

SYLLABUS

**for Courses affiliated to the
Kerala University of Health Sciences**

Thrissur 680596



**Master of Dental Surgery (MDS)
Prosthodontics and Crown and Bridge**

Course Code: 241

(2016-17 Academic year onwards)

2. COURSE CONTENT

2.1 Title of course:

MDS Prosthodontics and Crown and Bridge

2.2 Objectives of course

1. Goals

The goals of postgraduate training in various specialties are to train the BDS graduate who will:

- Practice respective specialty efficiently and effectively, backed by scientific knowledge and skill.
- Exercise empathy and a caring attitude and maintain high ethical standards.
- Continue to evince keen interest in continuing professional education in the specialty and allied specialties irrespective of whether in teaching or practice.
- Willing to share the knowledge and skills with any learner, junior or a colleague.
- To develop the faculty for critical analysis and evaluation of various concepts and views, to adopt the most rational approach.

2. Objectives

The objective is to train a candidate so as to ensure higher competence in both general and special area of interest and prepare him for a career in teaching, research and specialty practice. A candidate must achieve a high degree of clinical proficiency in the subject matter and develop competence in research and its methodology as related to the field concerned.

The above objectives are to be achieved by the time the candidate completes the course. The objectives may be considered as under –

1. Knowledge (Cognitive Domain)
2. Skills (Psychomotor Domain)
3. Human values, ethical practice and communication abilities.

2.1 Knowledge

- Demonstrate understanding of basic sciences relevant to the specialty.
- Describe etiology, pathophysiology, principles of diagnosis and management of common problem within the specialty in adults and children.
- Identify social, economic, environmental and emotional determinants in a given case and take them into account for planning treatment.
- Recognize conditions that may be outside the area of specialty/competence and to refer them to an appropriate specialist.
- Update knowledge by self-study and by attending courses, conferences and seminars relevant to specialty.

- Undertake audit; use information technology and carry out research both basic and clinical with the aim of publishing or presenting the work at various scientific gatherings.

22. Skills

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

23. Human values, ethical practice and communication abilities

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

2.3 Medium of instruction:

The medium of instruction for the course shall be English.

2.4 Course outline

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

2.5 Duration

The course shall be of **three 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 KUHS, observing the norms put

forward by theca.

- i. There will be no reduction for the course duration for any of the students including service candidates, diploma holders and those who have done senior house surgery or equivalent research experience.
- ii. No student shall be permitted to complete the course by attending more than 6 continuous years.
- iii. A candidate selected for admission in a Dental College is obliged to follow the curriculum, rules and regulations as approved by the Dental Council of India and the University. Curriculum, rules or regulations are subject to changes from time to time.

2.6 Syllabus

Course Contents

Syllabus for MDS PROSTHODONTICS AND CROWN & BRIDGE

A strict division of the subject may not be possible and some overlapping of subjects is inevitable.

Students should be prepared to answer overlapping subjects.

The concept of health care counseling shall be incorporated in all relevant areas

The MDS theory examination consist of four papers

Paper I - Applied Anatomy, Physiology, Pathology and Dental Materials

Paper-II- Removable Prosthodontics and Oral Implantology

Paper-III- Fixed Prosthodontics

Paper-IV -Essay

PAPER I - Applied Anatomy, Physiology, Pathology and Dental Materials

1. Applied General Anatomy of the Head and Neck, Oral and Dental Anatomy and Histology.

1.1. Embryology

1.1.1. Early embryology, development up to the appearance of the three primary germ layers.

1.1.2. Histogenesis and organogenesis.

1.1.3. Post natal growth and development of bony and soft tissue structure of the head and neck.

1.1.4. Development of Branchial arches, Pharyngeal pouches & cleft

1.2. Applied General Anatomy

1.2.1. Osteology of facial bones.

1.2.2. Face – Facial Muscles, Nerve supply, Blood supply, Lymphatic drainage.

1.2.3. Myology – Muscles of Facial Expression, Mastication

1.2.4. Cranial Nerves (5,7)

1.2.5. Salivary glands.

- 1.2.6. Palate
- 1.2.7. Anatomy of Tongue – muscles, blood and nerve supply.
- 1.2.8. TM Joint – Movements, relations, anomalies and age changes.

1.3. Oral and Dental Anatomy

- 1.3.1. Morphology of individual teeth in primary and permanent dentition with variations.
- 1.3.2. Occlusion, dental arch formation, development of occlusion from gum pads, deciduous, mixed and permanent dentition.
- 1.3.3. Sequence of eruption.
- 1.3.4. Tooth Numbering Systems

1.1. General Histology

- 1.4.1. Different types of epithelium
- 1.4.2. Bone

1.5. Oral Histology

- 1.5.1. Histology of developing tooth germ, enamel, dentin, cementum, periodontal ligament, pulp, alveolar bone, oral mucous membrane, salivary glands, gingival, gingival sulcus and epithelial attachment.
- 1.5.2. ENAMEL: Physical characteristics, chemical properties, structure clinical considerations. age changes.
- 1.5.3. DENTIN: Physical characteristics, chemical properties, structure. Types of dentin. Dentin innervation and hypersensitivity.
- 1.5.4. CEMENTIUM: Physical characteristics, chemical properties, structure. Clinical consideration. Age changes.
- 1.5.5. PERIODONTAL LIGAMENT: Cells and fibers. Functions. Clinical Considerations. Age Changes.
- 1.5.6. ALVEOLAR BONE: Physical characteristics, chemical properties and structure

2. Applied General and Oral Physiology

- 2.1 General principles of Human Physiology.
- 2.2 Blood - Composition & functions
- 2.3 Anemia - Definition, classification, life span of RBC's destruction of RBC's, formation & fate of bile pigment
- 2.4. Haemostasis – Role of vasoconstriction, platelet plug formation in haemostasis, coagulation factors, intrinsic & extrinsic pathways of coagulation, clot retraction.
- 2.5. Hemorrhage
- 2.6. Blood Pressure – Definition, normal values, variations, determinants. Control and Maintenance.
- 2.7 Hemorrhage and Shock.

3. Applied Pharmacology and therapeutics

- 3.1 Mechanism of drug action.
- 3.2 Mechanism of Detoxication in the Body.
- 3.3 Intolerance, Tolerance, Cumulative action, Synergism, Antagonism.
- 3.4 Dosage, Classification of Drugs.
- 3.5 Local Anesthetics.

- 3.6 Analgesics
- 3.7 Antiseptics and Disinfectants.

4. Applied General and Oral Pathology and Microbiology.

- 4.1 Cellular adaptation, Cellular degeneration, Apoptosis, Oncosis, Necrosis, Gangrene, Pathologic calcification
- 4.2 Intracellular accumulations – Fatty changes, deposition of proteins, glycogen
- 4.3 Detailed study of Inflammation - Definition, Vascular phenomena, Inflammatory Exudates, Localization of infection, Tissue changes in inflammation and variations of Inflammation.
- 4.4 Healing, Regeneration, Repair Mechanisms, Healing by primary intention, Healing by secondary intention, Fracture healing, Factors influencing healing process, Complications. Healing of a wound – organization, parenchymal repair, healing of a socket after extraction
- 4.5 Hemorrhage and Shock.
- 4.6 Atrophy, Hypertrophy, Hyperplasia, Metaplasia, Dysplasia
- 4.7 Anaemia - classification, Iron Deficiency anaemia, Megaloblastic anaemia, Hemolytic anaemias
- 4.8 Coagulation cascade
- 4.9 Dental caries – Etiology, histopathology, clinical characteristics and sequelae.
- 4.10 Pulpitis – Etiology, Pathology and sequelae of Acute and Chronic Pulpitis.
- 4.11 Acute apical periodontitis and dentoalveolar abscess.
- 4.12 Topography of root ends and surrounding structures, relationship between maxillary teeth and maxillary sinus.

5. Microbiology

- 5.1 Infection Control
- 5.2 Sterilization with special reference to dental office. Sterilization and Asepsis.
- 5.3 Hand washing and hand hygiene.
- 5.4 Personal protective equipments.
- 5.5 Handling of sharp instruments.
- 5.6 Needle-stick injury, exposure to body fluids. .
- 5.7 Post-exposure prophylaxis.
- 5.8 Management and disposal of waste.

6. RESEARCH METHODOLOGY, BIostatISTICS

6.1 Research Methodology

- 6.1.1 What is research ?
- 6.1.2 What is research methodology
- 6.1.3 Study Designs
 - 6.1.3.1 Epidemiological studies, Observations, Descriptive, Cohort case control studies.
 - 6.1.3.2 Experimental, Clinical trials (Randomized control), Community trends (Non randomized)

6.2 Biostatistics

- 6.2.1 Introduction to Biostatistics – Application of statistics on Dental Health.
- 6.2.2 Descriptive statistics – Definition, Presentation of Statistics, Measures of Central tendency – measures of Dispersion, Normal distribution, Binomial Distribution



- 6.2.3 Collection, compilation, and graphical representation of statistical data, techniques of sampling, bias in sampling.
- 6.2.4 Inferential statistics – Testing of Hypothesis, standard error, t-test, Z-test, chi square test, Analysis of Variance, “U” test.
- 6.2.5 Correlation and Regression.

7. Dental Radiology

- 7.1. Introduction
- 7.2. Sources
- 7.3. Principles of x-ray production
- 7.4. Radiographic Principles and Techniques
- 7.5. Recent advances in imaging, viz., Digital imaging, CBCT etc

8. Medical Emergencies & Management

- 8.1. Prevention – Introduction, Prevention, Preparation, Medico legal considerations
- 8.2. Unconsciousness - general considerations, Vasodepressor syncope, Postural hypotension,
- 8.3. Diabetes mellitus – hyperglycemia and hypoglycemia

9. Ethics in Dentistry

- 9.1 Introduction to ethics:
 - 9.1.1 What is ethics?
 - 9.1.2 What are values and norms?
 - 9.1.3 How to form a value system in one’s personal and professional life?
 - 9.1.4 Hippocratic oath.
- 9.2 Ethics of the Individual
 - 9.2.1 The patient as a person
 - 9.2.2 Right to be respected
 - 9.2.3 Truth and confidentiality
 - 9.2.4 Autonomy of decision
 - 9.2.5 Doctor patient relationship
- 9.3 Professional Ethics
 - 9.3.1 Code of conduct
 - 9.3.2 Contract and confidentiality

10. APPLIED DENTAL MATERIAL SCIENCES

- 10.1 Introduction
- 10.2. Structure of matter.
- 10.3. Physical properties of dental materials
- 10.4. Mechanical properties of dental materials
- 10.5. Biocompatibility of dental materials.
- 10.6. Hydrocolloid Impression materials
- 10.7. Non aqueous elastomeric impression materials.

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- 10.8. Inelastic impression material
 - 10.9. Gypsum products
 - 10.10. Synthetic resins
 - 10.11. Denture base resins
 - 10.12. Restorative resin
 - 10.13. Bonding
 - 10.14. Solidification and micro structure of metals
 - 10.15. Constitution of alloys
 - 10.16. Corrosion
 - 10.17. Dental casting alloys & metals
 - 10.18. Inlay casting wax
 - 10.19. Investments
 - 10.20. Casting procedure
 - 10.21. Dental cements
 - 10.22. Ceramics
 - 10.23. Soldering
 - 10.24. Wrought base metal & gold alloys
 - 10.25. Dental implant materials
 - 10.26. Maxillofacial prosthetic materials
 - 10.27. Lasers in dentistry
 - 10.28. Finishing & polishing materials
 - 10.29. Mechanics of cutting with dental burs
 - 10.30. Recent developments in dental materials
 - 10.31. Materials used for the treatment of craniofacial disorders –

Clinical, treatment and Laboratory materials, Associated materials, Technical consideration, shelf life, storage, manipulation, sterilization and waste management.

PAPER II - Removable Prosthodontics and Oral Implant ology.

1.1. REMOVABLE COMPLETE PROSTHODONTICS

1.1.1. Introduction



- 1.1.2. Applied anatomy and physiology of oral and maxillofacial region including age changes
- 1.1.3. Diagnosis and Treatment planning
- 1.1.4. Residual ridge resorption
- 1.1.5. Mouth preparation
- 1.1.6. Impression procedures including the various theories of impression making.
- 1.1.7. Maxillo-mandibular relations.
- 1.1.8. Mandibular movements.
- 1.1.9. Articulators and Face Bows.
- 1.1.10. Selection and arrangement of teeth.
- 1.1.11. Occlusion
- 1.1.12. Verification of the jaw relations
- 1.1.13. Processing and finishing of Complete Dentures
- 1.1.14. Laboratory remount
- 1.1.15. Denture insertion
- 1.1.16. Clinical remount and recall checkup
- 1.1.17. Troubleshooting
- 1.1.18. Repair, relining and rebasing.
- 1.1.19. Duplication of denture
- 1.1.20. Immediate denture
- 1.1.21. Single complete denture
- 1.1.22. Overdenture
- 1.1.23. Principles of Aesthetics including characterization of denture.
- 1.1.24. Infection control and biomedical waste management in Prosthodontics.

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1.2. Removable Partial Denture

- 1.2.1. Introduction
- 1.2.2. Classification of partially edentulous situation
- 1.2.3. Examination, diagnosis, treatment planning
- 1.2.4. Components of removable partial denture
- 1.2.5. Principles of RPD, forces acting on RPD, control of stresses
- 1.2.6. Surveyor
- 1.2.7. Surveying Principles, procedure and designing
- 1.2.8. Mouth preparation
- 1.2.9. Impressions for distal extension RPD
- 1.2.10. Jaw Relations
- 1.2.11. Laboratory procedure
- 1.2.12. Insertion and post insertion follow up
- 1.2.13. Failures in RPD.
- 1.2.14. Repair lining.
- 1.2.15. Immediate RPD.
- 1.2.16. Transitional Denture.
- 1.2.17. Interim denture.
- 1.2.18. Dental Material aspects related to RPD.

1.3 Oral Implantology

- 1.3.1 Implant Supported Partial Dentures
- 1.3.2 Introduction and Terminology
- 1.3.3 Diagnosis and treatment Planning
- 1.3.4 Classification of Prostheses
- 1.3.5 Biomechanics in Oral Implantology
- 1.3.6 Cement retained and Screw retained prostheses.
- 1.3.7 Principles of Occlusion in Implantology.
- 1.3.8 Progressive Bone loading
- 1.3.9 Immediate Load applications in Implant dentistry
- 1.3.10 Implantology related to implant supported Overdentures.
- 1.3.11 Implantology related to maxillofacial prosthetics.
- 1.3.12 Failures in implant supported fixed partial dentures
- 1.3.13 Recent advances in implantology
- 1.3.14 Maintenance and Hygiene.

1.4 Maxillofacial Rehabilitation

1.4.1 Scope, terminology and definitions.

1.4.2 Behavioral and psychological issues in Head and neck cancer,

Psychodynamic interactions - clinician and patient

Cancer Chemotherapy: Oral Manifestations, Complications, and management,

Radiation therapy of head and neck tumors: Oral effects, Dental manifestations and dental treatment:

Etiology, treatment and rehabilitation (restoration)- Acquired defect of the mandible, acquired defects of hard palate, soft palate

Clinical management of edentulous and partially edentulous maxillectomy patients, Facial defects,

Restoration of speech, Velopharyngeal function, cleft lip and palate, cranial implants maxillofacial trauma, Lip and cheek support prosthesis,

Laryngectomy aids, Obstructive sleep apnoea, Tongue prosthesis, Esophageal prosthesis,

Vaginal radiation carrier, Burn stents, Nasal stents, Auditory inserts,

Trismus appliances, mouth controlled devices for assisting the handicapped

Custom prosthesis for lagophthalmos of the eye. Osseointegrated supported facial and maxillofacial prosthesis. Resin bonding for maxillofacial prosthesis,

Implant rehabilitation of the mandible compromised by radiotherapy,

Craniofacial Osseointegration, Prosthodontic treatment,

Material and laboratory procedures for maxillofacial prosthesis.

1.5 Maxillofacial Prosthetics

1.5.1 Obturators

1.5.2 Occlusal splints

1.5.3 Gunning Splint

1.5.4 Guiding Flange appliance

1.5.5 Other prostheses like ocular prosthesis, finger prosthesis, ear prosthesis, etc.

1.5.6 Dental Material aspects related to Maxillofacial prosthetics.

2. PAPER III - FIXED PARTIAL PROSTHODONTICS, OCCLUSION, TMJ AND AESTHETICS

2.1. Tooth Supported Fixed Partial Dentures

2.1.1. Introduction

2.1.2. Diagnosis and treatment planning

2.1.3. Occlusion in detail

2.1.4. Mandibular movements, occlusal correction

2.1.5. Articulators and face –bow

2.1.6. Classification of FPD and parts of FPD

2.1.7. Retainers – Classification, Indications

2.1.8. Selection of Retainers

2.1.9. Principles of tooth preparations

2.1.10. Preparation of vital and endodontically treated teeth to receive various retainers

2.1.11. Fluid control and soft tissue management.

2.1.12. Preparation of special tray and impression making

2.1.13. Preparation various dies

- 2.1.14. Maxillomandibular relations and relating them to articulators.
- 2.1.15. Laboratory procedures including preparation of wax pattern, casting and finishing.
- 2.1.16. Failures in FPD.
- 2.1.17. Dental Material aspects related to FPD.

