

10. Denture insertion.
    a) Insertion procedures.
    b) Clinical errors.
    c) Correcting occlusal disharmony.
    d) Selective grinding procedures.
11. Geriatric Prosthodontics for elderly.

Treating problems with associated denture use - detailed discussion.
Treating abused tissues.
Relining and rebasing of dentures.
Repair of dentures.
Immediate complete dentures construction procedure.
The single complete denture.
Tooth supported complete denture.
Dental implants in complete denture.

2. REMOVABLE PARTIAL DENTURES

1. Introduction
   - Terminologies and classification.
2. Components of a removable partial denture.
   - Major connectors,
   - minor connectors,
   - rest and rest seats.
3. Components of a Removable Partial Denture.
   - Direct retainers,
   - Indirect retainers,
   - Tooth replacement.
4. Principles of Removable Partial Denture Design.
5. Examination and evaluation of diagnostic data.
6. Survey and design - in detail
   - Surveyors.
   - Surveying.
   - Survey lines.
   - Tripoding.
   - Designing.
7. I-Bar Removable Partial Denture.
8. Mouth preparation and master cast.

9. Impression materials and procedures for removable partial dentures.
   - Special reference to distal extension bases.
10. Preliminary jaw relation and esthetic try-in for some anterior replacement teeth.
11. Laboratory procedures for framework construction.
12. Fitting the framework.
13. Special impression procedures for tooth- tissue supported Removable Partial Denture.
14. Established occlusal relationships.
15. Try-in and completion of the partial denture.
16. Delivering the Removable Partial Denture.
17. Post insertion observations.
18. Temporary and immediate Removable Partial Denture.
19. Complete denture opposing Removable Partial Dentures.
20. Other forms of the Removable Partial Denture.
21. Relining, Rebasing, and repairing the Removable Partial Denture
22. Attachments for Removable Partial Denture.
23. Removable Partial Denture in maxillofacial prosthetics.
24. Removable Partial Denture for the older adult.

3. FIXED PARTIAL DENTURES

1. Introduction
2. Fundamentals of occlusion.
3. Articulators.
4. Interocclusal records.
5. Articulation of casts.
6. Treatment planning for single tooth restorations.
7. Treatment planning for the replacement of missing teeth.
8. Fixed partial denture configurations.
9. Principals of tooth preparations.
10. Preparations for full veneer crowns.
11. Preparations for partial veneer crowns.
12. Preparations of intracoronal restorations.
13. Preparations for extensively damaged teeth.
14. Preparations for periodontally weakened teeth
15. Provisional Restorations
16. Fluid Control and Soft Tissue Management
17. Impressions
18. Working Casts and Dies

19. Wax Patterns
20. The Functionally Generated Path Technique
21. Investing and Casting
22. Finishing and Cementation
23. Esthetic Considerations
24. All - Ceramic Restorations
25. Metal - Ceramic Restorations
26. Pontics and Edentulous Ridges
27. Solder Joints and Other Connectors
28. Resin - Bonded Fixed Partials Denture

4. IMPLANT PROSTHODONTICS

1. Introduction to Implantology
2. Brief history and evolution
3. Diagnosis and treatment planning
   - Rationale for dental implants
   - Medical evaluation of the implant patient
   - Prosthetic options
   - Diagnostic imaging and techniques
   - Divisions of available bone
   - Bone density
   - Dental evaluation
4. Fundamental science
   - Bone physiology and metabolism.
   - Pharmacology for dental implants
   - Bone response to mechanical loads
   - Osseo integration, bio integration and fibro Osseo integration
5. Implant prosthodontics and maintenance.
   - Principles of cement retained and screw retained implant prosthodontics.
   - Occlusal considerations of implant supported and tissue supported prosthesis
   - Implant supported prosthesis – clinical and lab procedures
   - Maintenance of dental implants.

5. MAXILLOFACIAL PROSTHODODNTICS

1. Dentist and patient interaction psychological status of the patient social support system.
2. Chemotherapy and Radiation therapy their effect on orodental tissue
3. Prosthodontic Reconstruction of acquired mandibular defects,

- Mandibular Guidance Appliance
- Speech prosthesis
- Rehabilitation
- Clinical And Laboratory steps for their fabrication.

4. Prosthodontic reconstruction of acquired developmental defect of maxilla
   - Obturators
   - Speech appliance
   - Clinical And Laboratory steps for their fabrication.
5. Restoration of acquired and developmental Facial Defects.
   - Eye
   - Auricular
   - Nasal
   - Lip
   - Clinical And Laboratory steps for their fabrication.
6. Cranial and Facial Implants
7. Reconstructive Preprosthetic Surgery
8. Maxillofacial Prosthesis materials.
9. Miscellaneous prosthesis
   - Splints and Stents
   - Radiation carrier Prosthesis
10. Methods for retention for maxillofacial prosthesis.

6. T.M.J DISORDERS.

1. Jaw form and function
   - Morphology and function.
   - Neural control.
   - Dynamics of occlusion.
2. Growth and Development.
3. Biomechanics
   - Biomechanical and Biomaterial consideration.
4. Disorders
   - Disc Dispalcement.
   - TMJ degeneration.
   - Local and General stresses in stomatognathic system.
5. Diagnostic tests
   - Study casts.
   - Cephalometric analysis.
   - Maxillofacial imaging.

6. Treatment Planning
   - Interocclusal Appliances.
   - Selective tooth Grinding.
7. Prosthodontic Therapy
   - Occlusal considerations in Complete Dentures.
   - Masticatory performance measures in Maxillofacial Prosthodontics.

7. ESTHETIC DENTISTRY

1. Principles of esthetics.
   - Light and shadow.
   - Colour principles.
   - The principle of form.
   - The principle of perception.

2. Dentin bonding agents
   - Composite and clinical considerations
3. Color modifiers and opaquers
4. Composite resins
   - Composition and manipulation
   - Technique for direct and indirect composite restorations
5. Porcelain fused to metal restorations
6. All ceramic restorations
7. Laminates – clinical and laboratory procedures for porcelain and composite laminates.
8. Bleaching
9. Dynesthetic concept of smile.

M.D.S - CONSERVATIVE DENTISTRY AND ENDODONTICS

SCHEME OF EXAMINATION:

PG PART II
Paper I - Dental Materials including Preventive dentistry
This paper includes all materials used in Conservative Dentistry & Endodontics, their properties, manipulation, setting reactions and recent advances
Paper II – Conservative and Aesthetic dentistry
This paper includes all tooth preparations and restorative procedures including aesthetic, minimally invasive and non invasive techniques
Paper III – Endodontics
This paper includes pulp space anatomy, various disease of the pulp and peri radicular tissues, non surgical endodontic treatment, post endodontic restorations and surgical endodontics
Paper IV – Essay with Emphasis on Recent advances

PRACTICAL EXAMINATION:

Day 1

Clinical exercise 1 – Cast post and core	– 75 marks
Clinical exercise 2 – Molar endodontics	– 75 marks
Clinical exercise 3 – Composite restorations	– 50 marks

Day 2

Dissertation presentation / Pedagogy	– 20 marks
Viva voce	– 80 marks

CONSERVATIVE DENTISTRY

1. Rationale of Conservative Dentistry

This topic discusses the various rationale behind conservative treatment Adhering to the rationale will definitely increase the success of the conservative treatment.

