

**SUGGESTED MODIFICATIONS IN  
REGULATIONS AND CURRICULUM FOR MDS DEGREE COURSE**

**I MDS -- Preclinical work**

**Conservative Dentistry Exercises\***

Exercise	No.
Class 2 silver amalgam cavity preparation <ul style="list-style-type: none"> <li>• Conservative</li> <li>• Conventional</li> <li>• Pin retained amalgam on molar teeth</li> </ul>	2 (Typhodont) + 2 (Natural Teeth) 2 (Typhodont) + 2 (Natural Teeth) 1(Typhodont) + 1 (Natural Teeth)
Inlay cavity preparation (premolars and molars) MO, DO, MOD Wax pattern Casting	5(Typhodont) + 5 (Natural Teeth) 4 (Typhodont) + 4 (Natural Teeth) 2 (Typhodont) + 2 (Natural Teeth)
Onlay preparation (molars) Casting	2 (Typhodont) + 2 (Natural Teeth) 1 (Typhodont) + 1 (Natural Teeth)
Full crowns <ul style="list-style-type: none"> <li>• Anteriors</li> <li>• Posteriors</li> </ul>	2 (Typhodont) + 4 (Natural Teeth) Processing 1 + 2 2 (Typhodont) + 4 (Natural Teeth) Processing 1 + 2

Demonstration of use of hard tissue& soft tissue lasers

\* All exercises 1 each to be done under magnification

**Endodontics Exercises\***

Ultrasonics to be introduced

Demonstration of various obturation techniques and one each to be done.

Prefabricated post placement exercises

Demonstration of lasers

File retrieval demonstration – using various techniques and under magnification

\* All exercises 1 each to be done under magnification

**Clinical exercises**

**I, II, III MDS**

- Ultrasonics to be introduced
- Each type of clinical exercise to be performed under microscope
- Hands-on courses for advanced clinical practice such as micro-endodontics, lasers, implants, smile designing etc. be made compulsory and credit scores be assigned on the basis of the certificate.

## **Suggested Modification In The III MDS Final Clinical Examination Pattern**

### **Option A :**

#### **Day 1**

#### **Exercise 1 – Endodontics – Marks 50**

Local anaesthesia, rubber dam application  
Access Cavity  
Working length determination  
Biomechanical preparation  
Master cone selection

#### **Exercise 2 – Conservative Dentistry - Composite inlay exercise on posterior teeth – Marks 50**

Tooth preparation for class II inlay  
Impression making  
Fabrication

#### **Day 2**

#### **Case presentations – 5 total – 100 Marks**

Metal post and core - 1  
Fibre post and core - 1  
Full mouth rehabilitation - 1  
Esthetics – 2

**Pedagogy – 20 Marks**

**Viva voce – 80 Marks**

### **Option B :**

#### **Day 1**

**Exercise 1 - Long Case Discussion & Management Of One Clinical Condition In That Case  
As Specified By The Examiners After Case Discussion (Marks 100)**

**Exercise 2 -- An overall assessment** of candidates three years performance should be evaluated first by the departmental committee and then recommended for evaluation with external examiners. At the time of final evaluation with external examiners **5 case discussion** and treatment planning can be held simultaneously to judge the clinical acumen of the candidate. **(Marks 100)**

#### **Day 2**

**Pedagogy – 20 Marks**

**Viva voce – 80 Marks**

### **Option C:**

Any 3 of the following exercises can be undertaken for practical examination.