2.2. OCCLUSION

2.2.1. Evaluation, Diagnosis and Treatment of Occlusal Problems

2.2.2. Scope, definition, terminology, optimum oral health, anatomic harmony, functional harmony, occlusal stability, causes of deterioration of dental and oral health, Anatomical, physiological, neuro-muscular, psychological, considerations of teeth, muscles of mastication, temporomandibular joint, intra oral and extra oral and facial musculatures, the functions of Craniomandibular system.

2.2.3. Occlusal therapy, the stomatognathic system, centric relation, vertical dimension, the neutral zone, the occlusal plane, differential diagnosis of temporomandibular disorders, understanding and diagnosing intra articular problems, relating treatment to diagnosis of internal derangements of TMJ, Occlusal splints, Selecting instruments for occlusal diagnosis and treatment, mounting casts, Pankey-mann-schuyler philosophy of complete occlusal rehabilitation, long centric, anterior guidance, restoring lower anterior teeth, restoring upper anterior teeth, determining the type of posterior occlusal contours, methods for determining the plane of occlusion, restoring lower posterior teeth, restoring upper posterior teeth, functionally generated path techniques for recording border movements intra orally, occlusal equilibration, Bruxism, Procedural steps in restoring occlusions, requirements for occlusal stability, solving occlusal problems through programmed treatment planning, splinting, solving - occlusal wear problems, deep overbite problems, anterior overjet problems, anterior open bite problems. Treating - end to end occlusion, splayed anterior teeth, cross bite patient, Crowded, irregular, or interlocking anterior bite, using Cephalometrics for occlusal analysis, solving severe arch malrelationship problems, transcranial radiography, postoperative care of occlusal therapy.

2.3. TMJ

2.3.1. Temporomandibular joint and its function, Temporomandibular joint dysfunction - Scope, definitions, and terminology Orofacial pain, and pain from the temporomandibular joint region temporomandibular joint dysfunction, temporomandibular joint sounds, temporomandibular joint disorders

2.3.2. Anatomy related, trauma, disc displacement, Osteoarthritis/Osteoarthritis, Hyper mobility and dislocation, infectious arthritis, inflammatory diseases, Eagle's syndrome (Styloid - stylohyoid syndrome), Synovial chondromatosis, Osteochondrosis disease, Osteonecrosis, Nerve entrapment process, Growth changes, Tumors, Radiographic imaging

2.3.3. Etiology, diagnosis and cranio mandibular pain, differential diagnosis and management, orofacial pain - pain from teeth, pulp, dentin, muscle pain, TMJ pain -psychologic, physiologic – endogenous control, acupuncture analgesia, Placebo effects on analgesia, Trigeminal neuralgia, Temporal arteritis

2.3.4. Occlusal splint therapy - construction and fitting of occlusal splints, management of occlusal splints, therapeutic effects of occlusal splints, occlusal splints and general muscles performance, TMJ joint uploading and anterior repositioning appliances, use and care of occlusal splints.

2.3.5. Occlusal adjustment procedures - Reversible - occlusal stabilization splints and physical therapies, jaw exercises, jaw manipulation and other physiotherapy or irreversible therapy - occlusal repositioning appliances, orthodontic treatment, Orthognathic surgery, fixed and emovable prosthodontic treatment and occlusal adjustment, removable

prosthodontic treatment and occlusal adjustment, Indication for occlusal adjustment, special nature of orofacial pain, Indication for occlusal adjustment, special nature of orofacial pain, Psychopathological considerations, occlusal adjustment philosophies, mandibular position, excursive guidance, occlusal contact scheme, goals of occlusal adjustment, significance of a slide in centric, Preclinical procedures, clinical procedures for occlusal adjustment.

2.4. AESTHETICS

- 2.4.1. Scope, definitions, Morpho psychology and esthetics, structural esthetic rules
- facial components, dental components, gingival components physical components.
- 2.4.2. Esthetics and its relationship to function - Crown morphology, physiology of occlusion, mastication, occlusal loading and clinical aspect in bio esthetic aspects.
- 2.4.3. Physical and physiologic characteristic and muscular activities of facial muscle, perioral anatomy and muscle retaining exercises
- 2.4.4. Smile - classification and smile components, smile design, esthetic restoration of smile.
- 2.4.5. Esthetic management of the dentogingival unit, intraoral plastic surgery for management of gingival contours, and ridge contours, Periodontal esthetics,
- 2.4.6. Restorations - Tooth colored restorative materials, the clinical and laboratory aspects, marginal fit anatomy, inclinations, form, size, shape, color, embrasures, contact point.

3. PAPER – IV – ESSAY

A 3 hour essay on any of the major topics in Prosthodontics.

PROSTHODONTIC TREATMENT MODALITIES

1. Tooth and tooth surface restorations
 - Veneers - composites and ceramics
 - Inlays- composite, ceramic and alloys
 - Onlay - composite, ceramic and alloys
 - Partial crowns - $\frac{3}{4}$ th, $\frac{7}{8}$ th, proximal $\frac{1}{2}$ crowns
 - Pin-ledge restorations.
 - Radicular crowns
 - Full crowns
2. Tooth Replacements - PARTIAL /COMPLETE
 - Tooth supported Fixed partial denture, Overdenture
 - Tissue Supported Interim partial denture, Complete denture, Immediate denture
 - Tooth and tissue supported Cast partial denture, Overdenture
 - Precision attachment
 - Implant supported Cement retained, Bar & clip attachment
 - Screw retained Ball attachment
 - Tooth and implant supported, Screw retained
 - Cement retained
 - Root supported, Dowel and core, Overdenture, Pin retained
3. Tooth and tissue defects (Maxillo- facial and Cranio-facial prostheses)
 - Cleft lip and palate
 - Partial and complete anodontia related to various syndromes
 - Splints and stents as adjuncts to surgical procedures
 - Prostheses for facial defects
 - Auricular, nasal, ocular, orbital prostheses

Craniofacial implants
Prostheses following hemimandibulectomy and maxillectomy
Speech and velopharyngeal prostheses □ Laryngectomy aids, prosthetic nasal stents, burn stents, auditory inserts. Trismus appliance- screw gag

4. T.M.J and Occlusal disturbances

Occlusal equilibration
Splints - Diagnostic Repositioners / Deprogrammers
Anterior bite plane
Posterior bite plane
Bite raising appliances
Occlusal rehabilitation

5. Esthetic/Smile designing

Laminates / Veneers
Tooth contouring (peg laterals, malformed teeth)
Tooth replacements
Inter disciplinary management

6. Geriatric Prosthodontics

Prosthodontics for the elderly
Behavioral and psychological counseling
Removable Prosthodontics
Fixed Prosthodontics
Implant supported Prosthodontics
Maxillofacial Prosthodontics
Psychological and physiological considerations

7. Preventive measures

Modulation of diet and nutrition; counseling

PRECLINICAL EXERCISES

• **Complete Denture**

1. Special tray with spacer in auto polymerizing resin
 - i. Maxillary
 - ii. Mandibular
2. Occlusal rims on maxillary and mandibular permanent bases
3. Teeth arrangement
 - i. Class I
 - ii. Class II
 - iii. Class III with posterior cross bite
 - iv. Balanced arrangement of teeth (Class I)
4. Acrylized balanced complete denture (Class I)

• **Removable Partial Denture**

1. Surveying, designing and wax pattern on mandibular and maxillary casts
 - i. Kennedy Class I

- ii. Kennedy Class II
 - iii. Kennedy Class III
 - iv. Kennedy Class IV
2. Complete laboratory steps in the fabrication of anyone class of partial denture

- **Fixed Partial Denture**

Preparation of natural teeth mounted on a phantom head

1. Full crown
 - i. Anterior
 - ii. Posterior
2. Partial Veneer Crown
 - i. $\frac{3}{4}$ th crown on Canine
 - ii. $\frac{3}{4}$ th crown on Premolar
 - iii. Proximal half-crown on mandibular second molar
 - iv. $\frac{7}{8}$ th crown maxillary first molar

3. Preparation for
- porcelain laminate veneer Maxillary central incisor

- **Implant dentures**

1. Preparation of impression tray
 - i. Open impression
 - ii. Closed impression
2. Surgical guide for implant placement
3. Fabrication of radiographic template

STRUCTURED TRAINING PROGRAMME MDS FIRST YEAR

1. Preclinical works and lab exercises to be completed within 6 months
2. Seminars – 5 Nos (Applied basic sciences)
3. Library Dissertation to be completed in first year
4. Dissertation topic & submission of protocol of proposed dissertation work after obtaining ethical clearance –within 9 months
5. Journal review-6 no's
6. Attending conferences and Continuing Educational programmes Minimum 2 CDEs, 2 Conferences (one National)
7. Complete Dentures cases-20, Temporary RPD cases-20, maxillofacial prostheses-5

8. Publication of scientific articles –minimum one
9. Clinical training
 - 9.1. Maintenance of a log book of recorded cases
10. Lecture classes for undergraduates – A minimum of 5 Lecturer classes should be taken for Undergraduate in presence of teaching faculty
11. Basic computer application- MS Office, Photo editing
12. Completion of seminar Vol.1

MDS SECOND YEAR

1. Journal review – 6Nos.
2. Seminar - 5 Nos (CD and RPD)
3. Clinical works
 - 3.1. Conventional CD-30
 - 3.2. Balanced CD -7
 - 3.3. Temporary RPD-30
 - 3.4. Crown /FPD-25
 - 3.5. MFP-15
 - 3.6. Cast RPD-5
 - 3.7. Case discussion – 10nos
4. Presenting Scientific papers/posters during state and national conferences -2 (one national)
5. Attending CDE-3
6. Publication of scientific articles-1
7. Lecturers for undergraduate students –A minimum of 5 Lecturer classes should be taken for Undergraduates in presence of teaching faculty.
8. Maintenance of Log book of recorded cases

MDS THIRD YEAR

1. Clinical Requirements in the 3rd year
 - 1.1. Conventional CD-10
 - 1.2. Temporary RPD-10
 - 1.3. Balanced CD- 5
 - 1.4. FPD cases-20
 - 1.5. MFP cases-10
 - 1.6. Cast RPD-5
 - 1.7. Implants-10 cases, out of which 2 implant supported overdentures
 - 1.8. Full mouth occlusal rehabilitation-2

2. Journal review-5
3. Publication of Scientific articles – 3nos
4. CDE – 3nos
5. Seminars – 5 Nos (FPD and Oral Implantology)
6. Presentation of scientific papers in National and State level conferences –1+2
7. Case discussions – 10nos
8. Submission of Photo album on clinical cases- A minimum of 20 different types of cases
9. Submission of seminars vol. 1, 2 &3
10. Lecture classes for Undergraduates - A minimum of 5 Lecturer classes should be taken for Undergraduates in presence of teaching faculty.
11. At the end of 30th month of commencement of course, dissertation should be submitted

MDS CLINICAL TRAINING

Developing essential skills

* Key

O -Observes a procedure performed by a faculty A-Assists a senior faculty

PA- performs procedure under the direct supervision of a senior specialist

PI-Performs independently

PROCEDURE	CATEGORY			
	0	A	PA	PI
Tooth surface restorations				
Composites - fillings, laminates, inlay,	2	2	2	8
onlay Ceramics - laminates, inlays, onlays	1	1	1	8
CROWNS				
FVC in metal	1	2	2	10
FVC in all ceramic	1	2	2	10
FVC in full Metal	1	2	2	2
ceramic All ceramic-	1	1	1	2
3/4th crowns molar	1	-	-	5
7/8th crown on maxillary molar	1	-	-	5
Proximal half crown	1	-	-	5

Pinledge and pinhole crowns	1	-	-	5
Telescopic crowns	1	-	-	5
Intraradicular crowns (central, lateral, canine, premolar, and molar)	1	-	-	5
Crown on implant supported prosthesis	-	1	1	5

FIXED PARTIAL DENTURES

PROCEDURE	CATEGORY			
	0	A	PA	PI
Cast metal-precious and non precious(3 unit posterior)	1	-	-	5
Metal ceramic (anterior and posterior)	1	1	1	10
Multiple abutment- maxillary and mandibular full arch	1	1	1	5
Incorporation of custom made and readymade precision joint or attachment	1	1	1	5
Adhesive bridge for anterior/ posterior	1	-	1	10
Metal with acrylic resin facing anterior FPD	-	-	1	5
Immediate fixed partial dentures (interim)	1	-	-	5
Fixed prosthesis as a retention and rehabilitation	1	1	-	5
for acquired and congenital defects - maxillofacial	-	-	-	-
Prosthetics	-	-	-	-
Implant supported prosthesis	1	-	1	1
Implant - tooth supported prosthesis	1	-	1	1

REMOVABLE PARTIAL DENTURE

Provisional partial dentures	1	1	1	50
Cast removable partial denture	1	1	1	6
Removable denture with precision attachments and telescopic crowns for anterior and posterior	1	1	2	4
Partial denture for the medically compromised and handicapped	1	1	1	5

COMPLETE DENTURES -

Neurocentric occlusion & characterized prosthesis	-	-	1	5
Complete dentures (by using semi adjustable articulator)	-	-	1	15
Single dentures	-	-	1	5

Overlay dentures	-	-	1	5
Treatment complete dentures for abused tissues	-	-	1	5
Complete denture prosthesis (for abnormal ridge relation, ridge form and ridge size)	-	-	1	5
Complete dentures for patients with TMJ syndromes	-	-	1	5
Complete dentures for medically compromised and handicapped patients	-	-	1	5

GERIATRIC PATIENTS

Tooth and tooth surface restorations, crowns, fixed prosthesis, removable prosthesis	-	-	1	10
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IMPLANT SUPPORTED COMPLETE PROSTHESIS -

Implant supported complete prosthesis (maxillary and Mandibular)	-	-	1	1
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MAXILLOFACIAL PROSTHESES

Guiding flange and obturators	-	-	1	4
Speech and palatal lift prosthesis	-	-	1	2
Eye prosthesis	-	-	1	2
Ear prosthesis	-	-	1	2
Nose prosthesis	-	-	1	2
Face prosthesis	-	-	1	1
Maxillary obturators	-	-	1	2
Hemimandibulectomy	-	-	1	2
Cranial prostheses	-	-	1	1
Finger/ hand, foot	-	-	1	2
Management of burns, scars	-	-	-	1

TMJ SYNDROME MANAGEMENT

Splints - periodontal, teeth, jaws	-	-	1	4
TMJ supportive and treatment prosthesis	-	-	1	1
Stabilization appliances for maxilla and mandible with freedom to move from IP to CRCP	-	-	-	1
In IP without the freedom to move to CRCP	-	-	-	1
Repositioning appliances, anterior disclusion	-	-	-	1

Chrome cobalt and acrylic resin stabilization appliances	2	-	-	-
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FULL MOUTH REHABILITATION

Full mouth rehabilitation - restoration of esthetics and function of stomatognathic system	-	1	-	4
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INTER-DISCIPLINARY TREATMENT MODALITIES

Inter-disciplinary management - restoration of Oro craniofacial defects for esthetics, phonation, mastication and psychological comforts	-	1	-	2
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MANAGEMENT OF FAILED RESTORATION

Tooth and tooth surface restorations	-	-	-	5
Removable prosthesis	-	-	-	10
Crowns and fixed prosthesis	-	5	-	-
Maxillofacial prosthesis	-	-	-	2
Implant supported prosthesis	-	-	-	1
Occlusal rehabilitation and TMJ syndrome	-	-	-	2
Restoration failure of psychogenic origin	-	-	-	5
Restoration failure to age changes	-	-	-	2

SCHEME OF EXAMINATION

MDS UNIVERSITY EXAMINATIONS

Theory

Consists of four papers each carrying 75 marks and 3 hour duration which would be centrally evaluated.

Practical / Clinical Examination

The examination shall be conducted in 3 days. If there are more than 6 candidates, it shall be extended for one more day. Each candidate shall be examined for a minimum of three days, six hours per day including viva voce. There must be four examiners out of which 50 percent of the examiners will be from other states.

The practical examination will include Complete Denture, Removable Partial Denture and Fixed Partial Denture.

DAY 1

Discussion on Diagnosis and Treatment Planning, Evaluation of preliminary and final impressions.
(CD)

– 1 hour

Orientation Jaw relation – 1 hour

Transferring the relation to

articulator – 1 hour Tentative Jaw

relation – 30 Minutes

Discussion on Diagnosis and Treatment planning (FPD)

- 30 Minutes Preparation of abutments – 1 hour 30
minutes

Isolation, Gingival retraction & Impression – 30 minutes

DAY 2

Evaluation of provisional restoration – 45 minutes

Evaluation of die preparation and wax pattern – 30 minutes

Pedagogy (8 minutes of presentation + 2 minutes of discussion/ candidate) 45 minutes

Thesis presentation (8 minutes of Presentation + 2 minutes of discussion/candidate)–1 hour

Presentation of special cases (15 Minutes / candidate, maximum of 4 cases)- 1-hour

Gothic arch tracing, Inter-occlusal records & Programming of articulator –2 hours.