2. Dental Anatomy, Histology, Physiology & Occlusion

This topic discusses the clinical significance of Anatomy & Physiology of teeth and the importance of maintaining proper occlusion while designing various restorative treatments. The problems associated with occlusal interferences and their management is also dealt with.

3. Infection Control

Disinfection and sterilization protocols to be followed, isolation and tissue management during restorative procedures, thereby improving the quality of clinical restorative dentistry.

4. Pathological Lesions of Hard tissues of the teeth.

Dental Caries- Its Epidemiology, Diagnosis, etiology, histopathology and management. Emphasis on various research studies conducted worldwide.

Caries Control & Prevention with emphasis on social awareness of prevention of caries by various fluoridation measures.

5. Non – pathological lesions of the hard tissues of the teeth.

This topic discusses the various non-carious lesions of hard tissues of the teeth, their etiology, diagnosis, differential diagnosis, treatment and prevention.

6. Material science: its properties, manipulation and application

Material science forms the basis of Conservative Dentistry. This topic provides an insight into their structure, properties and bio-mechanics for Restorative dentistry.

7. Contacts & Contours

Tooth contours and contacts, its significance during restorative procedures. Methods of tooth separation and various devices and techniques used to achieve optimal contacts and proper contour.

8. Various restorative procedures

Restorative procedures; from non invasive simple aesthetic procedures like bleaching, recontouring to complex restorative procedures with emphasis on the recent advances

in the restorative techniques, pertaining to the tooth preparation designs for various restorative materials.

9. Cutting tools, Instruments, and Instrumentation

In depth study of the various instruments and equipments used in Conservative Dentistry:

Hand cutting instruments- Historical development, manufacture, standardization and its applications

Rotary Cutting Instruments- Development, various speed ranges & its merits & limitations.

10. Management of Pain in Conservative Dentistry

The cause of sensitivity and pain during restorative procedures are discussed. All the drugs used during the restorative procedures will be analyzed with their composition, mechanism of action, and side effects.

11. Hypersentivity

Pathways of dentinal pain, various theories, causes and management of hypersensitivity are dealt with in detail.

12. Deep Caries Management

Histo-pathological zones of deep caries and their management, with emphasis on patient recall and follow-ups.

13. Complex Restorations

This topic deals with complex treatment options for patients with grossly mutilated teeth, multiple carious lesions and full mouth rehabilitation.

14. Principles of Aesthetics

This much popular topic deal with color perceptions, facial and oral analyses, smile design, principles of aesthetics and treatment planning.

15. Modern biological and mechanical concepts

Changing trends in Diagnosis, cavity designs and materials which facilitate advanced knowledge of Minimal Intervention Dentistry with emphasis on preservation of tooth structure.

16. Conservative Dentistry in relation to other branches of dentistry including geriatric dentistry

With increase in the population of senior generations, the need for dental care for older patients has become a necessity. Focus on handling and counseling of the elderly patients, treatment of root caries, xerostomia, etc.

17. Systemic diseases and conservative dentistry

Contra-indications of restorative procedures for medically compromised patients, treatment protocol to be followed and precautions to be taken will be discussed.

18. Evidence based dentistry

Step by step approach of searching the electronic data base in evidence based decision making. To throw light on critical areas of conservative dentistry that is lacking in evidence. To underscore the emphasis on more clinical researches to fill in these voids.

19. Research Protocol and Biostatistics

Research has become a fundamental requirement of the academician and the clinician too. Understanding research and its ways, statistical analysis and to develop an interest in more clinical research.

ENDODONTICS

1. Histology & Physiology of the Dental Pulp

Development, Anatomy, histology, age changes and pulpal response to trauma is discussed.

2. Microbiology and Immunology of pulp and Periapical diseases

This chapter presents a short review of various root canal floras, their role in pulpal and periapical pathology and its impact on endodontic treatment outcome.

3. Rationale of Endodontic treatment

This topic deals with the role of various inflammatory cells, the vascular changes and tissue changes following inflammation and the reaction of pulp and peri-radicular tissues to noxious stimuli.

4. Diagnostic Procedures

Patient assessment, medical & dental histories, various objective tests conducted, the diagnostic tools used and the advanced techniques in diagnosis of the pulpal & periapical diseases.

5. Biologic Response of pulp to various procedures and materials used

This topic discusses the pulpal reaction to dental caries, cavity preparations, the effect of local anesthetics on dental pulp and the different types of pulpal reaction to materials.

6. Dynamics of pulp and peri-radicular pathosis

This chapter includes the dynamics of pulpal and periradicular pathosis, their diagnosis, the clinical and radiographic examination, factors influencing prognosis, diagnostic perplexities and the differential diagnosis of each condition

7. Asepsis in Endodontic Practice.

This topic discusses the different methods of disinfection and sterilization and the barrier techniques used in infection control. Occupational health & safety measures and immunization for dental health care personnel is also covered.

8. Management of Pain

Pathways of pain, i.e. the neuro-physiology of pain and the pain assessment tools are discussed. Differential diagnosis & management of Odontogenic and non-odontogenic pain is covered.

9. Local anesthesia and sedation

This chapter includes the clinical indications of various local anesthetic agents, techniques of administrating local anesthetics with special emphasis on inferior alveolar nerve block, Gow Gates technique, mental nerve block, posterior superior and infra orbital nerve blocks

10. Isolation and temporization of teeth

This chapter elaborates the importance of isolation in endodontics, various methods of isolation and gingival tissue management. It also includes the temporization of teeth during endodontic treatment.

11. Pulpal Anatomy and Access cavity preparation

The candidate should have an in-depth knowledge of the internal anatomy of the teeth including pulp chamber and the root canals. The principles of access cavity preparations and the procedural errors encountered will be discussed.

12. Instruments used in Endodontics

This chapter deals with the various hand cutting and rotary instruments used, its history, manufacture, standardization and different speeds used. Other modes of instrumentation such as sonics, ultrasonics and lasers are also discussed.

13. Non- Surgical Endodontic Treatment of pulpless teeth

This topic deals with patient preparation, access cavity preparation, various methods of working length determination, principles & techniques of cleaning and shaping and various obturation methods.

14. Chemicals & Materials used in Endodontics

Materials used are discussed under various topics like intra canal irrigants and medicaments, root canal sealers & pastes, Obturating materials, post-endodontic restorative materials for post & core and coronal restorations, etc.

15. Traumatic injuries

This chapter focuses on the etiology, classification, emergency treatment measures and management of traumatized teeth.

16. Surgical Endodontics

Indications & Contra-indications of various surgical procedures employed in Endodontics, principles and types of flap design, soft and hard tissue management and post-surgical healing are dealt with.

17. Replantation and Transplantation of teeth.

This chapter deals with the indication and contraindication of replantation, the endodontic treatment and replantation of avulsed teeth, the splinting procedures and the tooth transplantation procedures.

18. Endo – perio relationship

This chapter includes the classification of endo-perio lesions, their etiological factors and their treatment options.

19. Etiology and treatment of discolored teeth

This chapter includes the various etiological factors of discolored teeth, classification of discoloration and treatment options for intrinsic and extrinsic discoloration with emphasis on different types of bleaching and veneering procedures.

20. Resorption

This chapter elaborates the classification, etiological factors, the management of various types of resorption and the role of neuropedtides in root resoption

21. Post endodontic restorations

This chapter presents the different methods of restoring the endodontically treated teeth, the purpose of giving post endodontic restorations, post space preparation, different types of post systems(prefabricated), custom made cast post and core, various core build up materials and their indications, preparations for various full coverage restorations.

