

School of Dental Sciences

Krishna Institute of Medical Sciences,

Deemed to be University, Karad

MDS Syllabus

FACULTY NAME: SCHOOL OF DENTAL SCIENCES

PROGRAMME NAME: CONSERVATIVE DENTISTRY AND ENDODONTICS

PROGRAMME CODE-2202

OBJECTIVES:

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

Knowledge:

At the end of 36 months of training, the candidates should be able to:

- Describe etiology, pathophysiology, periapical diagnosis and management of common restorative situations, endodontic situations that will include contemporary management of dental caries, management of trauma and pulpal pathosis including periodontal situations.
- Demonstrate understanding of basic sciences as relevant to conservative / restorative dentistry and Endodontics.
- Identify social, economic, environmental and emotional determinants in a given case or community and take them into account for planning and execution at individual and community level.
- Ability to master differential diagnosis and recognize conditions that may require multi disciplinary approach or a clinical situation outside the realm of the specialty, which he or she should be able to recognize and refer to appropriate specialist.
- Update himself by self-study and by attending basic and advanced courses, conferences, seminars, and workshops in the specialty of Conservative Dentistry-Endodontics-Dental Materials and Restorative Dentistry.
- Ability to teach/guide, colleagues and other students.
Use information technology tools and carry out research both basic and clinical with the aim of his publishing his work and presenting the same at scientific platform.

Skills:

- Take proper chair side history, examine the patient and perform medical and dental diagnostic procedures as well as perform relevant tests and interpret to them to come to a reasonable diagnosis about the dental condition in general and Conservative Dentistry – Endodontics in particular. And undertake complete patient monitoring including preoperative as well as post operative care of the patient.

- Perform all levels of restorative work, surgical and non-surgical Endodontics as well as endodontic-periodontal surgical procedures as part of multidisciplinary approach to clinical condition.
- Provide basic life saving support in emergency situations.
- Manage acute pulpal and pulp periodontal situations.
- Have a thorough knowledge of infection control measures in the dental clinical environment and laboratories.
- Should have proper knowledge of sterilization procedures

Human Values, Ethical Practice and Communication Abilities

- Adopt ethical principles in all aspects of restorative and contemporary Endodontics including non-surgical and surgical Endodontics.
- Professional honesty and integrity should be the top priority.
- Dental care has to be provided regardless of social status, caste, creed or religion of the patient.
- Develop communication skills in particular to explain various options available for management and to obtain a true informed consent from the patient.
- Apply high moral and ethical standards while carrying on human or animal research
- He/She shall not carry out any heroic procedures and must know his limitations in performing all aspects of restorative dentistry including Endodontics. Ask for help from colleagues or seniors when required without hesitation.
- Respect patient's rights and privileges including patient's right to information.

COURSE CONTENTS:

PART-I:

PAPER I: 2202-11

Applied Basic Sciences:

COURSE OUTCOME

1. Students would be able to demonstrate understanding of basic sciences as relevant to conservative/ restorative dentistry and Endodontics
2. Students would demonstrate infection control measures in the dental clinical environment and laboratories
3. Student would adopt ethical principles in all aspects of restorative and contemporary Endodontics including non-surgical and surgical Endodontics
4. 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

5. Students would be able to apply high moral and ethical standards while carrying on human or animal research
- 6.

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.
- **Anatomy and 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 and clinical considerations.
 - Pulp – development, histological structures, innervations, functions, regressive changes, clinical considerations.
 - Dentin and pulp complex.
 - Cementum – composition, cementogenesis, structure, function, clinical considerations.
 - Knowledge of internal anatomy of permanent teeth, anatomy of root apex and its implications in endodontic treatment.
 - Periodontal ligament – development, structure, function and clinical considerations.
 - 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,
 - 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.

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 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, immune suppressants, drug interactions, antiseptics, disinfectants, anti viral agents, drugs acting on CNS.

Biostatistics:

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

PART-II:

Paper-II: 2202-12 Conservative Dentistry

COURSE OUTCOME

7. Students would be able to demonstrate understanding of basic sciences as relevant to conservative/ restorative dentistry and Endodontics
8. Students would demonstrate infection control measures in the dental clinical environment and laboratories
9. Student would adopt ethical principles in all aspects of restorative and contemporary Endodontics including non-surgical and surgical Endodontics
10. 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
11. Students would be able to apply high moral and ethical standards while carrying on human or animal

research

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 preparation- recent developments (air abrasions, lasers etc.)
6. Infection control procedures in conservative dentistry, isolation equipment 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.
13. Direct gold restorations.
14. Recent advances in restorative materials.
15. Esthetics including smile design
16. Management of non-carious lesions.
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.
21. Lasers in Conservative Dentistry.
22. CAD-CAM in restorative dentistry.
23. Digital imaging and its applications in restorative dentistry.
24. Clinical Photography.

Paper-III: 2202-13 Endodontics

COURSE OUTCOME

1. 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.
2. 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
3. Students would undertake complete patient monitoring including preoperative as well as postoperative care of the patient.
4. Students would perform all levels of surgical and non-surgical Endodontics including endodontic endosseous implants, retreatment as well as endodontic-periodontal surgical procedures as part of multidisciplinary approach to clinical condition
5. Students would be able to manage acute pulpal and pulpoperiodontal

Situations

SYLLABUS

1. Rationale of endodontics.
2. Dentin and pulp complex.
3. Knowledge of internal anatomy of permanent teeth, anatomy of root apex and its implications in endodontic treatment.
4. Pulp and periapical pathology.
5. Pathobiology of periapex.
6. Diagnostic procedures – Orofacial dental pain emergencies: endodontic diagnosis and management, recent advances used for diagnosis.
7. Orofacial dental pain emergencies: endodontic diagnosis and management.
8. Case selection and treatment planning.
9. Endodontic microbiology.
10. Infection control procedures used in Endodontics (aseptic techniques such as rubber dam, sterilization of instruments etc.)
11. Endodontic emergencies and management.
12. Access cavity preparation – objectives and principles
13. Endodontic instruments and instrumentation – recent developments, detailed description of hand, rotary, sonic, ultra sonic etc.
14. Working length determination, cleaning and shaping of root canal system and recent developments in techniques of canal preparation.
15. Root canal irrigants and intra canal medicaments.
16. Endodontic microbiology.
17. Obturation materials, techniques and recent advances.
18. Traumatic injuries and management – endodontic treatment for young permanent teeth.
19. Endodontic surgeries, recent developments in technique and devices and wound healing.
20. Endoperio interrelationship and management.
21. Drugs and chemicals used in Endodontics.
22. Lasers in Endodontics.
23. Multidisciplinary approach to endodontic situations.
24. Radiology and CBCT in endodontic practice.
25. Procedural errors in endodontics and their management.
26. Endodontic failures and retreatment.
27. Resorptions and its management.
28. Microscopes and Microsurgery in endodontics.
29. Single visit endodontics, current concepts and controversies.
30. Regenerative Endodontics
31. Biomimetic materials
32. Inclusion of nanotechnology
33. Digital smile designing

Paper-IV: 2202-14
Essays (descriptive and analyzing type questions)

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

TEACHING / LEARNING ACTIVITIES:

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

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

MDS EXAM SCHEME

4 Theory Papers

Theory Max 75 marks

Theory Total Max 300 Min 150

Practical & Viva. Voce Max 300 Min 150