DAY 3

Try in of CD – 1 hour

Surveying of cast and designing of RPD – 1 hour

Discussion on components & selection of materials – 1

hour 30 minutes Viva voce – 2 hours 30 minutes

EVALUATION OF PRACTICALS & VIVA- VOCE

Practical /Clinical Examination: 200 Marks

1. Presentation of treated patients and records during their three year training period.

25 Marks

1.1 Evaluation of pre- clinical exercises and academic records during MDS course

10 marks

1.2 Presentation of treated special cases	15 marks
2. Clinical procedures-complete denture	100Marks
2.1 Discussion on treatment plan, evaluation of Preliminary impression, & Final Impression	15marks
2.2 Orientation Jaw Relation	5marks
2.3. Tentative jaw relation records	10 marks
2.4 Transferring it on articulators	5 marks
2.5 Extra oral tracing and securing centric and protrusive/lateral.	25marks
2.6 Programming the articulator	5 marks
2.7 Selection of teeth	5 marks
2.8 Arrangement of teeth	15marks
2.9 Waxed up denture try-in	10marks
2.10 Evaluation of previously processed denture. All steps will include chair side and lab viva voce	5marks
3. Fixed Partial Denture	50Marks
3.1 Discussion on Diagnosis and treatment planning	5marks
3.2 Abutment preparation, isolation and fluid control	25marks
3.3 Gingival retraction and impressions	10marks
3.4. Cementation of provisional restoration	10marks
4. Removable Partial Denture	25Marks
4.1 Surveying and designing of partially edentulous cast	10marks
4.2 Discussion on components and material selection	15marks
Viva Voce	100Marks
i. Viva-Voce examination:	80marks
All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach, expression, interpretation of data and communication skills. It includes all components of course contents. It includes presentation and discussion on dissertation also.	
ii. Pedagogy Exercise:	20marks
Pedagogy and thesis presentation	(10 +10)20 marks
A topic will be given at the beginning of the clinical examination and will have to be presented for 8-10 minutes.	

2.7 Total number of hours

As per the regulations of the DCI

2.8 Branches if any with definition

Prosthodontics and Crown & Bridge

2.9 Teaching learning methods

Method of Training

The training of a postgraduate student shall be full time but 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, case demonstrations, clinics, journal review meetings, and clinical meetings. Every candidate shall be required to participate in the teaching and training programme of undergraduate students and interns. Training should include involvement in laboratory and experimental work, and research studies.

Every Institution Undertaking Post Graduate training programme shall set up an Academic cell or a Curriculum Committee, under the chairmanship of a Senior faculty member, which shall work out the details of the training programme in each speciality in consultation with other Department faculty staff and also coordinate and monitor the implementation of these training Programs.

Based on the above guidelines for a structured training programme for postgraduate courses, the basic tenets of a successful postgraduate teaching programme, are detailed under the following heads.

- **Formal Lectures** by the faculty on varied subjects including general areas and systems. Both senior and junior faculty can do this. However, the number of these classes should be maintained of low levels to encourage self-learning.
- **Symposia / Seminars** form an integral part of PG learning. A monthly symposium will generate approximate 30-35 symposia / course. These symposia can include department faculty and HODs as chairpersons and maximum involvement of both students and faculty should be ensured.
- **Clinical Discussions** form the core of PG training and can be assigned to various clinical units on rotating basis. However other faculty could also actively participate in the discussion. The discussions must be 3-4/week. One suggestion is to score the performance of the candidate by a small panel of faculty and convey the scores to the candidate / PG at the end of the session.
- **Journal Club /Clinical Club** should be conducted at least once in a week in each postgraduate department. Journal clubs not only imparts new information but also trains the candidate to objectively assess and criticize various articles which come out and should be useful in ensuring evidence based dentistry.
- **Guest Lectures** can be integrated into the PG program at least once in a month. Even the retired faculty can be invited for delivering the lectures

and will ensure importing of greater wisdom to the candidates.

- **Orientation Classes** for newcomers should also be incorporated. These classes can even be assigned to junior faculty/senior PG.
- **Clinical posting.** Each PG student should work in the clinics on regular basis to acquire adequate professional skills and competency in managing various cases to be treated by a specialist.
- **Clinico Pathological Conferences** should be held once a year involving the faculties of Oral Medicine and Radiology, Oral Pathology and concerned clinical department. The student should be encouraged to present the clinical details, radiological and histo- pathological interpretations and participation in the discussions.
- **Rotation postings in other departments** should be worked out by each department in order to bring in more integration between the speciality and allied fields.
- **Periodical Quiz** can be both informative and entertaining and should be encouraged and planned.
- **Computer Training and Internet Applications** are now becoming a must for both faculty and students. These areas should be strengthened as a next step. There can be a sort of internet information club in the departments.
- **Conferences/CDEs** – All postgraduate students should be encouraged to attend conferences and CDEs. They should also be asked to present papers wherever appropriate and should be rewarded by assigning scores for them.
- **Publication of scientific papers** – It is desirable and advisable to have at least two publications in the State/National/International indexed dental journals.
- **Involvement in Teaching Activity** – PG students can be assigned the job of teaching the undergraduate students and these will definitely improve the teaching skills in the post graduate students.

Examinations

Evaluation is a continuous process, which is based upon criteria developed by the concerned authorities with certain objectives to assess the performance of the learner. This also indirectly helps in the measurement of effectiveness and quality of the concerned MDS programme. Evaluation is achieved by two processes

- 1) Formative or internal assessment
- 2) Summative or university examinations.

Formative evaluation is done through a series of tests and examinations conducted periodically by the institution. Summative evaluation is done by the university through examination conducted at the end of the specified course.

A candidate registered for MDS course must clear the final examination within six years of the date of admission. The examinations should be so organized that this shall be used as the mechanism to confirm that the candidate has acquired appropriate knowledge, skill and competence at the end of the training that he/she can act as a specialist and/or a medical teacher as per expectation. University examination will be held regularly by KUHS in April-May/October-November every year.

A candidate who wishes to study for MDS in a second specialty should have to take the full course of 3 years in that specialty and appear for the examinations.

2.10 Content of each subject in each year

Present in clause 2.6

2.11 No: of hours per subject

Present in clause 2.6

2.12 Practical training

Present in clause 2.6

2.13 Records

Present in clause 2.20

2.14 Dissertation: As per Dissertation Regulations of KUHS

Every candidate pursuing MDS degree course is required to carry out work on a selected research project under the guidance of a recognized postgraduate 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, and comparison of results and drawing conclusions. Every candidate shall submit to the University in the prescribed format a synopsis containing particulars of proposed dissertation work after obtaining ethical clearance from the Institutional Ethical Committee **within six months from the date of commencement of the course or before the dates notified by the University**. The synopsis shall be sent only through the Principal of the institution.

Such synopsis will be reviewed and the dissertation topic will be registered

by the university. No change in the dissertation topic or guide/co-guide shall be made without prior approval of the University. The dissertation should not be just a repetition of a previously undertaken study but it should try to explore some new aspects. The dissertation should be written under the following headings:

Introduction

- i. Aims and Objectives of the study
- ii. Review of Literature
- iii. Methodology
- iv. Results
- v. Discussion
- vi. Conclusion
- vii. Summary
- viii. References
- ix. Annexures

The written text of dissertation shall be not less than 50 pages and shall not exceed 150 pages excluding references, tables, questionnaires, and other annexures. It should be neatly typed (font size 13-Times New Roman or font size 13-Cambria) in 1.5 line spacing on one side of the paper (A4 size, 8.27" x 11.69") and bound properly. Spiral binding should be avoided. (Refer KUHS website). The guide, co-guide if any, Head of the Department and the Head of the Institution shall certify the dissertation. For uniformity, it was suggested that the colour of the hard bind of the dissertation for all branches of MDS course in the purview of KUHS shall be dark brown with letters of gold colour. The title, author, and year of study should also be imprinted or embossed on the spine of the book. **Three hard copies and one properly labeled soft copy in a CD (refer KUHS website) of the dissertation thus prepared shall be submitted to KUHS on the 29th month of commencement of the course / 31st Oct. of the 3rd academic year, whichever falls first.** Dissertation should preferably be sent to a minimum of three reviewers / examiners / assessors, of which two shall be from out side the state and one from the affiliated colleges o KUHS. If modifications are to be made as specified, three hard copies and one soft copy of the dissertation after corrections made by the candidate should be submitted with in a minimum of 30 days to the University. Consent for acceptance for evaluation of dissertation should be obtained from the reviewer/examiner/ assessor before the dissertation are despatched. Proforma for evaluation of dissertation should be sent along with the copies of the dissertation to the reviewers appointed by the university. The Proforma should contain all the assessment criteria with the clause – **Accepted/Accepted with modifications/ Rejected** and reasons for rejection by the examiner. This proforma should be sent back to the University within two weeks / within the date specified after receipt of dissertation. The dissertation may be declared accepted if more than 50% of the reviewers (2 in the case of 3 reviewers) have accepted it.If modifications are to be made as specified, 3 hard copies and one soft copy of the dissertation after corrections made by the candidate should be submitted within 30 days to the University which may be

sent back to the same examiner/s by the University for Acceptance after a fee has been levied from the candidate. If the dissertation has been rejected by more than 50% of the reviewers (2 in the case of 3 reviewers), the dissertation may be reviewed by an Expert Reviewing Committee comprising of not less than two subject experts, Dean (Research) of KUHS and Guide of the candidate provided the Guide requests for a review, after a fee has been levied from the candidate. If rejected by the Reviewing Committee, the candidate should take up a new topic and undergo all the procedures of submitting the synopsis, fees, IEC clearance, etc as prescribed by the University. The candidate who takes up the new topic can appear only for the subsequent examination.

Approval of dissertation work is an essential precondition for a candidate to appear in the University examination. Hall tickets for the university examination should be issued to the candidate only if the dissertation has been accepted.

A candidate whose dissertation has been accepted by the examiners and approved by the University, but who is declared to have failed at the final examination will be permitted to reappear at the subsequent MDS examination without having to prepare a dissertation.

Guide – The academic qualification and teaching experience required for recognition by the University as a guide for dissertation work is as laid down by the Dental Council of India / KUHS.

Co-guide – A co-guide may be included provided the work requires substantial contribution from the same department or a sister department or from another institution recognized for teaching/training by KUHS/DCI. The co-guide should fulfill the academic qualification and teaching experience required for recognition by the University as a co-guide for dissertation work.

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.

2.15 Speciality training if any

Present in clause 2.6

2.16 Project work to be done if any

Present in clause 2.6

2.17 Any other requirements [CME, Paper Publishing etc.]

Present in clause 2.6

2.18 Prescribed/recommended textbooks for each subject Applied Basic Sciences

SUBJECT	NAME OF AUTHOR	NAME OF BOOK
Anatomy	BD Chaurasia	BD Chaurasia's Human Anatomy
	William, Peter L	Grays Anatomy

Oral Anatomy	Ash, Major M	Wheeler's Dental Anatomy, Physiology and Occlusion
	Sicher, Harry, Du Brull, Llyod	Oral Anatomy
Oral Histology	Bhaskar B.N. Ed	Orban's Oral Histology and Embryology
	Avery, James K	Essentials of Oral Histology and Embryology
Embryology	Sadler	Langman's Medical Embryology
	Inderbeer Singh	Human Embryology
Physiology	Guyton Arthur and John L Hall	Text Book of Medical Physiology
	Ganong, William F	Review of Medical Physiology
Pharmacology	KD Tripathi	Essentials of Medical Pharmacology
	Hardman, Joel G	Goodman and Gilman's pharmacological basis of
Nutrition	Nizel	Nutrition in Preventive Dentistry: Science and Practice
General Pathology	Cotran, Ramzi S and Others	Robbins Pathologic Basis of Disease
	Harsh Mohan	Textbook of Pathology
Oral Pathology	Shaffer, William and Others	Textbook of Oral Pathology
	Neville, Brad W and Others	Oral and Maxillofacial Pathology
Microbiology	Ananthanarayan and Panicker	Textbook of Microbiology
	Lakshman S	Essential Microbiology for Dentistry
Biostatistics	Dr. Symalan	Statistics in Medicine
	Soben Peter	Essentials of Preventive and Community Dentistry
	Sunder Rao and Richard J.	Introduction to Biostatistics and Research Methods

Dental Materials

1. Dental Materials- Properties and manipulation-O'Brien
2. Restorative Dental Materials- Robert G.Craig
3. Notes on Dental Materials- ECombe
4. Applied Dental Materials-McCabe
5. Philip's science of Dental Materials-Anusavice
6. Esthetics, Composite bonding technique and Materials-Jorden

COMPLETE DENTURE

1. Prosthodontic treatment for edentulous patients: Complete dentures and implant supported prostheses- Zarb George A. Ed and Charles L. Bolender
2. Essentials of complete denture Prosthodontics- Sheldon Winkler
3. Text book of Complete dentures- Arthur O Rahn and Charles M. Heartwell
4. Swenson's Complete dentures-Swenson, Merrill G.
5. Denture prosthetics: Complete dentures- Nagle and Sears

6. Complete dentures Prosthodontics- John J Sharry
7. Treatment of edentulous patient- Victor O. Lucia
8. Clinical Dental prosthetics- Fenn and Lidelow
9. Dental lab procedures- Complete dentures – Morrow, Robert M and others
10. Complete denture- A clinical pathway-McEntee
11. Problems and solutions in complete denture Prosthodontics- Lamb, David J
12. A color atlas of Complete denture- John W Hobkirk
13. Color atlas and text of Complete Denture-Grant
14. Clinical dental Prosthodontics- PennNRW
15. Mastering the art of Complete denture- G Raser and R.Godd
16. Geriatric dentistry- Aging and oral health
17. Synopsis of Complete dentures- Charles W. Bartlett
18. Clinical problem solving in Prosthodontics- David W. Bartlett
19. Treatment of edentulous patients – J. Fraser, McCord

REMOVABLE PARTIAL DENTURE

1. Removable partial denture- Grasso and Miller
2. Mc. Crackens removable partial Prosthodontics- McGivney, Glen P, Castleberry, Dwight J
3. Clinical Removable Partial Prosthodontics-Stewart
4. Removable Denture Prosthodontics- Alan A Grant
5. Partial dentures- Terkla, Louis G, Laney, William R
6. Partial denture prosthetics – Neill D J and Walt JD
7. Partial dentures-Osborne
8. Atlas of Removable partial denture design- Stratton, Russel J, Wiebelt, Frank J
9. Dental lab procedures- Removable partial dentures- Rudd, Kenneth D and others
10. Removable denture construction- Butes, John P. and others
11. A color atlas of removable partial dentures – JD Davenport
12. Removable denture Prosthodontics-Lechner
13. Removable Partial denture-Revenue/Bochu
14. Removable Partial Prosthodontics: A case oriented manual of treatment planning-
Lechner S. and Mac Gregor

FIXED PARTIAL DENTURE

1. Contemporary Fixed Prosthodontics- Rosensteil, Stephen F.
2. Fundamentals of Fixed Prosthodontics- Herbert T, Shillingburg
3. Theory and practice of crown and bridge Prosthodontics- Tylman, Stanley D
4. Occlusion- Ash and Ramjford
5. Evaluation, diagnosis and treatment of occlusal problems-Dawson
6. Management of TMJ disorders and occlusion-Okesson
7. Planning and making crown and bridge- Bernad C N Smith
8. Esthetics of Anterior Fixed Prosthodontics-Chiche/Pinnualt
9. Change your smile-Goldstein
10. Text book of Occlusion- Mohl/ Zarb/Rough
11. Ceramometal Fixed partial denture-Iracron
12. Precision fixed Prosthodontics- Clinical and laboratory aspects-Shconanbayer
13. Dental Ceramics- McLean
14. Science and Art of Dental Ceramics- Vo. I , Vol. II- McLean
15. Dental Lab procedures- Fixed partial dentures – Rhoads, John E and others

16. Introduction to Metal Ceramic Technology- Naylor, PatricW
17. Esthetic restoration: Improved dentist laboratory communication- Muia, Paul J and Petersburg
18. Esthetic approach to metal ceramic restoration for the mandibular anterior region- Muterthies,Klaus
19. Precision fixed Prosthodontics: Clinical and laboratory aspects- MartignoniM.
20. Aesthetic design for ceramic restoration- Korson,David
21. Modern practice in crown and bridge Prosthodontics- Johnston and Dykema
22. Modern Gnathological concept – updated- Victor O.Lucia
23. Complete mouth rehabilitation through crown and bridge Prosthodontics- Kazis H. and KazisJ
24. Occlusion and clinical practice- An evidence based approach-Klineberg and Jagger

MAXILLOFACIAL PROSTHETICS

1. Prosthetic rehabilitation- Keith F.Thomas
2. Clinical Maxillofacial prosthesis-Taylor
3. Maxillofacial Prosthodontics-Chalian
4. Maxillofacial rehabilitation- John J.Beumer

IMPLANT PROSTHODONTICS

1. Contemporary Implant Dentistry - Carl E.Misch
2. Principles and practice of oral implantology-Weiss
3. Practical implant dentistry- Arun KGarg
4. Implant Prosthodontics clinical and laboratory procedures-Stevens
5. Atlas of oral implantology- NormanCranin
6. Endosteal dental implants-McKinney
7. Implant Prosthodontics- Surgical and prosthetic procedures-Fagan
8. Implant Prosthodontics- clinical and laboratory procedures-Fagan
9. Osseo integration and occlusal rehabilitation- Hobo, Sumiya and others
10. Oral rehabilitation with implant supported prostheses- Jimenez lopez,Vicente
11. Branemarkosse integrated implant- Albrektsson and George AZarb
12. Clinical atlas of dental implant surgery- Michael S.block
13. Dental implants- The art and science – Charles ABabbush
14. Guided bone regeneration in implant dentistry- Buser, Daniel and others
15. Tissue- integrated prostheses: Osseo integration in clinical dentistry- Per-Ingvar Branemark and others

2.19 Reference books

As suggested by HOD

2.20 Journals

1. Journal of Prosthetic Dentistry.
2. British Dental Journal
3. International Journal of Prosthodontics
4. Journal of Prosthodontics
5. Journal of American Dental Association

6. Dental Clinics of North America
7. Quintessence international
8. Australian Dental Journal
9. Journal of Indian Dental Association
10. Journal of Oral Implantology

2.21 Logbook

▫ Work Diary / Log Book

Logbooks serve as a document of the trainee's work. The trainee shall maintain this Logbook of the special procedures/operations observed/assisted/performed by him/her during the training period right from the point of entry and its authenticity shall be assessed weekly by the concerned Post Graduate Teacher / Head of the Department. This shall be made available to the Board of Examiners for their perusal at the time of his / her appearing at the Final examination. The logbook should record clinical cases seen and presented, procedures and tests performed, seminars, journal club and other presentations. Logbook entries must be qualitative and not merely quantitative, focusing on learning points and recent advances in the area and must include short review of recent literature relevant to the entry. A work diary containing all the various treatment done by the candidate in the course of the study should also be maintained. The work diary shall be scrutinized and certified by both the guide/co guide and Head of the Department and presented in the University practical/clinical examination.