#### **Exercise 1**

Post space preparation followed by fiber post cementation, Core buildup and final impression.  
(100 Marks)

**Exercise 2**

Class 2 Inlay Cavity preparation & Wax pattern Fabrication with casting and cementation

Or

Class 2 Direct composite restoration

Or

Class 4 Direct Composite Restoration

Or

Mid line diastema closure with direct composite ( 50 Marks)

**Exercise 3**

Root Canal Treatment up to master cone selection (50 Marks)

**Day 2**

**Pedagogy – 20 Marks**

**Viva voce – 80 Marks**

**SCHEME FOR POST GRADUATE PROGRAM**

Duration of the course: 36 months

**Program for 1<sup>st</sup> year:**

1. Basic Knowledge of *computer* within First 3months
2. *Preclinical exercises shouldbe completed within first 5 months.*
3. *Basic science classes* to be attended.
4. Epidemiological study and field *survey* to be completed in 6months.
5. **Thesis Synopsis Submission**
6. *Seminar* on dental materials & Conservative dentistry two days a week. (5 per student)
7. *Journal club*
8. Topic selection for *Library Dissertation*
9. *Clinical training* including Basic conservative procedures
10. *Study model/poster* to be submitted to the department.

**PROMOTIONAL EXAM FOR FIRST YEAR MDS**

Viva and theory test to be held on dental materials (portion divided in four sessions)

**Clinical Work:**

A	Composite restoration	30
B	GIC restorations	30
C	Complex amalgam restorations	05

D	Composite inlay + veneers(direct and indirect)	05
E	Ceramic jacket crown	05
F	Post and Core for anterior teeth	05
G	Bleaching vital and Non vital	05 each
H	RCT anterior	20
I	Endo surgery-observation and assisting	05

**Programme for Second year MDS:**

- 1) Endodontics
- 2) Post –Endodontic restorations
- 3) Specialized conservative Procedures.
- 4) Photo /audio/ video/radiographic records of all cases
- 5) **Seminars** on endodontic & conservative dentistry two days a week(5 per student)
- 6) Journal club once a week.
- 7) Case presentation once a week. (Case discussion – 5 per student)
- 8) **Short term research.** (Optional)
- 9) Submission of library dissertation.
- 10) Presentation of **Scientific papers/ Research papers** in state and national Conferences.
- 11) International /National/State conferences- minimum 2
- 12) Lecture classes for undergraduate students in conservative dentistry- minimum 2 hours.
- 13) Camps-5 and rural posting-20 days to be attended.
- 14) **Promotional exam for second year MDS-- Yearly practical exams be introduced to ensure quality clinical work.**
- 15) **Viva and theory test to be held on Conservative dentistry** :( Portions divided in four sessions)

**Clinical Work**

1	Ceramic jacket crowns	10
2	Post and core for anterior teeth	10
3	Post and core for posterior teeth	05
4	Composite restoration	05
5	Full crown for posterior teeth	15
6	Cast gold inlay	05
7	Other special types of work such as splinting	05

8	Anterior RCT	20
9	Posterior RCT	30
10	Endo Surgery performed independently	05
11	Management of Endo-Perio problems	05

**PROGRAMME FOR III YEAR MDS:**

- 1) Endodontics
- 2) Post-Endodontic restorations
- 3) Specialized conservative procedures
- 4) Endodontic surgeries-minimum 5. (Photo/ audio-video/ Radiographic records)
- 5) Seminars on Endodontic and conservative dentistry two days a week
- 6) Journal club once a week
- 7) Case presentation once a week (Clinical case presentations: minimum 5 per student)
- 8) Multidisciplinary approach cases- 2 minimum
- 9) Cases of special interest or cases with advanced treatment planning-----minimum 3
- 10) Dissertation submission 6 months before the final examination.
- 11) Presentation of scientific papers in national/ international/State conferences-2
- 12) Lecture Classes for undergraduate students in Endodontics minimum 2 hours.
- 13) Two Scientific publications at state/ national/ international journals
- 14) Camps-5 and rural posting- 20 days to be attended
- 15) Viva and theory test to be held on Endodontics in three sessions

**Mock Exam Theory and Practicals to be held at the end of the year.**

**Clinical Work**

1	Cast gold inlay- onlay, cuspal restoration	10
2	Post and core	20
3	Molar Endodontics	50
4	Retrieval of broken instruments	05
5	Endo surgery	05
6	Full mouth rehabilitation	02

All other types of surgeries including crown lengthening, perio-esthetics, hemi-sectioning, splinting, replantation, endodontic implants.