22. Endodontic retreatment

This chapter deals with non surgical and surgical retreatment of endodontically compromised teeth with special emphasis on methods of removing GP and broken instruments and role of microscopes in retreatodontics.

23. Microscopes in Endodontics

Use of microscopes has made success of endodontics more predictable. Microscopes have been used in various procedures like perforation repair, location of hidden canals, removal of broken instruments, etc with precision. Microscopes have been specially used extensively for endodontic microsurgical procedures.

24. Pedodontic endodontics

This chapter includes the pulp morphology, the difference between deciduous and permanent teeth, the management of deep carious lesion, vital pulp therapies [direct and indirect pulp capping, pulpotomy], pulpectomy in primary tooth, and management of traumatized young permanent teeth.

25. Geriatric Endodontics

With increase in the population of elderly people, the need for endodontic treatment of such patients poses several problems like calcifications, obstructions, narrowing of canals, root caries, etc. The post endodontic restoration of such teeth is a challenge.

26. Pharmacology and therapeutics

This chapter highlights the drugs used for relieving pain, anxiety and infection control with special emphasis on their indications and contraindications.

27. Dento-legal reporting

This chapter deals with dental ethics and the legal responsibilities of the dentist.

M.D.S - ORAL AND MAXILLOFACIAL SURGERY

SCHEME OF EXAMINATION:

Paper I - Oral and Maxillofacial Surgery Including Surgical Anatomy and Pathology
Paper II - Maxillofacial and Surgical Procedures and Implantology
Paper III - Facio Maxillary Trauma and Anaesthesia
Paper IV - Essay With Emphasis on Recent Advances

PRACTICAL / CLINICAL EXAMINATION

1st Day
9.00 AM – 11.00 AM --- Impaction (100 Marks)
11.00 AM – 11.30 AM --- Break
11.30 AM – 3.00 PM --- Case Presentation (50 Marks)
Long Case – 1
Short Case – 1
2nd Day
9.00 AM – 12.00PM --- Dissertation Presentation / Pedagogy Exercise (20 Marks)
12.00 PM – 1.00 PM --- Lunch
1.00 PM – 3.00 PM --- Grand Viva (80 Marks)

MDS PART II SYLLABUS

Anesthesia/Dentoalveolar Surgery/Office Management

Anesthesia and Pain Control

1. Preoperative Evaluation
2. Monitoring for Oral and Maxillofacial Surgery
3. Local Anesthetics
4. Parenteral Sedation
5. General Anesthesia for the Office Patient
6. Management of Acute Postoperative Pain
7. Pharmacosedation for Pediatric Patients
8. Chronic Head and Neck Pain
9. Complications in Anesthesia

Dentoalveolar Surgery

10. Basic Exodontia
11. Complicated Exodontia
12. Surgical management of Impacted teeth
13. Ectopically positioned and unerupted teeth
14. Tooth Reimplantation and Transplantation
15. Surgical uprighting and Repositioning
16. Principles of Endodontic Microsurgery
17. Periodontal Considerations for Oral Surgery Procedures Involving the Dentogingival Junction
18. Pediatric Dentoalveolar Surgery
19. Lasers in Oral and Maxillofacial Surgery

20. Sit-Down Oral and Maxillofacial Surgery

21. Complications of Dentoalveolar Surgery

Orthognathic Surgery

Diagnosis and Treatment Planning

1. Patient Selection for Orthognathic Surgery

2. Diagnosis and Treatment Planning for Orthognathic Surgery

3. The Application of Video Imaging Technology to Orthognathic Surgery

4. Orthodontic Preparation for Orthognathic Surgery

5. Model Surgery

Wound Healing and Perioperative Management

6. Revascularization and Healing of Orthognathic Surgical Procedures

7. Preoperative, Intraoperative and Postoperative care

8. Ambulatory Anesthesia for Orthognathic Surgery

Maxillary and Midfacial Procedures

9. Surgical Assisted Maxillary Expansion

10. LeFort I Osteotomy

11. Anterior and Posterior Maxillary Segmental Osteotomies

12. Maxillary Quadrangular LeFort I and Quandrangular LeFort II Osteotomy

13. High-level Midface Osteotomy Surgery

Mandibular and General Procedures

14. Bilateral Sagittal Split Osteotomy:Advancement and Setback

15. Vertical Ramus Osteotomy and the Inverted –L Osteotomy

16. Anterior Mandibular Subapical Osteotomy

17. Mandibular Body Osteotomy

18. Total Mandibular Subapical Osteotomy

19A. Distraction Osteogenesis: A Unique Treatment for Congenital Micrognathias

19B. Intraoral Distraction Osteogenesis

20. General Procedures

Two-Jaw Surgery

21. Combined Maxillary and Mandibular Surgery

22. Rigid Internal Fixation in Orthognathic Surgery

Special Considerations

23. Functional Outcomes Following Orthognathic Surgery

24. Soft tissue changes asoosicated with Orthognathic Surgery

25. Psychological Ramifications of Orthognathic Surgery

26. Orthognathic Surgery Before Completion of Growth

27. Maxillofacial Surgery For Treatment of Obstructive Sleep Apnea

28. Rehabilitation After Orthognathic Surgery

Trauma

1. Diagnosis and Perioperative Management of Head and Neck Injuries

2. Basic Principles of Treatment: Hard and Soft Tissue

3. Diagnosis and Management of Dentoalveolar Injuries

4. Mandibular Fractures

5. Temporomandibular Joint Region Injuries

6. Zygomatic Complex Fractures

7. Orbital Trauma

8. Management of Midface Injuries

9. Management of Frontal Sinus Fractures and Associated Injuries

10. Nasal Injuries

11. Soft Tissue Injuries

12. Special Soft Tissue Injuries

13. Avulsive Hard Tissue Injuries

14. Maxillofacial Injuries in Children

15. Maxillofacial Injuries in the Elderly

16. Treatment of the Complex Facial Trauma Patient

Temporomandibular Disorders

Principles of Temporomandibular Joint Management

1. Developmental and Clinical Anatomy and Physiology of the Temporomandibular Joint

2. Congenital and Developmental Temporomandibular Disorders

3. Masticatory Myalgias

4. Pathophysiology of Articular Disk Displacements of the Temporomandibular Joint

5. Arthritis of the Temporomandibular Joint

6. Epidemiology of Temporomandibular disorders

Clinical and Radiographic Diagnosis

7. Clinical Evaluation for Temporomandibular disorders and Oro facial pain

8. Temporomandibular Joint Imaging: Treatment Planning

Extrajoint Therapy

9. Role of Splint Therapy in Treatment of Temporomandibular Disorders

10. Physical Therapy Management Of Temporomandibular Disorders

11. The Role Of Occlusion in Temporomandibular Joint

12. Orthognathics and the Temporomandibular Joint

13. Morphologic Changes of the Temporomandibular joint Associated with Orthognathic Surgery

Intrajoint Therapy

14. Arthroscopy

15. Surgery for internal Derangement

16. Autogenous Temporomandibular joint

17. Alloplastic Reconstruction of the Temporomandibular joint

18. Management of Failed Alloplastic Implants: Immunologic Considerations

19. Tumors of the Temporomandibular joint

Nonsurgical Management of Temporomandibular joint Disorders and Facial Pain

20. Bio behavioral Assessment and Treatment of Temporomandibular Disorders

Surgical Pathology

Basic Principles

- Pathology of the oral and Maxillofacial Region: Diagnostic and Maxillofacial Region: Diagnostic and surgical considerations
- Radiation Therapy for Head and Neck Cancer
- Head and Neck: Medical Oncology