3 EXAMINATIONS

3.1 Eligibility to appear for exams

Every candidate to become eligible to appear for the **MDS examination** shall fulfill the following requirements.

Attendance

Every candidate shall have fulfilled the attendance prescribed by the University during **each academic year** of the Postgraduate course. A candidate becomes eligible for writing the University examination only after the completion of 36 months from the date of commencement of the course. The candidates should have completed the training period before the commencement of examination.

Dissertation

Approval of the dissertation is a mandatory requirement for a candidate to appear for the MDS University examination.

Library Dissertation

Submission of library dissertation as per the regulations of DCI / KUHS is

mandatory for a candidate to appear for the university examination.

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.

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.

The certification of satisfactory progress by the Head of the Department and Head of the Institution shall be based on check list given in 5.1 to 5.8.

- **Students should note that in case they do not complete the exercises and work allotted to them within the period prescribed, their course requirements will be considered unfulfilled.**
- **Clinical Records, Work Diaries and Logbooks should be maintained regularly and approved by the guide, duly certified by the Head of the Department.**

3.2 Schedule of Regular/Supplementary exams

The MDS examination shall be held at the end of the third academic year. The university shall conduct two examinations in a year at an interval of four to six months between two examinations. **Not more than two examinations shall be conducted in an academic year.**

3.3 Scheme of examination showing maximum marks and minimum marks

- MDS examination will consist of Written (Theory), Viva Voce, and Practical / Clinical examinations.

Written Examination (Theory): 300 Marks

Written examination shall consist of **four question papers**, each of three hours duration. Each paper shall carry 75 marks. The type of questions in the first three papers will be two long essay questions carrying 20 marks each and five short essay questions each carrying seven marks. **There will be no options in the questions in the first 3 papers. Fourth paper will be a single essay question paper which will carry an option and the candidate is to answer only one of the essays.** Questions on recent advances may be asked in any or all the papers. **The syllabus for the theory papers of the concerned specialty should cover the entire field of the subject. Though the topics assigned to the different papers are generally evaluated under designated papers, a strict division of the subject may not be possible and some overlapping of topics is inevitable. Students should be prepared to answer overlapping topics.** The theory examinations shall be held sufficiently earlier than the practical/clinical examinations so that the answer books can be assessed and evaluated before the start of the practical/clinical examination. The total marks for the theory examination shall be 300.

Practical Examination: 200 Marks

In case of practical examination, it should aim 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 mark for practical/clinical examinations shall be 200.

Viva voce: 100 Marks

Viva voce examination shall aim at assessing depth of knowledge, logical reasoning, confidence and oral communication skills. The candidate may be given a topic for the pedagogy in the beginning of the clinical examination and asked to make a presentation on the topic for 8-10 minutes. The total marks shall be 100 of which 80 would be for the viva voce (20 marks/examiner) and 20 marks for the pedagogy.

3.4 Papers in Written examination

Paper-I -	Applied Anatomy, Physiology, Pathology and Dental
Materials	
Paper-II-	Removable Prosthodontics and Oral Implantology
Paper-III-	Fixed Prosthodontics
Paper-IV -	Essay

3.5 Details of theory exams

Written examination shall consist of four papers each of three hours duration. Total marks for each paper will be 75. Paper I, II and III shall consist of two long questions carrying 20 marks each and 5 short essay questions carrying 7 marks each.

Distribution of topics for each paper will be as follows:

Paper I : Applied Basic Sciences: Applied Anatomy, embryology, growth and development, Genetics, Immunology, anthropology, Physiology, nutrition & Biochemistry, Pathology & Microbiology, virology, Applied pharmacology, Research Methodology and bio statistics, . Applied Dental anatomy & histology, Oral pathology & oral Microbiology, Adult and geriatric psychology. Applied dental materials.

PaperII: Complete denture & Removable Prosthodontics and Implant supported prosthesis (Implantology), Geriatric dentistry and Cranio facial Prosthodontics

PaperIII: Fixed Prosthodontics, occlusion, TMJ and esthetics.

PaperIV: Essay

3.6 Model Question Paper

MDS Prosthodontics and Crown and Bridge

Paper I : Applied Anatomy, Physiology, Pathology and Dental Materials

(Answer all questions)

Time 3 hours

Marks 75

Long essays

(2 x 20 = 40 marks)

1. Describe the anatomy of the Temporomandibular joint. Discuss the movements possible at the joint, mentioning the muscles causing them.

(10+10=20)

2. Classify leucocytes. Give an account of leucopoiesis. Mention normal counts of granulocytes and give their functions.

(5+5+5+5=20)

Short essays

(5 x 7 = 35 marks)

3. Non-steroidal anti-inflammatory drugs.
4. Chemical mediators of inflammation.
5. Radiation Hazards.
5. Research Ethics
6. Recent advances in Impression Materials

Paper II –Removable Prosthodontics and Oral Implantology

(Answer all questions)

Time:3hours

Max marks: 75

Long essays

(2 x 20 = 40marks)

1. Classify implant supported overdentures. Describe the biomechanical aspects and treatment planning of such overdentures. (5+5+10=20)
Mention the various jaw relations to be registered for making a complete denture.
Mention the common difficulties encountered in registering the relations. What are the methods of overcoming such difficulties? (5+5+10=20)

Short essays

(7 x 5=35 marks)

2. Different types of block out procedures in the fabrication of a removable partial denture
3. Principles of designing direct retainer for a removable partial denture
4. Prosthodontic management of a patient requiring maxillectomy

5. Role of teeth arrangement in improving speech in complete denture wearers
6. Recent developments in dental cast surveyors.

Paper III –FIXED PARTIAL PROSTHODONTICS, OCCLUSION, TMJ AND AESTHETICS

(Answer all questions)

Time: 3 hrs

Max marks : 75

Long essays

(2 x 20 = 40marks)

1. Describe the various designs and indications of gingival margin preparations of teeth for a fixed partial denture. (10+10=20)
2. Classify splints and their role in the management of Temporomandibular disorders. (5+15=20)

Short essays

(7 x 5=35mark)

3. Various designs of tooth preparation for porcelain laminate veneers.
4. Principles of pontic design
5. Importance of provisional prostheses in fixed Prosthodontics
6. Biological failures in tooth supported fixed partial dentures
7. Canine protected occlusion

Paper IV – ESSAY

Time:3hours

Marks:100

(Answer any one_of the following)

1. Splints used in prosthodontics.
- OR
2. Prosthetic options in implant dentistry

3.7 Internal assessment component

Not applicable.

3.8 Details of practical/clinical exams

The Practical / Clinical examination shall be conducted in 3 days. If there are more than 6 candidates, it shall be extended for one more day. Each candidate shall be examined for a minimum of three days, six hours per day including viva voce. There must be four examiners out of which 50 percent of the examiners will be from other states.

The practical examination will include Complete Denture, Removable Partial Denture and Fixed Partial Denture.

Day 1

Complete Denture (CD):

Discussion on diagnosis and treatment planning, Evaluation of Preliminary and Final impressions – 1hour

Orientation jaw relation - 1 hour

Transferring the relation to articulator – 1 hour

Tentative jaw relation – 30 minutes

FPD :

Discussion on diagnosis and treatment planning - 30 minutes

Preparation of abutments – 1hour 30 minutes

Isolation, Gingival retraction & impression – 30minutes

Day 2

FPD : Evaluation of provisional restoration –45minutes

Evaluation of die preparation and wax pattern – 30minutes

CD : Gothic arch tracing, Inter-occlusal records & Programming of articulator–2 hours

Pedagogy : (8 minutes of presentation and 2 minutes of discussion per candidate) – 45 minutes

Thesis presentation: (8 minutes of presentation plus 2 minutes of discussion per candidate) – 1 hour

Presentation of special cases (15 minutes per candidate, maximum of 4 cases) – 1 hour

Day 3

Try in of CD – 1 hour

Surveying of cast and designing of RPD – 1 hour

Discussion on components and selection of materials – 1 hour

30 minutes Viva voce – 2 hours 30 minutes

EVALUATION OF PRACTICALS

Practical /Clinical Examination:

200 Marks

1.1 Evaluation of preclinical exercises and academic records during MDS course – 15 marks

1.2. Presentation of treated special cases –10 marks

Clinical procedures:

2. Complete Denture-100 Marks

- 2.1. Discussion on treatment planning, evaluation of Preliminary impression & Final impression–15marks
- 2.2. Orientation jaw relation -5 marks
- 2.3. Tentative Jaw relation records-10 marks
- 2.4. Transferring it on articulators – 5 marks
- 2.5. Extra oral tracing and obtaining intra oral records – 25 marks
- 2.6. Programming the articulator – 10 marks
- 2.7. Selection of teeth -5 marks
- 2.8. Arrangement of teeth – 15 marks
- 2.9. Try in –10 marks

3. Fixed Partial Denture : 50 marks

- 3.1. Discussion on diagnosis and treatment planning – 5 marks
- 3.2. Abutment preparation – 25 marks
- 3.3. Isolation, Gingival retraction & Impression – 10 marks
- 3.4. Evaluation of provisional restoration – 10 marks

4. Removable Partial Denture : 25marks

- 4.1 Surveying and designing of partially edentulous cast – 10 marks
- 4.2. Discussion on components and material selection –15 marks

3.9 Number of examiners needed (Internal & External) and their qualifications

There shall be at least four examiners in each branch of study. Out of four, two (50%) should 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 DCI. The external examiners shall ordinarily be invited from another recognized University from outside the state. An external examiner may ordinarily be appointed for the same institute for not more than two years consecutively. Thereafter he may be reappointed after an interval of one year. The same set of examiners shall ordinarily be responsible for the practical and viva voce of the examination.

The Head of the Department shall ordinarily be one of the examiners and the chairperson of the Board of Examinations; second internal examiner shall rotate after every two consecutive examinations if there are more than two postgraduate teachers in the department other than the Head of the department. No person who is not an active Postgraduate teacher in that subject can be appointed as Examiner. However, in case of retired personnel,

a teacher who satisfies the above conditions could be appointed as examiner up to one year after retirement.

For the MDS examination, if there are no two qualified internal examiners in an institute the second internal examiner can be from a neighboring DCI and KUHS approved / recognized Dental College having PG course in the specific speciality. This examiner should be an active PG teacher in the same speciality with the qualifications and experience recommended for a teacher for postgraduate degree programme. The examination can also be conducted by one qualified internal examiner and three qualified external examiners if there is no qualified second internal examiner.

Reciprocal arrangement of Examiners should be discouraged, in that, the internal examiner in a subject should not accept external examinership of a college from which the external examiner is appointed in his subject in the same academic year.

3.10 Details of viva

Viva Voce :100 Marks

i. Viva-Voce examination :80marks

All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach, expression, interpretation of data and communication skills. It includes all components of course contents. It includes presentation and discussion on dissertation also.

ii. Pedagogy and thesis presentation: 10 +10 = 20marks

4. INTERNSHIP

Not applicable for PG Courses

5. ANNEXURES

5 Check Lists for Monitoring: Log Book, Seminar Assessment etc.

CHECK LISTS and LOG BOOK

5.1: Checklist 1

Model Checklist for Evaluation of Preclinical Exercises

Name of Student:

Date:

Name of the Faculty-in-charge:

Name of Exercise

Sl. No:	Items for observation during evaluation	Score
1	Quality of Exercise	
2	Ability to answer to questions	
3	Punctuality in submission of exercise	
4	TOTAL SCORE	

Performance	Score
Poor	0
Below Average	1
Average	2
Good	3
Very good	4

Signature of Faculty-in-charge

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5.2: Checklist 2

Model Checklist for Evaluation of Journal Review / Seminar Presentation

Name of Student:

Date:

Name of the Faculty/Observer:

Name of Journal / Seminar:

Sl. No:	Items for observation during evaluation	Score
1	Relevance of Topic	
2	Appropriate Cross references	
3	Completeness of Preparation	
4	Ability to respond to questions	
5	Effectiveness of Audio-visual aids used	
6	Time Scheduling	
7	Clarity of Presentation	
8	Overall performance	
9	TOTAL SCORE	

Performance	Score
Poor	0
Below Average	1
Average	2
Good	3
Very good	4

Signature of Faculty/Observer

5.3 :Checklist 3

Model Checklist for Evaluation of Clinical Case and Clinical Work

Sl. No:	Items for observation during evaluation	Score
1	History	
	Elicitation	
	Completeness	
2	Examination	
	General Examination	
	Extra oral examination	
	Intraoral examination	
3	Provisional Diagnosis	
4	Investigation	
	Complete and Relevant	
	Interpretation	
5	Diagnosis	
	Ability to defend diagnosis	
6	Differential Diagnosis	
	Ability to justify differential diagnosis	
7	Treatment Plan	
	Accuracy	
	Priority order	
8	Management	
9	Overall Observation	
	Chair side manners	
	Rapport with patient	
	Maintenance of Case Record	
	Quality of Clinical Work	
	Presentation of Completed Case	
10	TOTAL SCORE	

Performance	Score
Poor	0
Below Average	1
Average	2
Good	3
Very good	4

Name of the Faculty/Observer:



5.4 : Checklist 4

Model Checklist for Evaluation of Library Dissertation Work

Name of Student:

Date:

Name of the Faculty/Guide:

Performance	Score
Poor	0
Below Average	1
Average	2
Good	3
Very good	4

Sl. No:	Items for observation during evaluation	Score
1	Interest shown in selecting topic	
2	Relevance of Topic	
3	Preparation of Proforma	
4	Appropriate review	
5	Appropriate Cross references	
6	Periodic consultation with guide	
7	Completeness of Preparation	
8	Ability to respond to questions	
9	Quality of final output	
9	TOTAL SCORE	

Signature of Faculty/Guide

5.5 : Checklist 5

Model Checklist for Evaluation of Dissertation Work

Name of Student:

Date:

Name of the Faculty/Guide/Co-guide:

Sl. No:	Items for observation during evaluation	Score	Performance	Score
1	Interest shown in selecting topic		Poor	0
2	Relevance of Topic		Below Average	1
3	Preparation of Proforma		Average	2
4	Appropriate review		Good	3
5	Appropriate Cross references		Very good	4
6	Periodic consultation with guide/co- guide			
7	Depth of Analysis / Discuss			
8	Ability to respond to questions			
9	Department Presentation of findings			
10	Quality of final output			
	TOTAL SCORE			

Signature of Faculty/Guide/Co-guide

5.6 :CHECKLIST-6

CONTINUOUS EVALUATION OF DISSERTATION WORK BY GUIDE/CO-GUIDE

Name of the Trainee:

Date

Name of the Faculty/Observer:

Sl.No	Items for observation during	Poor 0	Below Averag 1	Average 2	Good 3	Very Good 4
1.	Periodic consultation with guide / co- guide					
2.	Regular collection of case material					
3.	Depth of Analysis / Discussion					
4.	Department presentation of findings					
5.	Quality of final output					
6.	Others					
	Total score					

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Signature of the guide / co-guide

5.7 ;CHECKLIST -7

OVERALL ASSESSMENT SHEET

Name of the College:

Date:

Name of Department:

Check List No	PARTICULARS	Name of trainee		
		First Year	Second Year	Third Year
1	Preclinical Exercises			
2.	Journal Review /Presentation			
3.	Seminars			
4	Library dissertation			
5.	Clinical work			
6-	Clinical presentation			
7.	Teaching skill practice			
8.	Dissertation			
	TOTAL			

Signature of HOD

Signature of Principal

The above overall assessment sheet used along with the logbook should form the basis for certifying satisfactory completion of course of study, in addition to the attendance requirement.

5.8 :
LOGBOOK

DEPARTMENT OF

MDS Programme
LOG BOOK OF

NAME.....

