Course structure
&
Revised/updated Syllabus
(As per DCI 2007 Guidelines)

B.D.S. (2nd and final Professional)
2019-20

DEPARTMENT OF CONSERVATIVE DENTISTRY & ENDODONTICS
DR. Z. A. DENTAL COLLEGE, FACULTY OF MEDICINE
ALIGARH MUSLIM UNIVERSITY
ALIGARH
Programme name: BDS  
Subject: Pre-clinical Conservative Dentistry  
Course code: BDSB  
Maximum Marks: 100  
Sessional Marks: 20  
Prof. Exam Marks: 80  
- Theory: No theory exam  
- Practical: 60  
- Viva voce: 20

Course objectives:
The objectives are dealt under following headings:

a. Knowledge and understanding:
   - To acquire adequate knowledge of the scientific foundation of conservative dentistry.
   - To understand various treatment procedures with emphasis on biological principal.
   - To acquire knowledge of various instruments and materials and manipulative techniques used in restorative procedures.

b. Skills:
   - To develop skills in preparation of various cavities and to perform various restorative procedures.
   - To develop skills in manipulation of various materials used in conservative dentistry.

c. Attitude:
   - The student should be able to apply the current knowledge of various materials used in dentistry in the interest of patients and the community in general.
   - To be aware of recent developments in instruments and materials used in conservative dentistry and update his/her knowledge by attaining various continuing education programmes.
   - Should be aware of both benefits and health hazards of various restorative materials used in conservative dentistry.
   - Should maintain high standard of professional ethics and apply those in all aspects of professional life.

d. Knowledge about infection and cross infection in dentistry:
   - Knowledge about asepsis – disinfection and sterilization of instruments, clinical area / personal care as per universal protection, and disposal of medical wastes in the appropriate modes.
   - Students should be aware of the rules and regulations pertaining to maintenance of clinical set up and waste disposal.
Course outcome:
Upon successful completion of course the students would be able to-
- Understand basics of cariology, its prevention and conservative management.
- Diagnose the type of carious lesion and prepare the cavity accordingly.
- Apply modern pulp protective regimens.
- Select suitable restorative materials for restoration in different teeth.
- Apply the concepts of asepsis, disinfection and sterilisation in the clinics.

Course content:
1. Definition & scope of operative dentistry, tooth nomenclature,
2. Infection control in operative dentistry *(Revised)*
3. Dental carries, definition, classification, diagnosis, etiopathogenesis.
4. Dental carries management and prevention.
5. Instruments nomenclature, design and formulae.
6. High speed equipments in dentistry.
7. Examination, diagnosis and treatment planning
8. Fundamentals of tooth preparation
9. Bio-mechanics of cavity design and restoration with filling materials,
10. Pulp and soft tissue protection
11. Choice of filling materials
12. Direct restorative materials
13. Fundamentals of enamel and dentin adhesion *(Revised)*
14. Indirect restorative materials *(Revised)*
15. Cavity preparation for various type of restorations including inlays and onlays.
17. Charting and recording of cases.

Books recommended:
Programme name: BDS
Subject/course: Conservative Dentistry & Endodontics (Part A+ Part B)
Course code: Part A (BDS-417) and Part B (BDS-418)
Maximum Marks: 200
  Theory - 100  Practical/clinical – 100
Sessional Marks: 20
  :Theory - 10  Practical/Clinical - 10
Prof. Exam Marks: 180
  :Theory-70 & viva voce-20 = 90
  :Practical - 90

Course objectives:

a. Knowledge and understanding:
The graduate should acquire the following during the period of training:

- To diagnose and treat simple restorative work for teeth.
- To gain knowledge about aesthetic restorative material and to translate the same to patient’s needs.
- To gain the knowledge about endodontic treatment on the basis of scientific foundation.
- To carry out simple endodontic treatment and emergency endodontic treatment.
- Adequate clinical experience required for general dental practice.

b. Skills:
He/she should attain following skills necessary for practice of dentistry

- To use medium and high speed hand pieces to carry out restorative work.
- To develop skills in preparation of various cavities and to perform various restorative procedures
- Poses the skills to use and familiarize endodontic instruments and materials needed for carrying out simple endodontic treatment.
- To develop skills in manipulation of various materials used in conservative dentistry.
- To achieve the skills to translate patient’s aesthetic needs along with function.