Soft tissue Pathology

- Head and Neck Infections
- Reactive Proliferations
- Soft Tissue Cyst and Benign
- Oral Malignant Disease: Management and Investigational Directions
- Skin Lesions of the Maxillofacial Region
- Unusual Maxillofacial Soft Tissue Malignancies: Sarcoma, Mucosal Melanoma and Lymphoma
- Salivary Gland Disease

Bone Pathology

- Odontogenic Cyst of the jaws and Other Selected Cyst
- Odontogenic Tumors: Surgical Pathology and Management

- Fibro-osseous Disease and Benign Tumors of Bone
- Surgical Management of Langerhans Cell Histiocytosis
- Diagnostic and Management of Vascular Malformations
- Sarcomas of Bone in the Maxillofacial Region
- Osteomyelitis and Osteoradionecrosis

Cleft/Craniofacial/Cosmetic Surgery

- Embryogenesis and Comprehensive Management of the Cleft Patient
- Use of Orthopedic Appliances in Growth Modification
- Cleft Lip and Palate
- Velopharyngeal Dysfunction
- Alveolar Cleft Grafts
- Orthognathic Surgery in the Cleft Patient

Craniofacial Surgery

- Embryogenesis and the Classification of Craniofacial Dysmorphogenesis
- Craniosynostosis and Craniofacial Dysostosis
- Orbital Hypertelorism
- Hemifacial Microsomia
- Orbital Pathology and Secondary Reconstruction
- Micrognathia and Mandibular Hypoplasia

Cosmetic Surgery

- Cosmetic Rhinoplasty
- Aesthetic Blepharoplasty
- Rytidectomy (Face-lift)
- Cosmetic Surgery of the Forehead and Brow

- Hair Restoration Surgery: Transplantation and Micrografting
- Otoplastis Surgery for the Protruding Ear
- Aesthetic Cutaneous Laser Surgery and Chemical Peels
- Endoscopic Facial Aesthetic Surgery
- Facial Suction Lipectomy
- Alloplastic Augmentation of the Maxillofacial Region

Reconstructive and Implant Surgery

Principles of Preprosthetic Surgery

- Physiopathology of Osseointegration
- Coordination in the comprehensive Diagnosis and Treatment of the Implant Patient: The Relationship Between the Implant Surgeon and the Restorative Doctor
- Imaging for Maxillofacial Reconstruction and Implantology

Soft Tissue and Osseous Preprosthetic Reconstruction

- Preprosthetic Surgery: An Overview and Soft Tissue Procedures
- Reconstruction of the Edentulous Maxilla
- Rehabilitation of the Edentulous Mandible: Prosthetic and Surgical Concerns

Implantology

- Principles for the Surgical Placement Of Endosseous Implants
- Subperiosteal Implants
- The Transmandibular Implant Reconstruction System
- Single-tooth Replacement in Oral Implantology
- Posterior Implant Restorations For Partially Edentulous Patients
- Maxillary Sinus Grafts and Implants
- Surgical Implant Failures
- Soft Tissue Considerations

Special Considerations

- Reconstruction of the Maxillofacial Cancer Patient
- Implant-Retained Facial Prosthesis
- Reconstruction of Developmental Deformities

SURGICAL ANATOMY AND PATHOLOGY

- Applied surgical anatomy of head and neck region
- Bloody supply – (arterial and venous)
- Lymphatic drainage
- Third molar surgery
- Soft tissue pathology with classification and investigations

Head and neck investigations

Reactive proliferations

Soft tissue cyst and neoplasm

Oral malignant disease

Skin lesions

Unusual maxillofacial soft tissue malignancies-sarcomas and lymphomas

- Salivary gland disease
- Bone pathology with classification and investigations
- Odontogenic tumors
- Odontogenic cysts of the jaws
- Fibro osseous disease and benign tumors of bone
- Vascular malformations
- Sarcomas of bone
- Osteomyelitis and osteoradionecrosis
- Wound healing

- Bone graft
- Craniofacial syndromes
- Temporomandibular disorders
- Neuralgias
- Maxillary sinus

MAXILLOFACIAL SURGICAL PROCEDURES

- Impactions – various techniques
- Minor surgical procedures – Alvoeloplasties
- Re implantation
- Biopsies

Other dento alveolar procedures

- Pre prosthetic surgeries
- Lasers
- Cryosurgery
- Orthognathic procedures – Maxillary
- Mandibular

Fixation in orthognathic surgery

- Soft tissue changes associated

Relapse

- Distraction osteogenesis
- TMJ surgeries - Arthroscopies and arthrocentesis

Splint therapy

Surgery for internal derangement, ankylosis, dislocation

Reconstruction of TMJ

- Cosmetic surgeries – Rhinoplasty

Face lift

Surgery for hemi facial microsomia/ craniofacial synostosis

Alloplastic augmentation of face

- Implants
- Cleft surgeries
- Resection and reconstruction (soft tissue and bony)

ANESTHESIA AND TRAUMATOLOGY

- LA - Composition, action, complication
- Techniques
- GA – GA agents, complications
- Intubation tubes

IV anesthesia

Muscle relaxants

Tracheostomy

- Sedation
- Pain control
- Patient monitoring and medical emergencies
- Maxillofacial injuries in children and adults
- Imaging in trauma
- Management of – Dento-alveolar injuries

Mandibular fractures

TMJ injuries

Orbit

Zygomatic complex

Mid face fractures

- Soft tissue injuries

M.D.S - PERIODONTOLOGY

GOALS

The goal of the post graduate training course would be to train dental graduates who will.

1.1Practice Periodontics and Implantology efficiently based on scientific Knowledge and Skill.

1.2Exercise a sympathetic and caring attitude maintaining high professional and Ethical Standards.

1.3Should be a motivated teacher in Periodontics and oral Implantology who will Be keen to share his knowledge and skill with colleagues, juniors or any learners.

1.4Should continue to evince keen interest in Periodontics and oral Implantology Whether in leading institution or practicing

1.5Should be able to carry out a scientific study, case presentation and research Projects Suitable for publication.

OBJECTIVES

2.1GENERAL OBJECTIVE

The post graduate will be able to provide clinical care for patients with complex problems that are beyond the treatment skills of general dentist and demonstrate evaluative and judgment skills in making appropriate decision regarding prevention, correction and referral to deliver comprehensive care to patients.

Knowledge

Skill

Attitude

Communication abilities.

2.2 KNOWLEDGE

The candidate should posses basic and systematic knowledge on the following subjects.

2.2.1Periodontal anatomy

2.2.2Periodontal pathology

2.2.3Role of nutrition in periodontics

2.2.4 Advance diagnostic aids

2.2.5 Iatrogenic factors involved in periodontal pathology

2.2.6 Clinical diagnosis

2.2.7 Evaluation of clinical findings for treatment planning

2.2.8 Counseling of patients

2.2.9 Surgical procedures

2.2.10 Post operative Maintenance.

2.2.11 Post surgical counseling.

2.2.12 Design and placement of oral implants
2.2.13 Follow up of implant restorations.
2.2.14 Should attend continual education programs seminars and conferences related to
2.2.15Periodontics and oral Implantology to enhance for himself or herself
2.2.16Should be able to use information technology and carry out research with the aim of publishing his/ her work, presenting papers and posters at state level national level and international fora.
2.2.17Essential knowledge of personal hygiene ,prevention of cross infection and safe disposal of biowaste keeping in mind the risk of transmission of hepatitis, HIV , and other contagious diseases.