BIODATA OF THE CANDIDATE

EXPERIENCE BEFORE JOINING P.G. COURSE

DETAILS OF POSTING:

- FIRST YEAR
- SECOND YEAR
- THIRD YEAR

DETAILS OF LEAVE AVAILED

PRECLINICAL EXERCISES

LIBRARY DISSERTATION

RESEARCH WORK

PARTICIPATION IN CONFERENCES – CDE PROGRAMMES

DETAILS OF PARTICIPATION IN ACADEMIC PROGRAMME

SEMINARS /SYMPOSIA PRESENTED

JOURNAL CLUBS

TEACHING ASSIGNMENTS – UNDERGRADUATES / PARAMEDICAL.

SPECIAL DUTIES (IF ANY)

INTERNAL ASSESSMENT

DAILY ACTIVITIES RECORD (BLANK PAGES)

ONE PAGE FOR EACH MONTH X 36 PAGES

MISCELLANEOUS

SUMMARY

SYLLABUS

**for Courses affiliated to the
Kerala University of Health Sciences**

Thrissur 680596



**Master of Dental Surgery (MDS)
Periodontology**

Course Code: 242

(2016-17 Academic year onwards)

2. COURSE CONTENT

2.1 Title of course:

MDS Periodontology

2.2 Objectives of course

1. Goals

The goals of postgraduate training in various specialities are to train the BDS graduate who will:

- Practice respective specialty efficiently and effectively, backed by scientific knowledge and skill.
- Exercise empathy and a caring attitude and maintain high ethical standards.
- Continue to evince keen interest in continuing professional education in the specialty and allied specialties irrespective of whether in teaching or practice.
- Willing to share the knowledge and skills with any learner, junior or a colleague.
- To develop the faculty for critical analysis and evaluation of various concepts and views, to adopt the most rational approach.

2. Objectives

The objective is to train a candidate so as to ensure higher competence in both general and special area of interest and prepare him for a career in teaching, research and specialty practice. A candidate must achieve a high degree of clinical proficiency in the subject matter and develop competence in research and its methodology as related to the field concerned.

The above objectives are to be achieved by the time the candidate completes the course. The objectives may be considered as under –

1. Knowledge (Cognitive Domain)
2. Skills (Psychomotor Domain)
3. Human values, ethical practice and communication abilities.

2.1. Knowledge

- Demonstrate understanding of basic sciences relevant to the specialty.
- Describe etiology, pathophysiology, principles of diagnosis and management of common problem within the specialty in adults and children.
- Identify social, economic, environmental and emotional determinants in a given case and take them into account for planning treatment.
- Recognize conditions that may be outside the area of specialty/competence and to refer them to an appropriate specialist.
- Update knowledge by self-study and by attending courses, conferences and seminars relevant to specialty.

- Undertake audit; use information technology and carry out research both basic and clinical with the aim of publishing or presenting the work at various scientific gatherings.

2.2. Skills

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

2.3. Human values, ethical practice and communication abilities

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

2.3 Medium of instruction:

The medium of instruction for the course shall be English.

2.4 Course outline

Periodontics is the science dealing with the health and diseases of the investing and supporting structures of the teeth and oral mucous membrane.

2.5 Duration

The course shall be of **three 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 KUHS, observing the norms put forward by the DCI.

- i. There will be no reduction for the course duration for any of the students including service candidates, diploma holders and those who have done senior house surgery or equivalent research experience.

- ii. No student shall be permitted to complete the course by attending more than 6 continuous years.
- iii. A candidate selected for admission in a Dental College is obliged to follow the curriculum, rules and regulations as approved by the Dental Council of India and the University. Curriculum, rules or regulations are subject to changes from time to time.

2.6. Syllabus

The syllabus for the theory of Periodontology should cover the entire field of the subject and the following topics may be used as guidelines only and not limited to them.

The concept of health care counseling shall be incorporated in all relevant areas.

The theory examination in MDS Periodontology consists of four papers as given below.

- Paper-I** - Applied Anatomy, Physiology, Biochemistry, Pathology, Microbiology, Pharmacology and Biostatistics
Paper-II-Etiopathogenesis
Paper-III-Clinical Periodontology and Oral Implantology
Paper-IV -Essay

Syllabus distribution among the four papers

Paper I: Applied Anatomy, Physiology, Biochemistry, Pathology, Microbiology, Pharmacology and Biostatistics

1. Applied Anatomy:

- 1.1. Development of the Periodontium
- 1.2. Micro and Macro structural anatomy and biology of the periodontal tissues
- 1.3. Age changes in the periodontal tissues
- 1.4. Anatomy of the Periodontium
 - 1.4.1. Macroscopic and microscopic anatomy
 - 1.4.2. Blood supply of the Periodontium
 - 1.4.3. Lymphatic system of the Periodontium
 - 1.4.4. Nerves of the Periodontium
- 1.5. Temporomandibular joint, Maxillae and Mandible
- 1.6. Cranial nerves **5,7,9,11,12.**
- 1.7. Tongue, oropharynx
- 1.8. Muscles of mastication

2. Physiology

1. Blood
2. Respiratory system

3. Cardiovascular system
 - 3.1. Blood pressure
 - 3.2. Normal ECG
 - 3.3. Shock
4. Endocrinology - hormonal influences on Periodontium
5. Gastrointestinal system
 - 5.1. Salivary secretion-composition, function & regulation
 - 5.2. Reproductive physiology
 - 5.2.1. Hormones- Actions and regulations, role in periodontal disease
 - 5.2.2. Family planning methods
6. Nervous system
 - 6.1. Pain pathways
 - 6.2. Taste -Taste buds, primary taste sensation & pathways for sensation

3. Biochemistry

- 3.1. Basics of carbohydrates, lipids, proteins, vitamins, proteins, enzymes and minerals
- 3.2. Diet and nutrition and periodontium
- 3.3. Biochemical tests and their significance
- 3.4. Calcium and phosphorus

4. Pathology

- 4.1. Cell structure and metabolism
- 4.2. Inflammation and repair, necrosis and degeneration
- 4.3. Immunity and hypersensitivity
- 4.4. Circulatory disturbances - edema, hemorrhage, shock, thrombosis, embolism, infarction and hypertension
- 4.5. Disturbances of nutrition
- 4.6. Diabetes mellitus
- 4.7. Cellular growth and differentiation, regulation
- 4.8. Lab investigations
- 4.9. Blood

5. Microbiology:

- 5.1. General bacteriology
 - 5.1.1 Identification of bacteria
 - 5.1.2. Culture media and methods
 - 5.1.3. Sterilization and disinfection
- 5.2. Immunology and Infection
- 5.3. Systemic bacteriology with special emphasis on oral microbiology - Staphylococci, genus Actinomyces and other filamentous bacteria and *Aggregatibacter actinomycetemcomitans*
- 5.4. Virology
 - 5.4.1. General properties of viruses
 - 5.4.2. Candidiasis
- 5.5. Applied microbiology
- 5.6. Diagnostic microbiology and immunology, hospital infections and management

6. Pharmacology:

- 6.1. General pharmacology

- 6.1.1. Definitions - pharmacokinetics with clinical applications, routes of administration including local drug delivery in periodontics
- 6.1.2. Adverse drug reactions and drug interactions
- 6.2. Detailed pharmacology of
- 6.2.1. Analgesics - opioid and nonopioid
- 6.2.2. Local anesthetics
- 6.2.3. Haematinics and coagulants, anticoagulants
- 6.2.4. Vitamin d and calcium preparations
- 6.2.5. Antidiabetics drugs
- 6.2.6. Steroids
- 6.2.7. Antibiotics
- 6.2.8. Antihypertensive
- 6.2.9. Immunosuppressive drugs and their effects on oral tissues
- 6.2.10. Antiepileptic drugs
- 6.3. Brief pharmacology, dental use and adverse effects of
- 6.3.1. General anesthetics
- 6.3.2. Antipsychotics
- 6.3.3. Antidepressants
- 6.3.4. Anxiolytic drugs
- 6.3.5. Sedatives
- 6.3.6. Antiepileptics
- 6.3.7. Antihypertensives
- 6.3.8. Antianginal drugs
- 6.3.9. Diuretics
- 6.3.10. Hormones
- 6.3.11. Pre-anesthetic medications
- 6.4. Drugs used in bronchial asthma cough
- 6.5. Drug therapy of
- 6.5.1. Emergencies
- 6.5.2. Seizures
- 6.5.3. Anaphylaxis
- 6.5.4. Bleeding
- 6.5.5. Shock
- 6.5.6. Diabetic ketoacidosis
- 6.5.7. Acute Addisonian crisis
- 6.6. Dental pharmacology
- 6.6.1. Antiseptics
- 6.6.2. Astringents
- 6.6.3. Sialogogues

6.6.4. Disclosing agents

6.6.5. Antiplaque agents

6.7. Fluoride pharmacology

7. Biostatistics:

7.1. Introduction, definition and branches of biostatistics

7.2. Collection of data, sampling, types, bias and errors

7.3. Compiling data-graphs and charts

7.4. Measures of central tendency (mean, median and mode), standard deviation variability

7.5. Tests of significance (chi square test 't'test and Z-test)

7.6. Null hypothesis

8. Research Methodology

8.1. What is research?

8.2. What is research methodology

8.3. Study Designs

8.4. Epidemiological studies, Observations, Descriptive, Cohort case control studies.

8.5. Experimental, Clinical trials (Randomized control),
Community trends (Non randomized)

9. Infection Control

9.1. HIV and AIDS

9.2. Viral hepatitis

9.3. Aseptic techniques

9.4. Sterilization with special reference to dental office.

9.5. Dental control unit water systems and handpiece asepsis

9.6. Infection control of impressions

9.7. Cross infection

10. Dental Radiology

10.1. Introduction

10.2. Sources

10.3. Principles of x-ray production

10.4. Radiographic Principles And Technique

10.5. Advanced radiographic techniques – Subtraction radiography, CT, CBCT

11. Ethics in Dentistry

11.1. Introduction to ethics:

11.2. What is ethics?

11.3. What are values and norms?

11.4.How to form a value system in one's personal and professional life?

11.5.Hippocratic oath.

11.6.Ethics of the Individual

11.6.1.The patient as a person

11.6.2.Right to be respected

11.6.3.Truth and confidentiality

11.6.4.Autonomy of decision

11.7.Doctor patient relationship

11.7.1.Professional Ethics

11.7.2.Code of conduct

11.7.3.Contract and confidentiality

Paper II :Etiopathogenesis

2.1.Classification of periodontal diseases and conditions

2.2. Epidemiology of gingival and periodontal diseases

2.3.Defense mechanisms of gingiva

2.4.Periodontal microbiology

2.5.Basic concepts of inflammation and immunity

2.6.Microbial interactions with the host in periodontal diseases

2.7.Pathogenesis of plaque associated periodontal diseases

2.8.Dental calculus

2.9.Role of iatrogenic and other local factors

2.10.Genetic factors associated with periodontal diseases

2.11.Influence of systemic diseases and disorders of the periodontium

2.12 .Role of environmental factors in the etiology of periodontal disease

2.13.Stress and periodontal diseases

2.14.Occlusion and periodontal diseases

2.15.Smoking and tobacco in the etiology of periodontal diseases

2.16.AIDS and periodontium

2.17. Periodontal medicine

2.18.Dentinal hypersensitivity

Paper III :Clinical and Therapeutic Periodontology and Oral Implantology

Clinical periodontology includes gingival diseases, periodontal diseases, periodontal instrumentation, diagnosis, prognosis and treatment of periodontal diseases.

3.1.GINGIVAL DISEASES

3.1.1 Gingival inflammation

3.1.2.Clinical features of gingivitis

3.1.3.Gingival enlargement

3.1.4.Acute gingival infections

3.1.5.Desquamative gingivitis and oral mucous membrane diseases

3.1.6.Gingival diseases in the childhood

3.2. PERIODONTAL DISEASES

3.2.1.Periodontal pocket

3.2.2.Bone loss and patterns of bone destruction

3.2.3.Periodontal response to external forces

3.2.4.Masticatory system disorders

3.2.5.Chronic periodontitis

3.2.6.Aggressive periodontitis

3.2.7.Necrotising ulcerative periodontitis

3.2.8.Interdisciplinary approaches

3.2.8.1.Orthodontic

3.2.8.2.Endodontic

3.2.8.3.Periodontic considerations

3.3.TREATMENT OF PERIODONTAL DISEASES

3.3.1.History, examination, diagnosis, prognosis and treatment planning

3.3.1.1.Clinical diagnosis

3.3.1.2.Radiographic and other aids in the diagnosis of periodontal diseases

3.3.1.3.Advanced diagnostic techniques

3.3.1.4.Risk assessment

3.3.1.5.Determination of prognosis

3.3.1.6.Treatment plan

3.3.1.7.Rationale for periodontal treatment

3.3.1.8.General principles of anti-infective therapy with special emphasis on infection control in periodontal practice

3.3.1.9.Halitosis and its treatment

3.3.1.10.Bruxism and its treatment

3.3.2.Periodontal instrumentation

3.3.2.1.Instrumentation

3.3.2.2.Principles of periodontal instrumentation

3.3.2.3.Instruments used in different parts of the mouth

3.3.3.Periodontal therapy

3.3.3.1.Preparation of tooth surface

3.3.3.2.Plaque control

3.3.3.3.Antimicrobial and other drugs used in periodontal therapy and wasting diseases of teeth

3.3.3.4 .Periodontal management of HIV infected patients

3.3.3.5. Occlusal evaluation and therapy in the management of periodontal diseases

3.3.3.6. .Role of orthodontics as an adjunct to periodontal therapy

3.3.3.7 .Special emphasis on precautions and treatment for medically compromised patients

- 3.3.3.8.Periodontal splints
- 3.3.3.9.Management of dentinal hypersensitivity

3.3.4.Periodontal surgical phase- special emphasis on drug prescription

- 3.3.4.1.General principles of periodontal surgery
- 3.3.4.2.Surgical anatomy of periodontium and related structures
- 3.3.4.3.Gingival curettage
- 3.3.4.5.Gingivectomy technique
- 3.3.4.6.Treatment of gingival enlargements
- 3.3.4.7.Periodontal flap
- 3.3.4.8.Osseous surgery (resective and regenerative;
- 3.3.4.9.Furcation; Problem and its management
- 3.3.4.10.The periodontic – endodontic continuum
- 3.3.4.11.Periodontic plastic and esthetic surgery
- 3.3.4.12.Recent advances in surgical techniques

3.3.5. Future directions and controversial questions in periodontal therapy

- 3.3.5.1.Future directions for infection control
- 3.3.5.2.Research directions in regenerative therapy
- 3.3.5.3.Future directions in anti-inflammatory therapy
- 3.3.5.4.Future directions in measurement of periodontal diseases

3.3.6.Periodontal maintenance phase

- 3.3.6.1.Supportive periodontal treatment
- 3.3.6.2.Results of periodontal treatment

3.3.7.Periodontal instrumentation

- 3.3.7.1.Instrumentation
- 3.3.7.2.Principles of periodontal instrumentation
- 3.3.7.3.Instruments used in different parts of the mouth

3.3.8.Periodontal therapy

- 3.3.8.1.Preparation of tooth surface
- 3.3.8.2.Plaque control
- 3.3.8.3.Antimicrobial and other drugs used in periodontal therapy and wasting diseases

3.3.9.ORAL IMPLANTOLOGY

- 3.3.9.1 Introduction and historical review
- 3.3.9.2.Biological, clinical and surgical aspects of dental implants
- 3.3.9.3.Diagnosis and treatment planning
- 3.3.9.4.Implant surgery
- 3.3.9.5.Prosthetic aspects of dental implants

- 3.3.9.6. Diagnosis and treatment of Peri-implant complications
- 3.3.9.7. Special emphasis on plaque control measures implant patients
- 3.3.9.9. Maintenance phase

3.3.10. MANAGEMENT OF MEDICAL EMERGENCIES IN PERIODONTAL PRACTICE

Paper IV : Essay. (Essay on any of the topics in Periodontology with emphasis on recent advances.)

FIRST YEAR MDS

EVIDENCE-BASED DECISION MAKING

- Introduction to Evidence-Based Decision Making
- Assessing Evidence
- Implementing Evidence-based Decisions in Clinical Practice

THE NORMAL PERIODONTIUM

- The Gingiva
- The Tooth-Supporting Structures
- Aging and the Periodontium

CLASSIFICATION AND EPIDEMIOLOGY OF PERIODONTAL DISEASES

- Classification of Diseases and Conditions Affecting the Periodontium
- Epidemiology of Gingival and Periodontal Diseases

PHARMACOLOGY

- Drug administration – modes, physiology, toxicology of antibiotics.
 - Tetracycline. Metronidazole, Penicillins, Cephalosporins, Clindamycin, Ciprofloxacin, Macrolides, Antifungal Drugs
 - Local Drug Delivery Systems
 - Periodontal Dressing
 - Antibiotic Prophylaxis in medically compromised patients
 - Anticoagulants and Antiplatelet drugs with special reference to the periodontium
 - Antiepileptic drugs with special reference to the periodontium
 - Antihypertensive drugs with special reference to Calcium channel blockers
 - Immunosuppressive drugs. with special reference to the periodontium
- Antiseptics, disinfectants and mouthwashes.
- Analgesics and anti-inflammatory drugs
- Astringents
- General and local anesthesia – indications and contraindications premedication and anesthetics in different clinical situations.
- Condition with special reference to periodontics.
 - Nutritional Influences–
 - General
 - Vitamin A Deficiency.
 - Vitamin B Complex deficiency and the Periodontium.
 - Role of Vitamin C in the Periodontium.
 - Vitamin D, Calcium, Phosphorus and the Periodontium..
 - Vitamin E,K,
 - Protein deficiency.