**SELECTION OF ARTICLES FOR JOURNAL CLUB PRESENTATION**

**(15 ARTICLES)**

Endodontic research titles	---	5
Conservative Dentistry research titles	---	5
Case reports	---	2
Review articles	---	2

**SUGGESTED BOOKS FOR MDS DEGREE**

**CONSERVATIVE DENTISTRY**

1. STURDEVANT – ART AND SCIENCES OF OPERATIVE DENTISTRY 5<sup>TH</sup> EDITION
2. SUMMIT JB - FUNDAMENTALS OF OPERATIVE DENTISTRY: A CONTEMPORARY APPROACH – 3<sup>RD</sup> EDITION
3. CHARBENEAU G.T. PRINCIPLES & PRACTICE OF OPERATIVE DENTISTRY – 3<sup>RD</sup> EDITION
4. MARZOUK M.A. OPERATIVE DENTISTRY MODERN THEORY AND PRACTICE
5. WILSON, NAIRN H. F. MINIMALLY INVASIVE DENTISTRY 1<sup>ST</sup> edition
6. VIMAL SIKRI - TEXT BOOK OF OPERATIVE DENTISTRY 2<sup>ND</sup> edition

**ENDODONTICS**

1. COHEN – PATHWAYS OF PULP 11<sup>TH</sup> EDITION
2. INGLE’S ENDODONTICS 6<sup>TH</sup> EDITION
3. GUTMANN – PROBLEM SOLVING IN ENDODONTICS – 5<sup>TH</sup> EDITION
4. JAMES L GROSSMAN – ENDODONTIC PRACTICE – 13<sup>TH</sup> EDITION
5. TORABINEJAD M – ENDODONTICS PRINCIPLES AND PRACTICE 4<sup>TH</sup> EDITION
6. HARTYS ENDODONTICS IN CLINICAL PRACTICE 7<sup>TH</sup> EDITION
7. WEINE – ENDODONTIC THERAPY 6<sup>TH</sup> EDITION

**ESTHETIC DENTISTRY**

1. KENNETH W ASCHHEIM – A CLINICAL APPROACH TO TECHNIQUES AND MATERIALS 3<sup>RD</sup> EDITION
2. CONTEMPORARY ESTHETIC DENTISTRY – FREEDMAN
3. DAWSON -FUNCTIONAL OCCLUSION – FROM TMJ TO SMILE DESIGN
4. STEPHEN CHU - FUNDAMENTALS OF COLOR – SHADE MATCHING AND COMMUNICATION IN ESTHETIC DENTISTRY

**EQUIPMENTS:-****There is no clarity in the highlighted items.**

S.No.	Name	Specification	Quantity		Availability
1.	Dental Chairs and Units	Electrically operated with shadowless lamp, spittoon, 3 way syringe, instrument tray and motorized suction, micromotor, airtor attachment with hand pieces (Fibre optic) and scaller	One chair per post-graduate student and two for faculty per Unit		
			<b>Unit 1</b>	<b>Unit 2</b>	
2.	ENDOSONIC HANDPIECES – Micro endosonic Tips, retro treatment		2	3	
3.	Mechanised rotary instruments including hand pieces (speed and torque control) and hand instruments various systems		3	6	
4.	Rubber dam kit		1 per chair	1 per chair	
5.	Autoclaves for bulk instrument sterilization vacuum (Front loading)		2	3	
6.	Autoclaves for hand piece sterilization		1	1	
7.	Apex locators one for every two chairs??		2	4	
8.	Pulp tester		2	4	
9.	Equipments for injectable thermoplasticized gutta percha		1	2	
10.	Operating microscopes 3 step or 5 step magnification		1	1	
11.	Surgical endo kits (Microsurgery)		2	2	
12.	Set of hand cutting instruments		1	2	