2.3SKILLS

The Candidates should be able examine clinically
2.3.1 Patients with periodontal problems
2.3.2. Investigate the parameters required
2.3.3 Recording of indices
2.3.4 Evaluating the results of investigations and indices
2.3.5 Planning the treatment a
2.3.6 Assessing the prognosis
2.3.7 Counseling of patients at every stage
2.3.8 Periodical follow up

2.4 ATTITUDE

2.4.1 Adopt ethical principles in periodontal practice
2.4.2 Professional honesty and integrity to be fostered
2.4.3 Treatment to be delivered irrespective of the socio economic status, caste Creed religion of the patient 2.4.4 willing to share the knowledge
2.4.5 Willing to adopt new methodology on scientific basis in the best interest of the patients
2.4.6 Respect right and privileges including right to information and seek second opinion

2.5 COMMUNICATIVE ABILITIES

2.5.1 Develop vocal and objective type of communication to communicate whenever required in the management of patients
2.5.2 Provide leader ship to get best out of a group in a congenial working atmosphere
2.5.3 Should be able to communicate in simple understandable language to patients

2.5.4 Should be able to guide and council the patients regarding the treatment modalities
2.5.5 Should develop the ability to communicate with professional colleagues.
2.5.6 Should develop an intention to approach the media like internet email or video conference which is required.

TEACHING/LEARNING ACTIVITIES

Seminars:

A minimum of 15 seminars to be presented by each student during the P.G. course. (atleast 5 seminars per year)

Journal clubs:

A minimum of 25 journal articles to be reviewed by eac h student during the P.G course.

Inter-department seminars:

Each P.G. student should present at least 1 seminar in an interdepartmental meeting during the P.G. course. Such meetings may be held atleast once every month.

Library assessment:

One to be presented at the end of 18 months of the course.

ACADEMIC ACTIVITIES:

1st year:

Submission of synopses of dissertation along with ethical committee approval to be submitted before the end of 1st year.

Library dissertation to be completed at the end of 1st year

2nd year:

To attend classes and training on the following:

Applied genetics

Applied immunology

Biomaterial used in periodontics

3rd year:

Scientific paper/ poster Presentation at conferences

Submission of dissertation – 6months before completion of III year

First year:

Pre-clinical work:

Dental:

Practice of incisions and suturing techniques on the typhodont models

Fabrication of bite guards and splints

Occlusal adjustments on the casts mounted on the articulator

X-ray techniques and interpretation

Local anaesthetic techniques

Medical:

Basic diagnostic microbiology and immunology, collection and handling of sample, culture techniques

Basic understanding of immunological diseases

Interpretation of various biochemical investigations

Practical training and handling medical emergencies and basic life support devices

Basic biostatistics – surveying and data analysis

CLINICAL WORK:

1.	Applied periodontal indices	10 cases
2.	Scaling and root planning (SRP)	15 cases
3.	Hand	15 cases
4.	Ultrasonic	15 cases
5.	Curettage	10 cases
6.	Gingivectomy / Gingivoplasty	10 cases

Second year:

1.	Clinical work	10 cases
2.	Case history and treatment planning	5 cases
3.	Local Drug Delivery Techniques	
4.	Periodontal surgical procedures Pocket therapy	35 cases
5.	Mucogingival surgeries	10 cases
6.	Implants (2 implants) Management of perio endo problems	5 cases
7.	Occlusal adjustments	10 cases
8.	Perio splints	10 cases

Third year

Clinical work

Regenerative techniques

Using various graft and barrier techniques 10 cases

Full mouth rehabilitation 2 cases

Maintenance phase and follow up of all treated cases

SCHEME OF EXAMINATIONS:

PG PART II

Paper I - Normal Periodontal Structures, Genetics and Nutrition

Paper II - Etio Pathogenesis

Paper III- Clinical Periodontology and Oral Implantology
Paper IV - Essay with Emphasis on Recent Advances

PRACTICAL EXAMINATION:

1. Case presentation		- 25Marks
Periodontal surgery I		-75Marks
2. Case report presentation:		
Interdisciplinary periodontal management /		
Rehabilitation with implant	2 cases	- 40 Marks
Reconstructive periodontal surgery	1case	- 20 Marks
Periodontal plastic surgery	1case	- 20 Marks
3. Short case sheet		- 20 Marks

MDS PART – II SYLLABUS:

1. **Syllabus for Paper I**

1.1. Basic Tissues

1.1.1. **Gingiva**

- Introduction
- Macroscopic anatomy
- Microscopic anatomy

1.1.2. **Periodontal ligament**

1.1.3. **Root Cementum**

1.1.4. **Alveolar Bone**

1.1.5. **Blood supply for the bone**

1.1.6. **Lymphatic system of the Periodontium**

1.1.7. **Nerves for the Periodontium**

1.2. Epidemiology

1.3. Molecular Biology

1.4 Nutrition and Genetics

1.5 **Evidence based Dentistry**

1.6 **Ethics**

1.6.1. Introduction

1.6.2. History of ethics

1.6.3. Philosophy of ethics

1.6.4. Code of Dental ethics

1.6.5. Duties and Obligation of the Dentist

1.6.6. Ethical Rules for Dentists

1.6.7. Conclusion

1.7 Jurisprudence

1.8 **Dental Insurance**

1.8.1. Introduction

1.8.2. Private fee for service

1.8.3. Post payment plans

1.8.4. Third party repayment plans

1.8.5. **Insurance principles in dental care**

1.8.5.1. Deductible

1.8.5.2. Co-insurance

1.8.5.3. Group Insurance

1.8.5.4. Re-embossment of dentist in re-payment plans

1.8.5.5. Re-embossment of dentist in pre-payment plans

1.8.5.6. Commercial insurance plans
1.8.5.7. Delta Dental Plans
1.8.5.8. Health service Corporations
1.8.5.9. Medicaid
1.8.5.10 National Health Insurance

2. Syllabus for Paper II

2.1. Periodontal Pathology
- 2.1.1. Dental Plaque and Calculus
  - 2.1.1.1. General introduction to plaque formation
  - 2.1.1.2. Microbial considerations
  - 2.1.1.3. Dental Plaque as a bio film
  - 2.1.1.4. Structure of Dental Plaque
    - 2.1.1.4.1. Supragingival plaque
    - 2.1.1.4.2. Subgingival Plaque
    - 2.1.1.4.3. Peri-implant Plaque
- 2.1.2. Dental Calculus
  - 2.1.2.1. Clinical appearance, distribution and clinical diagnosis
  - 2.1.2.2. Attachment to tooth surface and implants
  - 2.1.2.3. Mineralisation, composition and structure
  - 2.1.2.4. Clinical Implications
- 2.1.3. Microbiology of Periodontal Pathology
  - 2.1.3.1. Introduction
    - 2.1.3.1.1. Periodontal diseases and other infectious Diseases
  - 2.1.3.1.2. Unique feature of periodontal infections
  - 2.1.3.2. Historical Perspective
    - 2.1.3.2.1. The early search
    - 2.1.3.2.2. The decline of interest in micro-organisms
    - 2.1.3.2.3. Non-specific plaque hypothesis
    - 2.1.3.2.4. Mixed anaerobic infections
    - 2.1.3.2.5. Return to specificity in microbial etiology of periodontal disease
    - 2.1.3.2.6. Changing concepts of the microbial etiologyof periodontal diseases
  - 2.1.3.3. Current suspected pathogens of destructive
    - 2.1.3.3.1. Periodontal diseases
    - 2.1.3.3.2. Criteria for defining periodontal pathogens