c. Attitude:

- The student should be able to apply the current knowledge of various materials used in dentistry in the interest of patients and the community in general.
- To be aware of recent developments in instruments and materials used in conservative dentistry and update his/her knowledge by attaining various continuing education programmes.
• Should be aware of both benefits and health hazards of various restorative materials used in conservative dentistry.
• Should maintain high standard of professional ethics and apply those in all aspects of professional life.

d. Knowledge about infection and cross infection in dentistry:
• Knowledge about asepsis – disinfection and sterilization of instruments, clinical area / personal care as per universal protection, and disposal of medical wastes in the appropriate modes.
• Students should be aware of the rules and regulations pertaining to maintenance of clinical set up and waste disposal.

Course outcome:
Upon successful completion of course the students would be able to-
• Diagnose and develop a proper treatment plan.
• Understand basics of cariology, pulpal and periapical diseases and their prevention and conservative management.
• Perform the basic and standardized procedures in clinical restorative dentistry and Endodontics.
• Apply the concepts of asepsis, disinfection and sterilisation in the clinics.
• Manage and maintain a safe working environment for staff and patients at all times.

Course content:

Conservative Dentistry (Part A):
1. Definition, scope, examination, diagnosis & treatment planning in operative dentistry
2. Instruments nomenclature, design and formulae, care and sterilization
3. Dental Caries- aetiology, diagnosis and management
5. Analgesia and pain control in operative dentistry
6. Preliminary considerations for operative dentistry and Isolation of the operating field.
7. Dental amalgam properties and manipulation
8. Tooth preparation for class I, II, III and V amalgam restorations
9. Complex amalgam restorations
10. Choice of filling materials
11. Dental casting alloys and casting procedures
12. Varnishes liners and bases
14. Direct tooth coloured restorations.
15. Cavity preparation for various type of restorations including inlays and onlays.
16. Direct gold restorations
17. Fractured teeth and their management
18. Management of discoloured teeth  
19. Indirect tooth colored restorations  
20. Ethics and dental jurisprudence (Revised)  
21. Evidence based dentistry  
22. Management of dentin hypersensitivity (Revised)

Endodontics (Part B):

1. Introduction, scope and rationale of endodontic therapy  
2. Diagnostic aids in Endodontics,  
3. Pulpal and peri-radicular diseases  
4. Endodontic instruments, Care and sterilization  
5. Case selection and treatment planning in endodontics  
6. Tooth morphology and Access cavity preparation  
7. Working length determination (Revised)  
9. Techniques of root canal preparation - Rotary endodontics (Revised)  
10. Irrigation in endodontics  
11. Obturation of the root canal system  
12. Drugs used in root canal therapy  
13. Vital pulp therapy  
14. Management of endodontic emergencies  
15. Management of traumatic dental injuries  
16. Bleaching of teeth  
17. Restoration of endodontically treated teeth  
18. Endodontic surgery  
19. Endodontic and periodontal interrelationships  
20. Micro- dentistry

Books recommended:

3. Summitts fundamentals of operative dentistry a contemporary approach, 4th ed.
Course structure
&
Revised/updated Syllabus
(As per DCI Guidelines)

M.D.S. (Conservative Dentistry & Endodontics)
2017-18

DEPARTMENT OF CONSERVATIVE DENTISTRY & ENDODONTICS
DR. Z. A. DENTAL COLLEGE, FACULTY OF MEDICINE
ALIGARH MUSLIM UNIVERSITY
ALIGARH
**Conservative dentistry and Endodontics** Conservative dentistry deals with prevention and treatment of the diseases and injuries of the hard tissues and the pulp of the tooth and associated periapical lesions, along with restoration of those teeth to normal form function and aesthetics.