- Minerals
- Endocrine Disorders–
 - Diabetes Mellitus,
 - Hyperparathyroidism, Hyperthyroidism
 - Sex Hormones
- Hematologic Disorders
 - Leukaemia
 - Anaemia.
 - Agranulocytosis
 - Polycythemia.
 - Hemophilia,
 - Thrombocytopenia
- Metal Intoxication–
 - Bismuth
 - Lead
 - Mercury
- Otherchemicals
- Emergency drugs in dental practice.
- Calcium channel blockers.
- Immunosuppressive drugs.
- Biotransformation of drugs.
- Antibiotics sensitivity tests.

MATERIAL SCIENCE

- Foreign body reactions in tissues.
- Composite Resins and Glass Ionomer Cements.
- Biological aspects of GTR therapy.
- Biological aspects of Synthetic bone graft materials.
- Splinting of Teeth
- Dental Implants – Various Implant Systems.

SECOND YEAR MDS

ETIOLOGY OF PERIODONTAL DISEASES

- Microbiology of Periodontal Diseases
- The role of dental calculus and other predisposing factors
- Genetic factors associated with periodontal disease
- Immunity and Inflammation: Basic Concepts
- Microbial interactions with the host in periodontal diseases
- Smoking and periodontal disease
- Molecular Biology of the host-microbe interaction in periodontal diseases: Selected Topics: Molecular signalling aspects of pathogen-mediated bone Destruction in periodontal disease
- Host Modulation

RELATIONSHIP BETWEEN PERIODONTAL DISEASE AND SYSTEMIC HEALTH

- Influence of systemic disorders and stress on the periodontium
- Periodontal medicine: impact of periodontal infection on systemic health
- Oral malodour

PERIODONTAL PATHOLOGY

1. GINGIVAL DISEASE

- Defence mechanisms of the gingiva
- Gingival inflammation
- Clinical features of gingivitis
- Gingival enlargement
- Acute gingival infections
- Gingival diseases in childhood
- Desquamative gingivitis

2. PERIODONTAL DISEASE

- The Periodontal Pocket
- Bone Loss and Patterns of Bone Destruction
- Periodontal Response to External Forces
- Masticatory System Disorders
- Chronic Periodontitis
- Necrotizing Ulcerative Periodontitis
- Aggressive Periodontitis
- Pathology and Management of Periodontal Problems in Patients with HIV Infections

III YEAR MDS

TREATMENT OF PERIODONTAL DISEASE

1. DIAGNOSIS, PROGNOSIS AND TREATMENT PLAN

- Clinical Diagnosis
- Radiographic Aids in the diagnosis of Periodontal Disease
- Advanced Diagnostic Techniques
- Risk Assessment
- Levels of Clinical Significance
- Determination of Prognosis
- The Treatment Plan
- Rationale for Periodontal Treatment
- Periodontal Therapy in the Female Patient
- Periodontal Treatment of Medically Compromised Patients
- Periodontal Treatment for Older Adults
- Treatment of Aggressive and Atypical Forms of Periodontitis

2. TREATMENT OF PERIODONTAL EMERGENCIES

- Treatment of acute gingival disease
- Treatment of periodontal abscess

3. NONSURGICAL THERAPY

- Phase I Therapy
- Plaque control for the periodontal patient
- Scaling and root planing
- Chemotherapeutic agents
- Host modulation agents
- Sonic and ultrasonic instrumentation
- Supragingival and Subgingival Irrigation
- Occlusal Evaluation and Therapy
- Adjunctive role of Orthodontic therapy
- Periodontic- Endodontic continuum

4. SURGICAL THERAPY

- Phase II Periodontal therapy
- General principles of Periodontal Surgery
- Surgical Anatomy of the periodontium and related structures
- Gingival Surgical Techniques
- Treatment of Gingival enlargement
- The periodontal Flap
- Flap technique for pocket therapy
- Resective osseous Surgery
- Reconstructive Periodontal surgery
- Furcation - Involvement and treatment
- Periodontal plastic and aesthetic surgery
- Recent advances in Surgical technology

5. PERIODONTAL RESTORATIVE INTERRELATIONSHIPS

- Preparation of periodontium for restorative dentistry
- Restorative interrelationships

ORAL IMPLANTOLOGY

1. Biological aspects of oral implants
2. Clinical aspects and evaluation of implant patient
3. Diagnostic imaging for the implant patient
4. Standard implant surgical procedures
5. Localised Bone augmentation and Implant site development
6. Advanced implant surgical procedures
7. Recent advances in implant surgical technology
8. Biomechanics, Treatment planning and prosthetic considerations
9. Implant related complications and failures

PERIODONTAL MAINTENANCE

1. Supportive periodontal treatment
2. Results of periodontal treatment

ETHICAL, LEGAL, AND PRACTICAL ISSUES IN THE MANAGEMENT OF PERIODONTAL PATIENTS

1. Dental ethics
2. Legal principles :Jurisprudence
3. Dental insurance and Managed Care in Periodontal Practice

STRUCTURED TRAINING SCHEDULE

FIRST YEAR

1 Clinical cases:

- i. Practice of incision and suturing techniques on typhodont models
- ii. X ray techniques and interpretations
- iii. Local anesthetic techniques
- iv. Basic diagnostic microbiology and immunology, collection & handling samples, culturing techniques.
- v. Practical training on basic life support devices.
- vi. Basic Biostatistics. Survey & data analysis.
- vii. Applied periodontal Indices 10Cases
- viii. Scaling & Root planing 50 cases
- ix. Ultrasonic scaling 50 cases.
- x. Curettage 15Cases.
- xi. Local Drug Delivery 10 cases
- xii. Gingivectomy & Gingivoplasty 5cases.

- 2 **Seminars:** One Seminar per week to be conducted in the department. A minimum of five seminars should be presented by each student each year. A minimum of 30 seminars should be attended by each student each year.
- 3 **Journal club:** One Journal club per week to be conducted in the department. A minimum of five journal clubs should be presented by each student each year . A minimum of 30 journal clubs should be attended by each student each year.
- 4 Protocol for library dissertation to be submitted on or before the end of six months from the date of admission. Library dissertation should be submitted at the end of first year.
- 5 Synopsis for dissertation to be submitted at the end of first year.
- 6 Under graduate classes: Around 4-5 classes should be handled by each post- graduate student.
- 7 Field survey: To be conducted and submit the report
- 8 Inter – department meetings: should be held once in 3months.
- 9 Case discussions
- 10 Field visits: To attend dental camps and to educate the masses
- 11 Basic subjects classes
- 12 Internal assessment or Term paper
- 13 Scientific paper and poster presentations at various conferences and post graduate workshops.

SECOND YEAR:

- 1 **Clinicalwork**
 - i. Case history & treatment planning 5cases.
 - ii. Periodontal surgical procedures 50surgeries
 - a. Pocket therapy
 - b. Mucogingival surgery
 - c. Perio-endo problems
 - d. Periosplint
 - e. Occlusal adjustment
 - iii. Implant - 1case
- 2 **Seminars:** One Seminar per week to be conducted in the department. A minimum of five seminars should be presented by each student each year. A minimum of 30 seminars should be attended by each student each year.
- 3 **Journal club:** One Journal club per week to be conducted in the department. A minimum of five journal clubs should be presented by each student each year. A minimum of 30 journal clubs should be attended by each student each year.
- 4 Undergraduate classes: Each post- graduate student should handle around 4-5 classes.
- 5 Inter –departmental meetings: Should be held once in 3 months
- 6 Case discussions
- 7 Field visits: To attend dental camps and to educate the masses.
- 8 Dissertation work: On getting the approval from the university work for the dissertation to be started.
- 9 Scientific paper and poster presentations at various conferences and post graduate work shops.

THIRD YEAR

- 1 **Clinicalwork**
 - i. Surgeries - 20
 - ii. Including 10 Surgeries using Regenerative surgical techniques -graft material & membranes

- 2 Seminars- One Seminar per week to be conducted in the department. Each student should present a minimum of five seminars each year.
 - 3 Journal Club: One Journal club per week to be conducted in the department.
 - 4 Under graduate classes: each post –graduate student, should handle around 4-5classes.
 - 5 Inter departmental meetings: Should be held once in a month.
 - 6 The completed dissertation should be submitted six months before the final examination
 - 7 Case discussions
 - 8 Field visits: To attend dental camps and to educate the masses.
 - 9 Finishing and presenting the cases taken up.
 - 10 Preparation of finished cases and presenting the cases (to be presented for the examination).
 - 11 Maintenance of record and log book of all cases done during post graduate training period
 - 12 Mock examination
- NOTE: All documents of the treated cases and seminar topics duly attested by the concerned guide should be submitted prior to the Clinical/Practical University Examination.

2.7.Total number of hours

As per the instruction given by the DCI.

2.8.Branches if any with definition

Present in clause 2.6

2.9.Teaching learning methods

Method of Training

The training of a postgraduate student shall be full time but 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, case demonstrations, clinics, journal review meetings, and clinical meetings. Every candidate shall be required to participate in the teaching and training programme of undergraduate students and interns. Training should include involvement in laboratory and experimental work, and research studies. Every Institution under taking Post Graduate training programme shall set up an Academic cell or a Curriculum Committee, under the chairmanship of a Senior faculty member, which shall work out the details of the training programme in each speciality in consultation with other Department faculty staff and also coordinate and monitor the implementation of these training Programmes.

Based on the above guidelines for a structured training programme for postgraduate courses, the basic tenets of a successful postgraduate teaching programme, are detailed under the following heads.

- **Formal Lectures** by the faculty on varied subjects including general areas and systems. Both senior and junior faculty can do this. However, the number of these classes should be maintained of low levels to encourage self-learning.

- **Symposia / Seminars** form an integral part of PG learning. A monthly symposium will generate approximate 30-35 symposia / course. These symposia can include department faculty and HODs as chairpersons and maximum involvement of both students and faculty should be ensured.
- **Clinical Discussions** form the core of PG training and can be assigned to various clinical units on rotating basis. However other faculty could also actively participate in the discussion. The discussions must be 3-4/week. One suggestion is to score the performance of the candidate by a small panel of faculty and convey the scores to the candidate / PG at the end of the session.
- **Journal Club /Clinical Club** should be conducted at least once in a week in each postgraduate department. Journal clubs not only imparts new information but also trains the candidate to objectively assess and criticize various articles which come out and should be useful in ensuring evidence based dentistry.
- **Guest Lectures** can be integrated into the PG program at least once in a month. Even the retired faculty can be invited for delivering the lectures and will ensure importing of greater wisdom to the candidates.
- **Orientation Classes** for newcomers should also be incorporated. These classes can even be assigned to junior faculty/senior PGs.
- **Clinical posting.** Each PG student should work in the clinics on regular basis to acquire adequate professional skills and competency in managing various cases to be treated by a specialist.
- **Clinico Pathological Conferences** should be held once a year involving the faculties of Oral Medicine and Radiology, Oral Pathology and concerned clinical department. The student should be encouraged to present the clinical details, radiological and histo- pathological interpretations and participation in the discussions.
- **Rotation postings in other departments** should be worked out by each department in order to bring in more integration between the speciality and allied fields.
- **Periodical Quiz** can be both informative and entertaining and should be encouraged and planned.
- **Computer Training and Internet Applications** are now becoming a must for both faculty and students. These areas should be strengthened as a next step. There can be a sort of internet information club in the departments.
- **Conferences/CDEs** – All postgraduate students should be encouraged to attend conferences and CDEs. They should also be asked to present papers wherever appropriate and should be rewarded by assigning scores for them.
- **Publication of scientific papers** – It is desirable and advisable to have at least two publications in the State/National/International indexed dental journals.
- **Involvement in Teaching Activity** – PG students can be assigned the job of teaching the undergraduate students and these will definitely improve the teaching skills in the postgraduate students.

Examinations

Evaluation is a continuous process, which is based upon criteria developed by the concerned authorities with certain objectives to assess the performance of the learner. This also indirectly helps in the measurement of effectiveness and quality of the concerned MDS programme. Evaluation is achieved by two processes

- 1) Formative or internal assessment
- 2) Summative or university examinations.

Formative evaluation is done through a series of tests and examinations conducted periodically by the institution. Summative evaluation is done by the university through examination conducted at the end of the specified course. A candidate registered for MDS course must clear the final examination within six years of the date of admission. The examinations should be so organized that this shall be used as the mechanism to confirm that the candidate has acquired appropriate knowledge, skill and competence at the end of the training that he/she can act as a specialist and/or a medical teacher as per expectation. University examination will be held regularly by KUHS in April-May/October-November every year.

A candidate who wishes to study for MDS in a second specialty should have to take the full course of 3 years in that specialty and appear for examinations.

2.10 Content of each subject in each year

Present in clause 2.6

2.11 No: of hours per subject (lecture-tutorial-seminar-group discussion)

Present in clause 2.6

2.12 .Practical training given in labs/supervision (No: of hours for each exercise/training)

Present in clause 2.6

2.13 Records

Present in clause 2.20

2.14 Dissertation: As per Dissertation Regulations of KUHS

Every candidate pursuing MDS degree course is required to carry out work on a selected research project under the guidance of a recognized postgraduate 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, and comparison of results and drawing conclusions.

Every candidate shall submit to the University in the prescribed format a synopsis containing particulars of proposed dissertation work after obtaining ethical clearance from the Institutional Ethical Committee **within six months from the date of commencement of the course or before the dates notified by the University**. The synopsis shall be sent only through the Principal of the institution.

Such synopsis will be reviewed and the dissertation topic will be registered by the university. No change in the dissertation topic or guide/coguide shall be made without prior approval of the University. The dissertation should not be just a repetition of a previously

undertaken study but it should try to explore some new aspects. The dissertation should be written under the following headings:

Introduction

- i. Aims and Objectives of the study
- ii. Review of Literature
- iii. Methodology
- iv. Results
- v. Discussion
- vi. Conclusion
- vii. Summary
- viii. References
- ix. Annexures

The written text of dissertation shall be not less than 50 pages and shall not exceed 150 pages excluding references, tables, questionnaires, and other annexures. It should be neatly typed (font size 13-Times New Roman or font size 13-Cambria) in 1.5 line spacing on one side of the paper (A4 size, 8.27" x 11.69") and bound properly. Spiral binding should be avoided. (Refer KUHS Website). The guide, co-guide if any, Head of the Department and the Head of the Institution shall certify the dissertation.

For uniformity, it was suggested that the colour of the hard bind of the dissertation for all branches of MDS course in the purview of KUHS shall be dark brown with letters of gold colour. The title, author, and year of study should also be imprinted or embossed on the spine of the book. **Three hard copies and one properly labeled soft**

copy in a CD (refer KUHS Website) of the dissertation thus prepared shall be submitted to KUHS on the 29th month of commencement of the course / 31st Oct. of the 3rd academic year, whichever falls first. Dissertation should preferably be sent to a minimum of three reviewers / examiners / assessors, of which two shall be from outside the state and one from the affiliated colleges of KUHS. If modifications are to be made as specified, three hard copies and one soft copy of the dissertation after corrections made by the candidate should be submitted within a minimum of 30 days to the University. Consent for acceptance for evaluation of dissertation should be obtained from the reviewer/examiner/assessor before the dissertations are despatched. Proforma for evaluation of dissertation should be sent along with the copies of the dissertation to the reviewers appointed by the university. The proforma should contain all the assessment criteria with the clause – **Accepted/Accepted with modifications/Rejected** and reasons for rejection by the examiner. This proforma should be sent back to the University within two weeks / within the date specified after receipt of dissertation. The dissertation may be declared accepted if more than 50% of the reviewers (2 in the case of 3 reviewers) have accepted it. If modifications are to be made as specified, 3 hard copies and one soft copy of the dissertation after corrections made by the candidate should be submitted within 30 days to the University which may be sent back to the same examiner/s by the University for Acceptance after a fee has been levied from the candidate. If the dissertation has been rejected by more than 50% of the reviewers (2 in the case of 3 reviewers), the dissertation may be reviewed by an Expert Reviewing Committee comprising of not less than two subject experts, Dean (Research) of KUHS and Guide of the candidate provided the Guide

requests for a review, after a fee has been levied from the candidate. If rejected by the Reviewing Committee, the candidate should take up a new topic and undergo all the procedures of submitting the synopsis, fees, IEC clearance, etc as prescribed by the University. The candidate who takes up the new topic can appear only for the subsequent examination.

Approval of dissertation work is an essential precondition for a candidate to appear in the University examination. Hall tickets for the university examination should be issued to the candidate only if the dissertation has been accepted.

A candidate whose dissertation has been accepted by the examiners and approved by the University, but who is declared to have failed at the final examination will be permitted to reappear at the subsequent MDS examination without having to prepare a dissertation.

Guide – The academic qualification and teaching experience required for recognition by the University as a guide for dissertation work is as laid down by the Dental Council of India / KUHS.

Co-guide – A co-guide may be included provided the work requires substantial contribution from the same department or a sister department or from another institution recognized for teaching/training by KUHS/DCI. The co-guide should fulfill the academic qualification and teaching experience required for recognition by the University as a co-guide for dissertation work.