2.1.3.3.3. Mixed infections
2.1.3.4. The nature of dental plaque the biofilm way of life
2.1.3.4.1. The nature of biofilms
2.1.3.4.2. Properties of biofilms
2.1.3.4.3. The oral biofilms that lead to periodontal Disease
2.1.3.4.4. Microbial complexes
2.1.3.4.5. Factors that affect the composition of Subgingival
2.1.3.4.6. Microbial composition of supra and subginigval biofilms
2.1.3.5. Pre-requisites for periodontal disease initiation and Progression
2.1.3.5.1. The virulent periodontal pathology
2.1.3.5.2. The local environment
2.1.3.5.3. Host susceptibility
2.1.3.6. Mechanisms of pathogenicity
2.1.3.6.1. Essential factors for colonization of a subginigival species
2.1.3.6.2. Final comments
2.1.4. Host-parasite Interactions I periodontal disease
2.1.4.1. Initiation and progression of periodontal disease
2.1.4.2. Host-Parasite interactions
2.1.4.2.1. Microbial virulence factors
2.1.4.2.2. Host defense processes
2.1.5. Modifying factors: Diabetes, Puberty, Pregnancy, Menopause and Tobacco Smoking
2.1.5.1. Diabetes Mellitus
2.1.5.1.1. Association of periodontal infection and diabetic control
2.1.5.1.2. Modification of the host/bacteria relationship in Diabetes
2.1.5.1.3. Periodontal treatment
2.1.5.2. Puberty, pregnancy and Menopause
2.1.5.2.1. Puberty and menstruation
2.1.5.2.2. Pregnancy
2.1.5.2.3. Periodontal treatment during pregnancy
2.1.5.2.4. Menopause and osteoporosis
2.1.5.2.5. Hormonal contraceptives
2.1.5.3. Tobacco smoking

2.1.5.3.1. Periodontal disease in smokers

2.1.6. Plaque induced gingival disease

2.1.6.1. Host pathologic features of gingivitis
2.1.6.2. Gingivitis associated with local contributing factors
2.1.6.3. Treatment of plaque induced gingivitis
2.1.6.4. Gingival disease modified by endocrine factors
2.1.6.5. Gingival disease modified by malnutrition
2.1.6.6. Gingival disease modified by systemic conditions
2.1.6.7. Gingival disease modified by medications
2.1.6.8. Necrotic ulcerative gingivitis

2.1.7. Chronic Periodontitis

2.1.7.1. Risk factors or susceptibility to chronic periodontitis
2.1.7.2. Scientific basis for periodontal therapy
2.1.7.3. Effects of surgical treatment
2.1.7.4. Comparisons of surgical and non-surgical therapy

2.1.8. Aggressive Periodontitis

2.1.8.1. Classification and clinical Syndromes
2.1.8.2. Epidemiology
2.1.8.3. Etiology and pathogenesis
2.1.8.4. Diagnosis
2.1.8.5. Principles of therapeutic intervention

2.1.9. Necrotising Periodontal Disease

2.1.9.1. Nomenclature
2.1.9.2. Prevalence
2.1.9.3. Clinical characteristics
2.1.9.4. Diagnosis
2.1.9.5. Histopathology
2.1.9.6. Microbiology
2.1.9.7. Host response and pre-disposing factors
2.1.9.8. Treatment

2.1.10. Periodontal Abscess

2.1.10.1. Classification
2.1.10.2. Prevalence
2.1.10.3. Pathogenesis and histopathology
2.1.10.4. Microbiology
2.1.10.5. Diagnosis
2.1.10.6. Treatment

2.1.10.7. Complications
2.1.11. Non-plaque induced inflammatory gingival lesions
2.1.11.1. Gingival diseases of specific bacterial origin
2.1.11.2. Gingival diseases of specific viral origin
2.1.11.3. Gingival diseases of specific fungal origin
2.1.11.4. Gingival lesions of genetic origin
2.1.11.5. Gingival diseases of systemic origin
2.1.11.6. Traumatic Lesions
2.1.12. Differential diagnosis: Periodontal Tumours and Cysts
2.1.12.1. Reactive processes of periodontal soft tissues
2.1.12.2. Reactive processes of periodontal hard tissues
2.1.12.3. Benign neoplasms of periodontal soft tissues
2.1.12.4. Benign neoplasms of periodontal hard tissues
2.1.12.5. Malignant neoplasms of periodontal soft tissues
2.1.12.6. Malignant neoplasms of periodontal hard tissues
2.1.12.7. Cysts of Periodontium
2.1.13. Endodontics and Periodontics
2.1.13.1. Influence of pathologic conditions in the vital pulp on the periodontium
2.1.13.2. Manifestations of acute endodontic lesions in the marginal periodontium
2.1.13.3. Impact of endodontic treatment measure on the Periodontium
2.1.13.4. Influence of external root resorptions
2.1.13.5. Influence of periodontal disease on the condition of the pulp
2.1.13.6. Influence of periodontal treatment measure on the pulp
2.1.13.7. Endodontic considerations in root resection and multirooted teeth in periodontal therapy
2.1.13.8. Differential diagnosis considerations
2.1.13.9. Treatment strategies for combined endodontic and periodontic lesions
2.1.14. Trauma from occlusion
2.1.14.1. Definition and terminology
2.1.14.2. Trauma from occlusion and plaque associated periodontal disease

2.1.14.3. Conclusions
2.1.15. Periodontitis as a Risk for systemic disease
2.1.15.1. Periodontitis as a risk for coronary heart disease
2.1.15.2. Periodontitis as a risk for pregnancy complications
2.1.15.3. Periodontitis as a risk for respiratory infecton
2.1.16. Genetics in relation to Periodontitis
2.1.16.1. Introduction and definition
2.1.16.2. Evidence for the role of genetics in periodontology
2.1.16.3. Human genes and polymorphisms
2.1.16.4. Genetic in relation to disease in general
2.1.16.5. Modifying disease genes in relation to Periodontitis
2.1.16.6. Cytokine gene polymorphisms
2.1.16.7. FcyR gene polymorphisms
2.2. Immunology
2.3. Microbiology
2.4. Preventive Periodontics

3. Syllabus for Paper III

3.1. Periodontal Diagnosis

3.1.1. Examination of Patients with periodontal disease
3.1.1.1. Symptoms of periodontal disease
3.1.1.2. The gingival
3.1.1.3. The periodontal ligament – the root cementum
3.1.1.4. The alveolar bone
3.1.1.5. Diagnosis of periodontal lesions
3.1.1.6. Oral Hygiene status
3.1.1.7. Conclusion

3.2. Treatment

3.2.1. Treatment Planning
3.2.1.1. Screening for periodontal disease
3.2.1.2. Diagnosis
3.2.1.3. Treatment for planning
3.2.1.4. Initial (cause-related) therapy
3.2.1.5. Re-evaluation
3.2.1.6. Additional (corrective) therapy
3.2.1.7. Supportive periodontal therapy
3.2.2. Cause-Related Periodontal therapy