**PART-I**
- Paper I – Applied basic sciences

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

**Programme objectives:**

a. *Knowledge and understanding:*

   The postgraduate should acquire the following during the period of training:
   - To understand the basic sciences related to the oro-facial tissues.
   - To know about etiology, pathophysiology and clinical presentation of diseases of the tooth and periapical tissues.
   - To understand biomaterial science related to the specialty.
   - To acquire knowledge of prevention and management of diseases of the tooth and periapical tissues.

b. *Cognitive skills:*

   During the programme, a student will be able to:
   - Predict prognosis using clinical and radiographic data.
   - Implement a preventive strategy.
   - Justify a multidisciplinary treatment plan.
   - Critically assess scientific literature.

c. *Clinical skills:*

   During the programme, a student will be able to:
   - Perform appropriate dental diagnostic procedures.
   - Demonstrate proficiency in preventive and interventional care.
   - Perform restorative care including esthetic challenges.
   - Execute non-surgical and surgical Endodontics.

d. *Human Values, Ethical Practice and Communication Abilities:*

   - Should adopt ethical principles in all aspects of restorative and contemporaries Endodontics" including non-surgical and surgical Endodontic.
• Professional honesty and integrity should be the top priority.
• To provide dental care regardless of social status, caste, creed or religion of the patient.
• To develop communication skills- in particular to explain various options available management and to obtain a true informed consent from the patient.
• Apply high moral and ethical standards while carrying on human or animal research.
• He / She shall not carry out any heroic procedures and must know his limitations in performing all aspects of restorative dentistry including Endodontics.
PART - I

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<th>Programme name</th>
<th>MDS</th>
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<td>Subject/course</td>
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<td>MDCD-01</td>
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<td>Maximum Marks</td>
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<td>No</td>
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<tr>
<td>End term exam marks</td>
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Course outcome:

- Students would be able to demonstrate understanding of basic sciences as relevant to conservative / restorative dentistry and Endodontics.
- Students would demonstrate infection control measures in the dental clinical environment and laboratories.
- Student would adopt ethical principles in all aspects of restorative and contemporary Endodontics including non-surgical and surgical Endodontics.
- Students would be able to demonstrate communication skills in particular to explain various options available management and to obtain a true informed consent from the patient.
- Students would be able to apply high moral and ethical standards while carrying on human or animal research.

Course content:

1. *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.

2. *Applied Anatomy of Head and Neck:*
   - Enamel – development and composition, physical characteristics, chemical properties, structure.
   - Age changes – clinical structure.
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DR. Z. A. DENTAL COLLEGE, FACULTY OF MEDICINE, AMU, ALIGARH

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

3. 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.

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

- Pathways of pulpal infection, oral flora and microorganisms associated with endodontic diseases, pathogenesis, host defense, bacterial virulence factors, healing, theory of focal infections, microbes relevance to dentistry – strepto, staphylococci, lactobacilli, cornyebacterium, actinomycetes, clostridium, neisseria, vibrio, bacteriods, fusobacteria, spirochetes, mycobacterium, virus and fungi.
- Cross infection, infection control, infection control procedure, sterilization and disinfection.
- Immunology – antigen antibody reaction, allergy, hypersensitivity and anaphylaxis, 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).

6. **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, sympathomimitic drugs, vitamins and minerals (A, B, C, D, E, K IRON), antialogue, immunosupressants, drug interactions, antisepsics, disinfectants, anti viral agents, drugs acting on CNS.

7. **Biostatistics:**


8. **Applied Dental Materials:**

- Physical and mechanical properties of dental materials, biocompatibility.
DEPARTMENT OF CONSERVATIVE DENTISTRY & ENDODONTICS
DR. Z. A. DENTAL COLLEGE, FACULTY OF MEDICINE, AMU, ALIGARH

- 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.

Books recommended:

- B D Chaurasia's Human Anatomy, 3rd Vol., 8th edn. CBS Publisher & Distributor.
- Human Embryology by Inderbir Singh, 11th edn, Jaypee publication.
- Essentials of Medical Pharmacology, 8th edn, Jaypee publisher.
- Textbook of Microbiology for Dental Students 6th edn, Dr. C.P. Baveja, Arya publisher.
- Fundamentals of Epidemiology and Biostatistics, CBS publisher & Distributor
PART - II