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.

2.15 Speciality training if any

Present in clause 2.6

2.16 .Project work to be done if any

Present in clause 2.6

2.17. Any other requirements [CME, Paper Publishing etc.]

Present in clause 2.6

2.18. Prescribed/recommended textbooks for each subject

Applied Basic Sciences

SUBJECT	NAME OF AUTHOR	NAME OF BOOK
Anatomy	BD Chaurasia	BD Chaurasia's Human Anatomy
	William, Peter L	Grays Anatomy
	Ash, Major M	Wheeler's Dental Anatomy, Physiology and Occlusion

Oral Anatomy	Sicher, Harry, Du Brull , Llyod	Oral Anatomy
Oral Histology	Bhaskar B.N. Ed	Orbans Oral Histology and Embryology
	Avery, James K	Essentials of Oral Histology and Embryology
Embryology	Sadler	Langmans Medical Embryology
	Inderbeer Singh	Human Embryology
Physiology	Guyton Arthur and John L Hall	Text Book of Medical Physiology
	Ganong, William F	Review of Medical Pysiology
Pharmacology	KD Tripathi	Essentials of Medical Pharmacology
	Hardman, Joel G	Goodman and Gillmans
		pharmacological basis of Therapeutics
Nutrition	Nizel	Nutrition in Preventive Dentistry: Science and Practice
General Pathology	Cotran, Ramzi S and Others	Robbins Pathologic Basis of Disease
	Harsh Mohan	Textbook of Pathology
Oral Pathology	Shaffer, William and Others	Textbook of Oral Pathology
	Neville, Brad W and Others	Oral and Maxillofacial Pathology
Microbiology	Ananthanarayan and Panicker	Textbook of Microbiology
	Lakshman S	Essential Microbiology for Dentistry
Biostatistics	Dr. Symalan	Statistics in Medicine
	Soben Peter	Essentials of Preventive and Community Dentistry
	Sunder Rao and Richard J.	Introduction to Biostatistics and Research Methods

Periodontology

1. Clinical Periodontology,10thEdition
Fermin A.Carranza
Jr. Michael G. Newman
2. Contemporary Periodontics
Genco
3. Decision making in Periodontology,3rd edn
Walter BurnellHall
4. Periodontology color guide
Heasman, Preshaw,Smith
5. Essentials of Periodontics,4th edition
Hoag
6. Outline of Periodontics
J. D. Manson, B. M.Eley
7. Colour atlas of Periodontal Surgery
Jeffrey DJohnson
8. Periodontal Medicine, Surgery and Implants
Louis F Rose, Brian L Mealey,Robert
G Jenco, D Walter Cohen
9. Contemporary Periodontal Instrumentation
DianeSchoen
10. Clinical Guide to Periodontics
Murray Schwartz
11. Periodontics- in the tradition of Gottlieb&
D A Grant, Irving BSterm
12. Orban
Max A Listgarten
13. Clinical Periodontology and Implant Dentistry
JanLindhe
14. Geriatric Dentistry- Ageing and oral health
Ash & Ramfjord
15. Occlusion
Mash & Marcus L Ward

16. Evaluation, Diagnosis and Treatment of occlusal problems	Dawson
17. Implant Prosthodontics Clinical & Laboratory Procedures	Fagan
18. Implant Prosthodontics Surgical & Prosthetic Procedures	Fredrickson
19. Endosteal Dental Implants	McKinney
20. Contemporary Implant Dentistry	CEMisch
21. Change your Smile	Goldstein
22. Successful Restorative Dentistry	Prof. A. D.Wamsley
23. The Periodontal Ligament in Health and Disease	Berkovitz, B. J. Moxham, H.N. Newman
24. History of Dentistry	Hoffman/Asthet
25. Anatomical atlas of TMJ	Ide/Nakazann
26. Text book of occlusion	Moh/ Zarb/CasternRogh
27. Essentials of clinical periodontology and periodontics – ShanthipriyaReddy	
28. Periodontics-medicine surgery and implants	Brean.I.Mealy,Louis.F.Rose
29. Clinical Periodontology-Current concepts	Dr.B.R.R.Varma&R.P.Nayak
30. Text book of Periodontology	Dr.GururajaRao
31. Color Atlas Of Dental Medicine: Periodontology	WolfRateitschak-Pluss, Rateitschak-Hassell
32. Plastic - Esthetic Periodontal and Implant Surgery	Otto Zuhr MarcHurzeler
33. Periodontal Surgery: A Clinical Atlas of Mucogingival Esthetic surgery	NaoshiSato Giovanni Zucchelli

2.19. Reference books

As recommended by the HOD

2.20 Journals

1. Journal of Periodontal Research
2. Journal of Periodontology
3. Journal of Oral Implantology
4. Journal of Clinical Periodontology
5. Periodontology2000
6. I.S.P Journal
7. International journal of oral implantology and clinical research
8. International journal of clinical implant dentistry
9. International Journal of Periodontics and Restorative Dentistry
10. British Dental Journal
11. Journal of American Dental Association
12. Dental Clinics of North America
13. Dental Quintessance
14. Australian Dental Journal
15. Journal of Indian Dental Association

2.21. Log book

▫ **Work Diary / Log Book**

Logbooks serve as a document of the trainee's work. The trainee shall maintain this Logbook of the special procedures/operations observed/assisted/performed by him/her during the training period right from the point of entry and its authenticity shall be assessed weekly by the concerned Post Graduate Teacher / Head of the Department. This shall be made available to the Board of Examiners for their perusal at the time of his / her appearing at the Final examination. The logbook should record clinical cases seen and presented, procedures and tests performed, seminars, journal club and other presentations. Logbook entries must be qualitative and not merely quantitative, focusing on learning points and recent advances in the area and must include short review of recent literature relevant to the entry. A work diary containing all the various treatment done by the candidate in the course of the study should also be maintained. The work diary shall be scrutinized and certified by both the guide/co guide and Head of the Department and presented in the University practical/clinical examination.

3 EXAMINATIONS

3.1. Eligibility to appear for exams

Every candidate to become eligible to appear for the **MDS examination** shall fulfill the following requirements.

Attendance

Every candidate shall have fulfilled the attendance prescribed by the University during **each academic year** of the Postgraduate course. A candidate becomes eligible for writing the University examination only after the completion of 36 months from the date of commencement of the course. The candidates should have completed the training period before the commencement of examination.

Dissertation

Approval of the dissertation is a mandatory requirement for the candidate to appear for the university examinations.

Library Dissertation

Submission of library dissertation as per the regulations of DCI / KUHS is mandatory for a candidate to appear for the university examinations.

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.

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.

The certification of satisfactory progress by the Head of the Department and Head of the Institution shall be based on the checklist given in 5.1 to 5.8.

- **Students should note that in case they do not complete the exercises and work allotted to them within the period prescribed, their course requirements will be considered unfulfilled.**
- **Clinical Records, Work Diaries and Logbooks should be maintained regularly and approved by the guide, duly certified by the Head of the Department.**

3.2. Schedule of Regular/Supplementary exams

The MDS examination shall be held at the end of the third academic year. The university shall conduct two examinations in a year at an interval of four to six months between two examinations. **Not more than two examinations shall be conducted in an academic year.**

3.3. Scheme of examination showing maximum marks and minimum marks

MDS examination will consist of Written (Theory), Viva Voce, and Practical / Clinical examinations.

Written Examination (Theory) :300 Marks

Written examination shall consist of **four question papers**, each of three hours' duration. Each paper shall carry 75 marks. The type of questions in the first three papers will be two long essay questions carrying 20 marks each and five short essay questions each carrying seven marks. **There will be no options in the questions in the first 3 papers. Fourth paper will be a single essay question paper which will carry an option and the candidate is to answer only one of the essays.** Questions on recent advances may be asked in any or all the papers. **The syllabus for the theory papers of the concerned specialty should cover the entire field of the subject. Though the topics assigned to the different papers are generally evaluated under designated papers, a strict division of the subject may not be possible and some overlapping of topics is inevitable. Students should be prepared to answer overlapping topics.** The theory examinations shall be held sufficiently earlier than the practical/clinical examinations so that the answer books can be assessed and evaluated before the start of the practical/clinical examination. The total marks for the theory examination shall be 300.

Practical Examination : 200 Marks

In case of practical examination, it should aim 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 mark for practical/clinical examinations shall be 200.

Viva voce :100 Marks

Viva voce examination shall aim at assessing depth of knowledge, logical reasoning, confidence and oral communication skills. The candidate may be given a topic for the pedagogy in the beginning of the clinical examination and asked to make a presentation on the topic for 8-10 minutes. The total marks shall be 100 of which 80 would be for the viva voce (20 marks/examiner) and 20 marks for the pedagogy.

3.4. Papers in the examination

Paper-I - Applied Anatomy, Physiology, Biochemistry, Pathology and pharmacology

Paper-II- Etiopathogenesis

Paper-III- Clinical Periodontology and Oral Implantology

Paper-IV -Essay

3.5. Details of Theory examination

Distribution of topics for each paper will be as follows:

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

Paper II: Normal Periodontal structure, Etiology & Pathogenesis of Periodontal diseases, epidemiology as related to Periodontics

Paper III: Periodontal diagnosis, therapy & Oral implantology

Paper IV: Essay (with emphasis on recent advances in periodontics)

3.6. MODEL QUESTION PAPERS

MDS Periodontology

PAPER I – Applied Anatomy, Physiology, Biochemistry, Pathology, Microbiology, Pharmacology and Biostatistics

(Answer all questions)

Time: 3 hrs

Maximum marks 75

Long Essays

(2 x 20 =40marks)

1. Describe the anatomy, histology and clinical relevance of cementum. Add a note on pathologies affecting cementum
2. Enumerate blood-clotting factors. Describe the mechanism of blood clotting after periodontal surgery

Short essays

(5x7=35marks)

3. Sterilization and disinfection.
4. Vitamin C
5. HIV infection and periodontal consideration.
- 6 Tetracyclines.
7. Cohort Study.

PAPER II –Etiopathogenesis of Periodontal Diseases

(Answer all questions)

Time: 3hrs

Max marks:75

(2 x 20= 40 marks)

Long essays

1. Discuss genetic factors associated with periodontal disease.
2. Discuss the risk factors for aggressive periodontitis

Short essays

3. Etiological factors and impact of smoking in periodontal disease
4. Microorganisms associated with specific periodontal disease
5. Describe chemotaxins for neutrophils
6. Molecular characterization of gingipain protease genes
7. Segregation analysis of early onset periodontitis

(5x7=35marks)

PAPER III – – Clinical Periodontology and Oral Implantology

(Answer all questions)

Time: 3 hrs

Maximum marks75

Long essays

(2 x 20 = 40marks)

1. Describe principle of sonic and ultra-sonic instruments.
2. Describe the process of Osseo integration and the reasons for its failure.

Short essays

3. Radiosurgery techniques and instruments
4. Matrix metalloproteinases
5. Burnout phenomenon
6. Implant bone interface
7. Guided bone regeneration

(5x7=35)

PAPER IV – Essay on Recent Advances in Periodontics

(Answer only one question)

Time:3 hours

Max marks : 75

Evidence Based Periodontal Therapy

OR

Critically analyze the statement 'guided tissue regeneration with barrier membranes is not a total solution for periodontal reconstitution.'

3.7. Internal assessment component

Not applicable.

3.8. Details of practical/clinical exams

The clinical examination shall be of two days duration

1st day

Case discussion

- Long case-One
- Short case -Two

Periodontal surgery - Periodontal flap surgery on a previously prepared case in one quadrant of the mouth after getting approval from the examiners

2nd day

Post-surgical review and discussion of the case treated on the 1st day
Presentation of pedagogy/dissertation.

All the examiners shall participate in all the aspects of clinical examinations / Viva Voce
Distribution of Marks for Clinical examination (recommended)

a) Long Case discussion	50
b) 2 short cases	50
c) Periodontal surgery	75
d) Post — operative review	25
Total	200

3.9. Number of examiners needed (Internal & External) and their qualifications

There shall be at least four examiners in each branch of study. Out of four, two (50%) should 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 DCI. The external examiners shall ordinarily be invited from another recognized University from outside the state. An external examiner may ordinarily be appointed for the same institute for not more than two years consecutively. Thereafter he may be reappointed after an interval of one year. The same set of examiners shall ordinarily be responsible for the practical and oral part of the examination.

The Head of the Department shall ordinarily be one of the examiners and the chairperson of the Board of Examinations; second internal examiner shall rotate after every two consecutive examinations if there are more than two postgraduate teachers in the department other than the Head of the department. No person who is not an active Postgraduate teacher in that subject can be appointed as Examiner. However in case of retired personnel, a teacher who satisfies the above conditions could be appointed as examiner up to one year after retirement.

For the MDS examination, if there are no two qualified internal examiners in an institute the second internal examiner can be from a neighbouring DCI and KUHS approved / recognized Dental College having PG course in the specific speciality. This examiner should be an active PG teacher in the same speciality with the qualifications and experience recommended for a teacher for postgraduate degree programme. The examination can also be conducted by one qualified internal examiner and three qualified external examiners if there is no qualified second internal examiner.

Reciprocal arrangement of Examiners should be discouraged, in that, the internal examiner in a subject should not accept external examinership of a college from which the external examiner is appointed in his subject in the same academic year.

3.10. Details of viva:

Viva Voce :100 Marks

i. Viva-Voce examination : 80 marks

All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach, expression, interpretation of data and communication skills. It includes all components of course contents. It includes presentation and discussion on dissertation also.

iii. Pedagogy and thesis presentation : 10 +10 = 20 marks

4. INTERNSHIP

Not applicable in PG Courses

5. ANNEXURES

5. Check Lists for Monitoring: Log Book, Seminar Assessment etc.

CHECKLISTS and LOGBOOK

5.1: Checklist 1

Model Checklist for Evaluation of Preclinical Exercises

Name of Student:

Date:

Name of the Faculty-in-charge:

Name of Exercise

Sl. No:	Items for observation during evaluation	Score
1	Quality of Exercise	
2	Ability to answer to questions	
3	Punctuality in submission of exercise	
4	TOTAL SCORE	

Performance	Score
Poor	0
Below Average	1
Average	2
Good	3
Very good	4

Signature of Faculty-in-charge

5.2: Checklist 2

Model Checklist for Evaluation of Journal Review / Seminar Presentation

Name of Student:

Date:

Name of the Faculty/Observer:

Name of Journal / Seminar:

Sl. No:	Items for observation during evaluation	Score
1	Relevance of Topic	
2	Appropriate Cross references	
3	Completeness of Preparation	
4	Ability to respond to questions	
5	Effectiveness of Audio-visual aids used	
6	Time Scheduling	
7	Clarity of Presentation	
8	Overall performance	
9	TOTAL SCORE	

Performance	Score
Poor	0
Below Average	1
Average	2
Good	3
Very good	4

Signature of Faculty/Observer

सर्वे भयन्तु सर्वान्

5.3: Checklist 3

Model Checklist for Evaluation of Clinical Case and Clinical Work

Name of Student:

Date:

Sl. No:	Items for observation during evaluation	Score
1	History	
	Elicitation	
	Completeness	
2	Examination	
	General Examination	
	Extraoral examination	
	Intraoral examination	
3	Provisional Diagnosis	
4	Investigation	
	Complete and Relevant	
	Interpretation	
5	Diagnosis	
	Ability to defend diagnosis	
6	Differential Diagnosis	
	Ability to justify differential diagnosis	
7	Treatment Plan	
	Accuracy	
	Priority order	
8	Management	
9	Overall Observation	
	Chair side manners	
	Rapport with patient	
	Maintenance of Case Record	
	Quality of Clinical Work	
	Presentation of Completed Case	
10	TOTAL SCORE	

Performance	Score
Poor	0
Below Average	1
Average	2
Good	3
Very good	4

Signature of Faculty/Observer

5.4 :Checklist 4

Model Checklist for Evaluation of Library Dissertation Work

Name of Student:

Date:

Name of the Faculty/Guide:

Sl. No:	Items for observation during evaluation	Score
1	Interest shown in selecting topic	
2	Relevance of Topic	
3	Preparation of Proforma	
4	Appropriate review	
5	Appropriate Cross references	
6	Periodic consultation with guide	
7	Completeness of Preparation	
8	Ability to respond to questions	
9	Quality of final output	
9	TOTAL SCORE	

Performance	Score
Poor	0
Below Average	1
Average	2
Good	3
Very good	4

Signature of Faculty/Guide

सर्वे भवन्तु सुखिनः

5.5: Checklist 5

Model Checklist for Evaluation of Dissertation Work

Name of Student:

Date:

Name of the Faculty/Guide/Co-guide:

Sl. No:	Items for observation during evaluation	Score	Performance	Score
1	Interest shown in selecting topic		Poor	0
2	Relevance of Topic		Below Average	1
3	Preparation of Proforma		Average	2
4	Appropriate review		Good	3
5	Appropriate Cross references		Very good	4
6	Periodic consultation with guide/co- guide			
7	Depth of Analysis / Discuss			
8	Ability to respond to questions			
9	Department Presentation of findings			
10	Quality of final output			
	TOTAL SCORE			

सर्वे भयन्तु सर्वान् :

Signature of Faculty/Guide/Co-guide

5.6:CHECKLIST-6

CONTINUOUS EVALUATION OF DISSERTATION WORK BY GUIDE/CO-GUIDE

Name of the Trainee:

Date

Name of the Faculty/Observer:

Sl.No.	Items for observation during presentation	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Periodic consultation with guide / co- guide					
2.	Regular collection of case material					
3.	Depth of Analysis / Discussion					
4.	Department presentation of findings					
5.	Quality of final output					
6.	Others					
	Total score					

Signature of the guide / co-guide

5.7 :CHECKLIST -7

OVER ALL ASSESSMENT SHEET

Name of the College:

Date:

Name of Department:

Check List No	PARTICULARS	Name of trainee		
		First Year	Second Year	Third Year
1	Preclinical Exercises			
2.	Journal Review Presentation			
3.	Seminars			
4	Library dissertation			
5.	Clinicalwork			
6-	Clinicalpresentation			
7.	Teaching skill practice			
8.	Dissertation			
	TOTAL			

Signature of HOD

Signature ofPrincipal

The above overall assessment sheet used along with the logbook should form the basis for certifying satisfactory completion of course of study, in addition to the attendance requirement.