3.2.2.1. Objective of initial, cause-related periodontal therapy
3.2.2.2. Means of initial, cause –related periodontal therapy
3.2.2.3. Healing after initial, cause-related therapy
3.2.2.4. Evaluation of the effect of the initial, cause related therapy

3.2.3. Mechanical Supragingival plaque control
3.2.3.1. Importance of Supragingival plaque control
3.2.3.2. Self-performed plaque control

3.2.4. Use of antiseptics in Periodontal Therapy
3.2.4.1. Concept of chemical supragingival plaque control
3.2.4.2. Chemical plaque control agents
3.2.4.3. Chlorhexidine
3.2.4.4. Clinical use of chlorhexidine
3.2.4.5. Evaluation of chemical agents and products
3.2.4.6. Clinical trail design considerations

3.2.5. Use of antibiotics in Periodontal Therapy
3.2.5.1. Principles of antibiotic therapy
3.2.5.2. Evaluation of anti-microbial agents for periodontal Therapy

3.2.6. Breath Malodor
3.2.6.1. Socio-economic aspects
3.2.6.2. Etiology and pathophysiology
3.2.6.3. Diagnosis
3.2.6.4. Treatment

3.2.7. Periodontal Surgery: Access therapy
3.2.7.1. Techniques in periodontal pocket surgery
3.2.7.2. Distal wedge procedures
3.2.7.3. Osseous surgery
3.2.7.4. General guidelines for periodontal surgery
3.2.7.5. Outcome of surgical periodontal therapy

3.2.8. Effect of therapy on the microbiota in the dentogingival region
3.2.8.1. Introduction
3.2.8.2. Treatment of periodontal biofilms

3.2.9. Mucogingival therapy- Periodontal plastic surgery
3.2.9.1. Gingival augmentation
3.2.9.2. Root coverage
3.2.9.3. Interdental papilla reconstruction

3.2.9.4. Crown lengthening procedures
3.2.9.5. Deformed edentulous ridge
3.2.10. Regenerative periodontal Therapy
3.2.10.1. Introduction
3.2.10.2. Reliability of assessments of periodontal regeneration
3.2.10.3. Periodontal wound healing
3.2.10.4. Regenerative procedures
3.2.10.5. Guided tissue regeneration
3.2.11. Treatment of Furcation – Involved teeth
3.2.11.1. Terminology
3.2.11.2. Anatomy
3.2.11.3. Diagnosis
3.2.11.4. Differential dagnosis
3.2.11.5. Therapy
3.2.11.6. Prognosis
3.2.12. Occlusal Thearpy
3.2.12.1. Clinical symptoms of trauma from occlusion
3.2.12.2. Tooth mobility crown excursion/root displacement
3.2.12.3. Treatment of increased tooth mobility
3.2.13. Orthodontics and Periodontics
3.2.13.1. Orthodontic tooth movement in adults with periodontal tissue breakdown
3.2.13.2. Specific factors associated with orthodontic tooth movement in adults
3.2.13.3. Gingival recession
3.2.13.4. Minor surgery associated with orthodontic therapy
3.2.14. Supportive Periodontal Therapy
3.2.14.1. Definitions
3.2.14.2. Basic paradigms for the prevention of periodontal Disease
3.2.14.3. Patients at risk for Periodontitis without SPT
3.2.14.4. SPT for patients with gingivitis
3.2.14.5. SPT for patients with Periodontitis
3.2.14.6. Continuous multilevel risk assessment
3.2.14.7. Objectives for SPT
3.2.14.8. SPT in daily practice

3.3. Prognosis

3.4. Oral Implantology

3.4.1. Osseointegration: Historic Background and Current Concepts
- 3.4.1.1. Developments of the osseointegrated implant
- 3.4.1.2. Early tissue response to the osseointegrated implants
- 3.4.1.3. Osseointegration from a mechanical and biologic view Point
- 3.4.1.4. Osseointegration in the clinical reality
- 3.4.1.5. Future of the osseointegrated oral implants.

3.4.2. Surface topography of Titanium Implants
- 3.4.2.1. Implant surface / osseointegration
- 3.4.2.2. Measurement of surface topography
- 3.4.2.3. Implant surface roughness

3.4.3. Transmucosal attachment
- 3.4.3.1. Normal Peri-implant mucosa
- 3.4.3.2. Probing gingival and peri-implant mucosa

3.4.4. Radiographic Examination
- 3.4.4.1. Basic radio principles
- 3.4.4.2. Special requirements in the periodontally compromised Patient
- 3.4.4.3. Radiographic techniques for primary preoperative Evaluations
- 3.4.4.4. Radiographic techniques for secondary preoperative Evaluations
- 3.4.4.5. Postoperative radiography
- 3.4.4.6. Digital intraoral radiography

3.4.5. Surgical site
- 3.4.5.1. Preoperative examination
- 3.4.5.2. Principle comments on implant placement

3.4.6. Alveolar bone formation
- 3.4.6.1. Basic bone biology
- 3.4.6.2. Bone healing- general aspects
- 3.4.6.3. Concept of guided tissue regeneration
- 3.4.6.4. Clinical applications
- 3.4.6.5. Perspectives in bone regeneration with GTR

3.4.7. Procedure used to augment the deficient Alveolar ridge

3.4.8. Implant placement in the Esthetic Zone
- 3.4.8.1. Basic concepts

3.4.8.2. Anterior single tooth replacement
3.4.8.3. Multiple – unit anterior fixed implant restorations
3.4.8.4. Conclusions and perspective
3.4.9. Implant in the load carrying part of the dentition
3.4.9.1. Basic concepts
3.4.9.2. Restoration of the distally shortened arch with fixed implant supported prosthesis
3.4.9.3. Multiple – unit tooth – bound posterior implant Restorations
3.4.9.4. Posterior single tooth replacement
3.4.9.5. Clinical applications
3.4.10. Rehabilitation by means of Implants
3.4.11. Implants used for anchorage in orthodontics therapy
3.4.11.1. Implants for orthodontic anchorage
3.4.11.2. Orthodontic – prosthetic implant anchorage
3.4.11.3. Orthodontic Implant anchorage
3.4.11.4. Direct and indirect Orthodontic implant anchorage
3.4.12. Mucositis and Peri-implantitis
3.4.12.1. Excessive load
3.4.12.2. Infection
4.3.12.3. Peri-implant mucositis
4.3.12.4. Peri-implantitis
4.3.12.5. Treatment of Peri-implant tissue inflammation
4.3.12.6. Microbial aspects associated with implants in humans
4.3.12.7. Maintenance of the Implant Patient
4.3.12.7.1. The diagnostic process
4.3.12.7.2. Cumulative interceptive supportive therapy

4. **Syllabus for Paper IV**

4.1. Recent Advances

M.D.S - ORAL PATHOLOGY, MICROBIOLOGY & FORENSIC ODONTOLOGY

OBJECTIVES:

- To train a post graduate dental surgeon so as to ensure higher competence in both general and special pathology and oral diagnosis dealing with the nature of oral diseases, their causes, processes and effects.
- He/she is expected to perform routine histopathological evaluation of specimens relating to oral and perioral tissues.
- He/she is expected to carry out routine diagnostic procedures including hematological, cytological, microbiological, immunological and ultra structural investigations.
- He/She is expected to have an understanding of current research methodology, collection and interpretation of data, ability to carry out research projects on clinical and or epidemiology aspects, a working knowledge on current databases, automated data retrieval systems, referencing and skill in writing scientific papers.
- He/she is expected to present scientific data pertaining to the field, in conferences both as poster and verbal presentations in both National and State conferences and to take part in group discussions.