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<th>Programme name : MDS</th>
<th>Subject/course : Conservative Dentistry (Paper I)</th>
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<tr>
<td>Course code : MDCD-02</td>
<td>Maximum Marks : 100</td>
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<tr>
<td>Sessional Marks : No sessional exam</td>
<td>End term exam marks : 100</td>
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Course outcome:

- Students would be able to describe aetiology, pathophysiology, diagnosis and management of common restorative situations, that will include contemporary management of dental caries, non-caries lesions and hypersensitivity.
- Students would be able to take proper chair side history, examine the patient and perform medical and dental diagnostic procedures; as well as perform relevant tests and interpret them to come to a reasonable diagnosis about the dental condition.
- Perform all levels of restorative work including Aesthetic procedures and treatment of complicated restorative procedures.

Course Content:

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. Biologic response of pulp to various restorative materials and operative procedures.
9. Direct and indirect composite restorations.
10. Indirect tooth colored restorations- ceramic, inlays and onlays, veneers, crowns, recent advances in fabrication and gingival tissue management.
11. Impression procedures used for indirect restorations.
12. Cast metal restorations, indications, contraindications, tooth preparation for class II inlay, onlay, full crown restorations. Restorative techniques, direct and indirect methods of fabrication including materials used for fabrication like inlay wax, investment materials and casting.
14. Recent advances in restorative materials.
15. Esthetics including smile design.
17. Management of discolored tooth.
18. Minimal intervention dentistry.
19. Recent advances in restoration of endodontically treated teeth and grossly mutilated teeth.
20. Hypersensitivity-theories, causes and management.
22. CAD-CAM in restorative dentistry.

**Books recommended:**

Programme name : MDS  
Subject/course : Endodontics (Paper II)  
Course code : MDCD-03  
Maximum Marks : 100  
Sessional Marks : No sessional exam  
End term exam marks : 100

Course outcome:

- Students would be able to describe aetiology, pathophysiology, periapical diagnosis and management of common endodontic situations that will include contemporary management of trauma and pulpal pathoses including endo-periodontal situations.
- Students would be able to master differential diagnosis and recognize conditions that may require multidisciplinary approach or a clinical situation outside the realm of the specialty, which he or she should be able to recognize and refer to appropriate specialist.
- Students would undertake complete patient monitoring including preoperative as well as post-operative care of the patient.
- Students would perform all levels of surgical and non-surgical Endodontics including endodontic, retreatment as well as endodontic-periodontal surgical procedures as part of multidisciplinary approach to clinical condition.
- Students would be able to manage acute pulpal and pulpo-periodontal situations.

Course Content:

1. Rationale of endodontics.  
2. Pulp and periapical pathology.  
3. Pathobiology of periapex.  
5. Case selection and treatment planning.  
7. Infection control procedures used in Endodontics (aseptic techniques such as rubber dam, sterilization of instruments etc.)  
8. Endodontic emergencies and management.  
10. Endodontic instruments and instrumentation – recent developments, detailed description of hand, rotary, sonic, ultra sonic etc.  
12. Root canal irrigants and intra canal medicaments.  
13. Obturation materials, techniques and recent advances.  
15. Endodontic surgeries, recent developments in technique and devices and wound healing.
16. Endoperio interrelationship and management.
17. Lasers in Endodontics.
18. Multidisciplinary approach to endodontic situations.
20. Procedural errors in endodontics and their management.
22. Resorptions and its management.
23. Microscopes and Microsurgery in endodontics.
25. Regenerative Endodontics

**Boos recommended:**

2. Ingle’s Endodontics, 7th edn, PMPH USA.
Programme name: MDS
Subject/course: Essays (descriptive and analyzing type questions) (Paper III)
Course code: MDCH-04
Maximum Marks: 100
Sessional Marks: No sessional exam
End term exam marks: 100

Course Outcome:
- Students would diagnose, plan and execute challenging clinical cases requiring comprehensive management strategies using contemporary materials and techniques in the specialty of conservative dentistry and endodontics

Summary of the Distribution of Marks in MDS programme

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<th>THEORY</th>
<th>PRACTICAL/CLINICAL EXAMINATION</th>
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(Prof. Ashok Kumar)
Chairperson
Dept. of Conservative Dentistry & Endodontics, Dr. Z.A. Dental College
A.M.U., Aligarh