13.	Sterilizer trays for autoclave		4	6	
14.	Ultrasonic cleaner capacity 3.5 lts		1	1	
15.	Variable Intensity polymerization equipments - VLC units	Desirable	1	1	
16.	Conventional VLC units		2	4	
17.	Needle destroyer		2	2	
18.	Magnifying loupes one for students and one for faculty ??		1	2	
19.	LCD projector		1	1	
20.	Composite kits with different shades and polishing kits		2	4	
21.	Ceramic finishing kits, metal finishing kits	In ceramic labs	2	3	
22.	Amalgam finishing kits		2	3	
23.	RVG with x-ray machine developing kit		1	1	
24.	Chair side micro abrasion		1	1	
25.	Bleaching unit		1	1	
26.	Instrument retrieval kits with Piezo Electric ultrasonic tips		1	1	
27.	Computer with internet connection with attached printer and scanner		1	1	
28.	Refrigerator		1	1	
29.	<b>Equipments for casting procedures</b>				
30.	Equipments for ceramics including induction casting machines/ burnout preheat furnaces/ wax elimination furnaces		1	1	
31.	Lab micro motor/ metal grinders / sand blasters/ polishing lathes/		1	1	



	duplicator equipment/ vacuum investment equipments				
32.	Laser (preferably hard tissue)		1	1	
33.	Face bow with semi adjustable articulator		1	2	

The course contents mentioned below are not there in MDS Regulations 2017

**COURSE CONTENTS:**

**PAPER-I : APPLIED ANATOMY OF HEAD AND NECK**

- Development of face, paranasal sinuses and the associated structures and their anomalies, cranial and facial bones, TMJ anatomy and function, arterial and venous drainage of head and neck, muscles of face and neck including muscles of mastication and deglutition, brief consideration of structures and function of brain. Brief consideration of all cranial nerves and autonomic nervous system of head and neck. Salivary glands, Functional anatomy of mastication, deglutition and speech. Detailed anatomy of deciduous and permanent teeth, general consideration in physiology of permanent dentition, form, function, alignment, contact, occlusion.)
- Internal anatomy of permanent teeth and its significance
- Applied histology – histology of skin, oral mucosa, connective tissue, bone cartilage, blood vessels, lymphatics, nerves, muscles, tongue.

**DEVELOPMENT OF TEETH:**

- Enamel – development and composition, physical characteristics, chemical properties, structure
  - Age changes – clinical structure
  - Dentin – development, physical and chemical properties, structure type of dentin, innervations, age and functional changes.
  - Pulp – development, histological structures, innervations, functions, regressive changes, clinical considerations.
  - Cementum – composition, cementogenesis, structure, function, clinical consideration.
  - Periodontal ligament – development, structure, function and clinical consideration.
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- Salivary glands – structure, function, clinical considerations.
- Eruption of teeth.

**APPLIED PHYSIOLOGY:**

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

**PATHOLOGY:**

- Inflammation, repair, degeneration, necrosis and gangrene.
- Circulatory disturbances – ischemia, hyperemia, edema, thrombosis, embolism, infarction, allergy and hypersensitivity reaction.
- Neoplasms – classifications of tumors, characteristics of benign and malignant tumors, spread tumors.
- Blood dyscrasias
- Developmental disturbances of oral and Para oral structures, dental caries, regressive changes of teeth, pulp, periapical pathology, pulp reaction to dental caries and dental procedures.
- Bacterial, viral, mycotic infections of the oral cavity.

**MICROBIOLOGY:**

- Pathways of pulpal infection, oral flora and micro organisms associated with endodontic diseases, pathogenesis, host defense, bacterial virulence factors, healing, theory of focal infections, microbes or relevance to dentistry – strepto, staphylococci, lactobacilli, corynebacterium, actinomycetes, clostridium, neisseria, vibrio, bacterioids, fusobacteria, spirochetes, mycobacterium, virus and fungi.
- Cross infection, infection control, infection control procedure, sterilization and disinfection.
- Immunology – antigen antibody reaction, allergy, hypersensitivity and anaphylaxis, auto immunity, grafts, viral hepatitis, HIV infections and aids. Identification and isolation of microorganisms from infected root canals. Culture medium and culturing technique (Aerobic and anaerobic interpretation and antibiotic sensitivity test).