BROAD OUTLINE OF THEORITICAL, CLINICAL AND PRACTICAL COURSES:

- Study of principles of routine and special technique used for histopathology including principles of histochemistry, immunochemistry, applied and theoretical biochemical basis of histochemistry as related to oral pathology.
- Advanced histological and histopathological study of dental and oral tissues including embryonic considerations, clinical considerations, biology, histology, pathology, prognosis and management of oral oncology, concepts of oral premalignancy.
- Study of special and applied pathology of oral tissues as well as relation of local pathologic and clinical findings to systemic conditions.
- Oral microbiology and their relationship to various branches of dentistry.
- Oral microbiology affecting hard and soft tissues. Study of clinical changes and their significance to dental and oral diseases as related to oral pathology.
- Forensic odontology
- Inter institutional postings such as cancer hospital, dermatology clinics, regional HIV detection centers, sophisticated instrumentation centers for electron microscopy and other techniques.
- Maintenance of records of all postgraduate activities
- Library dissertation
- University dissertation

SCHEME OF EXAMINATION
THEORY – PART II

Paper I - Oral Pathology, Microbiology & Forensic Odontology (Including Immunology)
Paper II - Oncology (Including Basic Molecular Biology & Genetics)
Paper III - Diagnostic and Laboratory Techniques
Paper IV - Essay with Emphasis on Recent Advances

PRACTICAL CLINICAL EXAMINATION:

In case of practical examination, it should be aimed at assessing competence and skills of techniques and procedures. It should also aim at testing student's ability to make relevant and valid observations, interpretation and inference of laboratory or experimental or clinical work relating to his / her subject for undertaking independent work as a specialist.

The total marks for practical / clinical examination shall be 200 marks. The distribution of marks and time shall be as under :

1. Case presentation
    a. Long case - 1hr - 20 marks
    b. Short case - 30 min - 10 marks
2. Clinical hematology -1hr - 20 marks
3. Smear preparation -45 min - 20 marks
4. H&E staining -45 min - 30 marks
5. Histopathology slide discussion -3hrs - 100 marks

c) Viva Voce:

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

Duration of viva voce for each candidate - 1hr

1. Viva voce examination - 80marks
2. Dissertation / Pedagogy - 20 marks

MDS PART – II SYLLABUS:

1. ORAL PATHOLOGY

- Developmental defects of oral and maxillofacial region and abnormalities of teeth
- Dental caries {introduction, epidemiology, microbiology, cariogenic bacterial including properties, acid production in plaque, development of lesion, response of dentine –pulp unit, histopathology ,root caries sequelae and immunology}
- Pulp and periapical disease
- Infections of oral and para oral regions {bacterial viral and fungal infections}
- Non –neoplastic disorder of salivary glands
- Bone pathology
- Hematological disorders
- Physical and chemical injuries, allergic and immunological disease
- Cyst of odontogenic origin
- Dermatologic diseases
- Periodontal disease
- Oral manifestations of systemic disease
- Facial pain and neuromuscular disorder including TMJ disorder
- Regressive alteration of teeth

2. CLINICAL PATHOLOGY

- Laboratory investigations –Hematology, microbiology, and urine analysis

3. BASIC IMMUNOLOGY

- Basic principles of immunity, antigen-antibody reaction
- Cell mediated immunity and Humoral immunity

- Immunology of hypersensitivity
- Immunological basis of the autoimmune phenomena
- Immunodeficiency with relevants to opportunistic infection
- Basic principles of transplantation and tumor immunity

4. VIROLOGY

- General properties-structure broad classification of viruses, pathogenesis, pathology of viral infections
- Herpes virus-list of viruses included, lesion produced, pathogenesis, latency principles and laboratory diagnosis
- Hepatitis virus- list of viruses included, lesion produced, pathogenesis, principles and laboratory diagnosis, methods of prevention and control
- Human immunodeficiency virus - structure with relevance to laboratory diagnosis, type of infection, lab test and their interpretation, universal precaution, specific precautions and recent trends in diagnosis and prophylaxis.

5. MYCOLOGY

- General properties of fungi, classification basis on disease superficial, subcutaneous, deep opportunistic infections.
- General principle of fungal infection diagnosis rapid diagnosis method of collection of sample and examination of fungi.

6. ORAL BIOLOGY

- Structure and function of oral, dental and paraoral tissue including their ultrastructure, molecular and biochemical aspects
- Study of morphology of permanent and deciduous teeth

  (Lectures and practical demonstration to be given by PG students)

7. BASIC MOLECULAR BIOLOGY AND TECHNIQUES

- Experimental aspects – DNA extraction, PCR, and Western Blotting

8. BASIC HISTOTECHNIQUES AND MICROSCOPY

- Routine hematological test and clinical significance of the same
- Biopsy procedure for oral lesions
- Processing of tissue for paraffin lesions
- Microtome and principles of microtomy
- Routine stains, principles and theories of staining techniques
- Microscope and principles and theories of microscopy
- Light microscopy and various other types including electron microscopy
- Method of tissue preparation for ground section, decalcified section

9. SPECIALIZED HISTOTECHNIQUES AND SPECIAL STAINS

- Special staining techniques for different tissues
- Immunohistochemistry
- Preparation of frozen sections and cytological smear

10. DERMATOLOGY

- Study of selected mucocutaneous lesions, etiopathogenesis, pathology, clinical presentation and diagnosis

11. ORAL ONCOLOGY

- Detailed study including pathogenesis, molecular and biochemical changes of various tumors, tumor-like lesion and premalignant lesion affecting the hard and soft tissues of oral and paraoral tissues
- Tumor markers

12. ORAL MICROBIOLOGY AND IMMUNOLOGY

- Normal oral microbial flora
- Defense mechanisms of oral cavity
- Microbiology and immunology of dental caries and periodontal disease
- Dental caries {introduction ,epidemiology, microbiology, cariogenic bacterial including properties ,acid production in plaque, development of lesion, response of dentine –pulp unit, histopathology ,root caries sequelae and immunology}
- Tumor immunology
- Infections of pulp and periapical and periodontal tissue
- Oral sepsis and bacteremia
- Microbial genetics
- Infections of oral and para oral regions

13. FORENSIC ODONTOLOGY

- Legal procedures like inquest, medico-legal evidences postmortem examination of violence around mouth and neck, identification of deceased individual-dental importance
- Bite marks, rugae patterns and lip prints

14. HISTOPATHOLOGY – SLIDE DISCUSSION

- Record book to be maintained

15. LABORATORY TECHNIQUES AND DIAGNOSIS

- Routine hematological tests and significance of the same
- Biopsy procedure for oral lesions
- Processing of tissues for paraffin sections

- Microtome and principles of microtomy
- Microscope and principles and theories of microscopy
- Light microscopy and various other types including electron microscopy
- Method of tissue preparation for ground section, decalcified sections
- Special stains and staining techniques for different tissues
- Immunohistochemistry
- Preparation of frozen section and cytological smears

16. OTHER TOPICS IN ORAL PATHOLOGY

- Detailed description of diseases affecting oral mucosa, teeth, supporting tissues and jaws
- Cysts of the oral and para oral region
- Systemic disease affecting the oral cavity
- Non-neoplastic disorder of salivary gland
- Bone pathology
- Physical and chemical injuries, allergic and immunological disease
- Cyst of odontogenic origin
- Oral manifestation of systemic diseases