**PHARMACOLOGY:**

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

**BIOSTATISTICS:**

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

#### **RESEARCH METHODOLOGY:**

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

#### **APPLIED DENTAL MATERIALS:**

- Physical and mechanical properties of dental materials, biocompatibility. .
- Impression materials, detailed study of various restorative materials, restorative resin and recent advances in composite resins, bonding- recent developments- tarnish and corrosion, dental amalgam, direct filling gold, casting alloys, inlay wax, die materials, investments, casting procedures, defects, dental cements for restoration and pulp protection (luting, liners, bases) cavity varnishes.
- Dental ceramics-recent advances, finishing and polishing materials.
- Dental burs - design and mechanics of cutting - other modalities of tooth preparation.
- Methods of testing biocompatibility of materials used.

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

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

Restorative techniques, direct and indirect methods of fabrication including materials used for fabrication like inlay wax, investment materials and
12. Direct gold restorations.
13. Recent advances in restorative materials and procedures.
14. Management of non-cariou lesion.
15. Advance knowledge of minimal intervention dentistry.
16. Recent advances in restoration of endodontically treated teeth and grossly mutilated teeth
17. Hypersensitivity, theories, causes and management.
18. Lasers in Conservative Dentistry
19. CAD-CAM & CAD-CIM in restorative dentistry
20. Dental imaging and its applications in restorative dentistry (clinical photography)
21. Principles of esthetics

- Color
- Facial analysis
- Smile design
- Principles of esthetic integration
- Treatment planning in esthetic dentistry

**PAPER-III : ENDODONTICS**

1. Rationale of endodontics.
2. Knowledge of internal anatomy of permanent teeth, anatomy of root apex and its implications in endodontic treatment.
3. Dentin and pulp complex.
4. Pulp and periapical pathology
5. Pathobiology of periapex.
6. Diagnostic procedure – recent advances and various aids used for diagnosis-
  - a. Orofacial dental pain emergencies: endodontic diagnosis and management
7. Case selection and treatment planning
8. Infection control procedures used in Endodontics (aseptic techniques such as rubber dam, sterilization of instruments etc.)
9. Access cavity preparation – objectives and principles
10. Endodontic instruments and instrumentation – recent developments, detailed description of hand, rotary, sonic, ultra sonic etc..
11. Working length determination / cleaning and shaping of root canal system and recent development in techniques of canal preparation.
12. Root canal irrigants and intra canal medicaments used including non – surgical Endodontics by calcium hydroxide.
13. Endodontic microbiology.
14. Obturating materials, various obturation techniques and recent advances in obturation of root canal.
15. Traumatic injuries and management – endodontic treatment for young permanent teeth. Pediatric Endodontics – treatment of immature apex.
16. Endodontic surgeries, recent developments in technique and devices, endosseous endodontic implants – biology of bone and wound healing.
17. Endoperio interrelationship, endo + Perio lesion and management
18. Drugs and chemicals used in Endodontics
19. Endo emergencies and management.
20. Restoration of endodontically treated teeth, recent advances.
21. Geriatric Endodontics
22. Endo emergencies and management.
23. Biologic response of pulp to various restorative materials and operative procedures.
24. Lasers in Endodontics.
25. Multidisciplinary approach to endodontics situations.
26. Endodontics radiology- digital technology in endodontics practice.
27. Local anesthesia in endodontics.
28. Procedural errors in endodontics and their management.
29. Endodontics failures and retreatment.
30. Resorptions and its management.
31. Microscopes in endodontics.
32. Single visit endodontics, current concepts and controversies.

**TEACHING / LEARNING ACTIVITIES:**

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

**First Year**