5.8: LOGBOOK

DEPARTMENT OF

MDS Programme

LOG BOOK OF

NAME.....

BIODATA OF THE CANDIDATE

EXPERIENCE BEFORE JOINING P.G. COURSE

DETAILS OF POSTING :

- i. FIRST YEAR
- ii. SECOND YEAR
- iii. THIRD YEAR

DETAILS OF LEAVE AVAILED

PRECLINICAL EXERCISES

LIBRARY DISSERTATION

RESEARCH WORK

PARTICIPATION IN CONFERENCES – CDE PROGRAMMES

DETAILS OF PARTICIPATION IN ACADEMIC PROGRAMME

SEMINARS /SYMPOSIA PRESENTED

JOURNAL CLUBS

TEACHING ASSIGNMENTS – UNDERGRADUATES / PARAMEDICAL.

SPECIAL DUTIES (IF ANY)

INTERNAL ASSESSMENT

DAILY ACTIVITIES RECORD (BLANK PAGES)

ONE PAGE FOR EACH MONTH X 36 PAGES

MISCELLANEOUS

SUMMARY

SYLLABUS

**for Courses affiliated to the
Kerala University of Health Sciences**

Thrissur 680596



Master of Dental Surgery (MDS)

Oral and Maxillofacial Surgery

Course Code: 243

(2016-17 Academic year onwards)

2016

2. COURSE CONTENT

2.1 Title of course:

MDS Oral and Maxillofacial Surgery

2.2 . Objectives of course

1. Goals

The goals of postgraduate training in various specialities are to train the BDS graduate who will:

- Practice respective specialty efficiently and effectively, backed by scientific knowledge and skill.
- Exercise empathy and a caring attitude and maintain high ethical standards.
- Continue to evince keen interest in continuing professional education in the specialty and allied specialties irrespective of whether in teaching or practice.
- Willing to share the knowledge and skills with any learner, junior or a colleague.
- To develop the faculty for critical analysis and evaluation of various concepts and views, to adopt the most rational approach.

2. Objectives

The objective is to train a candidate so as to ensure higher competence in both general and special area of interest and prepare him/her for a career in teaching, research and specialty practice. A candidate must achieve a high degree of clinical proficiency in the subject matter and develop competence in research and its methodology as related to the field concerned.

The above objectives are to be achieved by the time the candidate completes the course. The objectives may be considered as under –

1. Knowledge (Cognitive Domain)
2. Skills (Psychomotor Domain)
3. Human values, ethical practice and communication abilities.

2.1. Knowledge

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

2.2. Skills

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

2.3. Human values, ethical practice and communication abilities

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

2.3 Medium of instruction:

The medium of instruction for the course shall be English.

2.4 Course outline

This branch deals with the diagnosis and surgical and adjunctive treatment of diseases, injuries and defects of the human facial skeleton and associated oral and facial structures.

2.5 Duration

The course shall be of **three 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 KUHS, observing the norms put forward by the DCI.

- i. There will be no reduction for the course duration for any of the students including service candidates, diploma holders and those who have done senior house surgeoncy or equivalent research experience.
- ii. No student shall be permitted to complete the course by attending more than 6 continuous years.
- iii. A candidate selected for admission in a Dental College is obliged to follow the curriculum, rules and regulations as approved by the Dental Council of India and the University. Curriculum, rules or regulations are subject to changes from time to time.

2.6 Subjects

The syllabus for the theory of Oral and Maxillofacial Surgery should cover the entire field of the subject and the following topics may be used as guidelines.

The concept of health care counseling shall be incorporated in all relevant areas.

The program outlines addresses both the knowledge needed in Oral and Maxillofacial Surgery and allied medical specialties in its scope. A minimum of three years of formal training through a graded system of education as specified will equip the trainee with skill and knowledge at its completion to be able to practice basic oral and Maxillofacial surgeon competently and have the ability to intelligently pursue further apprenticeship towards advance Maxillofacial surgery.

The topics are considered as under:-

- Basic sciences
- Oral and Maxillofacial surgery
- Allied specialties

PAPER – I APPLIED BASIC SCIENCES: Applied Anatomy, Physiology, Biochemistry, General and Oral Pathology, Microbiology and Pharmacology

Applied Basic Sciences:

A thorough knowledge both on theory and principles in general and in particular the basic medical subjects as relevant to the practice of maxillofacial surgery. It is desirable to have adequate knowledge in bio-statistics, Epidemiology, research methodology, nutrition and computers.

1. Anatomy

Development of face, paranasal sinuses and associated structures 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 its surrounding soft tissues, cranial nerves tongue, temporal and infratemporal region, orbits and its contents, muscles of face and neck, paranasal sinuses, eyelids and nasal septum teeth gums and palate, salivary glands, pharynx, thyroid and parathyroid glands, larynx, trachea and esophagus, congenital abnormality of orofacial regions, General consideration of the structure and function of the brain and applied anatomy of intra cranial venous sinuses, cavernous sinus and superior sagittal 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, lymphatics, nerves, muscles, tongue tooth and its surrounding structures.

2. 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 grouping, 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; Respiration control of ventilation anoxia, asphyxia, artificial respiration, hypoxia - types and management; CVS - cardiac cycle, shock, heart sounds, blood pressure, hypertension; Endocrinology-metabolism of calcium; endocrinal 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, enteral nutrition, routes of access to GI tract, 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 and treatment of acidosis and alkalosis.

3. Biochemistry

General principles governing the various biological principles of the body, such as osmotic pressure, electrolytes, dissociation, oxidation, reduction etc; general composition of body, intermediary metabolism, carbohydrate, proteins, lipids, enzymes, vitamins, minerals and antimetabolites.

4. General Pathology

Inflammation - Acute and chronic inflammation, repair and regeneration, necrosis and gangrene, 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 manifestation; wound management - Wound healing factors influencing healing; properties of suture materials, 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, Neoplasms – classification of tumors, Carcinogens and Carcinogenesis, grading and staging of tumors, various laboratory investigation.

5. General microbiology

Immunity, Hepatitis B and its prophylaxis, Knowledge of organisms, commonly associated with diseases of oral cavity, culture and sensitivity tests, various staining techniques-Smears and cultures, urine analysis and culture.

6. Oral pathology and microbiology:

Developmental disturbances of oral and para oral structures, regressive changes of teeth, bacterial, viral, mycotic infection of oral cavity, dental caries, diseases of pulp and Periapical tissues, physical and chemical injuries of oral cavity, wide range of pathological lesions of hard and soft tissues of the orofacial regions like the cysts odontogenic infection, benign, malignant neoplasms, salivary gland diseases, maxillary sinus diseases, mucosal diseases, oral aspects of various systemic diseases, role of laboratory investigation in oral surgery.

7. Pharmacology and therapeutics:

Definition of terminology used, pharmacokinetics and pharmacodynamics, dosage and mode of administration of drugs, action and fate in the body, drug addiction, tolerance and hypersensitive reactions, drugs acting on CNS, general and local anesthetics, antibiotics and analgesics, antiseptics, antitubercular, sialogogues, hematinics, anti diabetic, Vitamins A, B-complex, C,D,E and K

PAPER II – Minor Oral Surgery , Diseases and Defects of Orofacial region

Oral and Maxillofacial Surgery – Definition and scope.

1. General principles and surgical technique with special reference to plastic surgery.
 - 1.1. Sterilization and Disinfection.
 - 1.2. Scrub technique
 - 1.3. Incision
 - 1.4. Wound healing
 - 1.5. Suture materials and techniques
 - 1.6. Dressings
2. Diagnosis in Oral and Maxillofacial Surgery.
 - 2.1. History taking
 - 2.2. Clinical examinations
 - 2.3. Radiographic examination
 - 2.4. Clinical laboratory diagnosis
 - 2.5. Biochemical profiles
 - 2.6. Special investigations
 - 2.7. Diagnostic aids – Biopsy, maxillofacial radiology
 - 2.8. Sialography, ultrasound, CT scan and MRI
 - 2.9. Recent advances in diagnostic aids with reference to oral and maxillofacial surgery including digital radiography, scintigraphy and PET scan
3. Local anesthesia
 - 3.1. Properties of local anesthetic drug
 - 3.2. Indications, contraindications
 - 3.3. Components of local anesthetic solution
 - 3.4. Mode of action of the anesthesia
 - 3.5. Complications and their management.
4. General anesthesia
 - 4.1. Properties of common drugs
 - 4.2. Preanaesthetic preparation of the patient and premedication.
 - 4.3. Short anaesthesia in Dental chair.
 - 4.4. Endotracheal anaesthesia

- 4.5. Intravenous anaesthesia.
- 4.6. Complications and their management.
- 4.7. Hypotensive anaesthesia
5. Medical emergencies in oral and maxillofacial surgery.
6. Importance of general conditions of the patient in relation to oral and maxillofacial surgery.
7. Fluid and electrolyte balance
8. Hematology – Blood, Bleeding disorders, coagulation
9. Hemorrhage and shock
10. Medically compromised patients –Management.
11. Recent antibiotics, analgesic and Anti-inflammatory drugs
12. Care of the hospitalized oral and maxillofacial surgery patient.
13. Biomaterials used in Oral and Maxillofacial Surgery.
14. Exodontia and impactions.
15. Acute and chronic infections of the Oral and Maxillofacial region.
 - 15.1. Odontogenic and non-odontogenic infections
 - 15.2. Soft tissue infections
 - 15.3. Facial space infections
 - 15.4. Hard tissue infections
 - 15.5. Osteomyelitis – classification, diagnosis and management specific infections of the oral and maxillofacial region management of infections
 - 15.6. Osteoradionecrosis and Osteonecrosis.
 - 15.7. Recent concepts in management.
- 16 Cysts of the Head and Neck region – Odontogenic and non-odontogenic,
 - a) Etiology
 - b) Pathology
 - c) Clinical examination
 - d) Diagnosis
 - e) Investigations
 - f) Management
 - g) Recent advances
- 17 Tumours of the mouth and jaws
 - a. Benign odontogenic and nonodontogenic tumours.
 - i. Etiology

- ii. Pathology
- iii. Diagnosis and Management
- iv. Ameloblastoma
- v. Etiology and Pathology
- vi. Diagnosis and investigations
- vii. Management
 - 1. En block resections
 - 2. Peripheral osteotomy
 - 3. Hemimandibulectomy
 - 4. Maxillectomy

18 Pre-malignant lesions of the oral cavity

- a. Leukoplakia
- b. Erythroplakia
- c. Submucous fibrosis etc,

19 Malignant tumours of the oral cavity

- a. Carcinomas and sarcomas
- b. Etiology
- c. Pathology
- d. Diagnosis and investigations
- e. Staging of tumours
- f. Different modalities of treatment with special reference to surgical treatment.
 - i. Neck dissection
 - ii. Block dissection
- g. Recent advances in management.

20 Disease of the maxillary sinus

- a. Conditions involving the maxillary sinus
- b. Relationship to dental diseases
- c. Oro-antral fistula and foreign bodies in the maxillary sinus
- d. Cysts of the maxillary sinus
- e. Management of diseases of the maxillary sinus

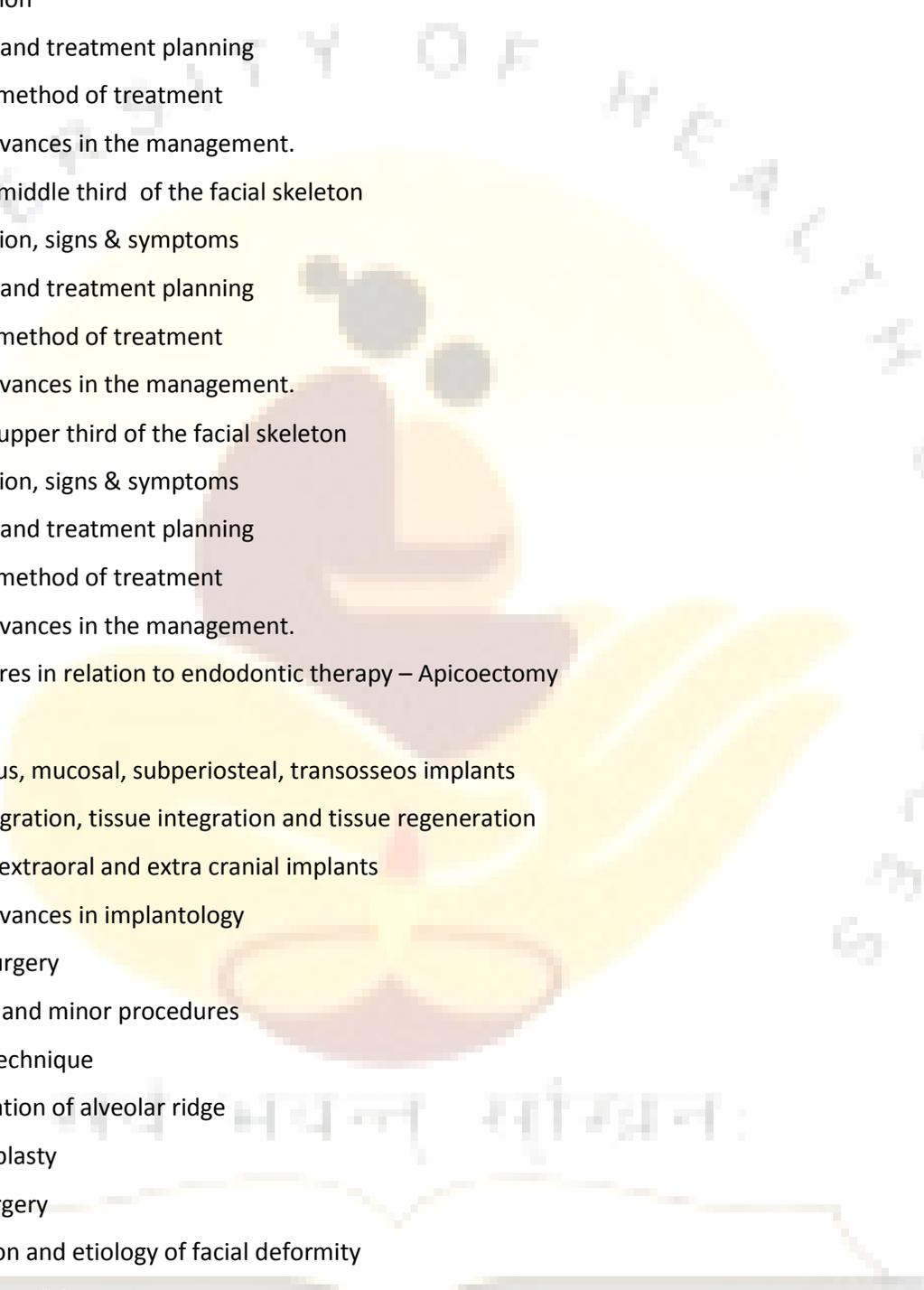
21 Diseases of the Salivary Glands

- a. Surgical anatomy
 - b. Disease of the duct and gland proper
 - c. Sialadenitis
 - d. Sialolithiasis –sialolithotomy
 - e. Treatment planning & management
 - f. Benign and malignant tumours of salivary gland pathology
 - g. Investigation with special references to sialography
 - h. Management.
- 22 Disease of the Temporomandibular joint
- a. Surgical anatomy
 - b. Clinical examination, diagnostic aids
 - c. Inflammatory conditions affecting TMJ
 - d. Developmental disorders / anomalies affecting TMJ.
 - e. Hypermobility and Hypomobility of TMJ
 - f. Tumors affecting TMJ
 - g. Internal derangement affecting TMJ
 - h. Management of disease of the Temporomandibular joint
 - i. Surgery of the temporomandibular joint.
- 23 Neurological disorders of the maxillofacial regions
- a. Orofacial pain – concepts, pain pathways.
 - b. Neuralgias
 - c. Nerve palsies
 - d. Nerve injuries
 - e. Management
- 24 AIDS and Hepatitis in relation to oral and maxillofacial surgery
- 25 Systemic disease in relation to oral and maxillofacial surgery.
- 15.8. Endocrine disorders
- 15.9. Blood Dyscrasias
- 26 Auto immune diseases
- 27 Surgical Pathology**
- a. Wound healing – as related to soft tissues, bone fracture, Dental sockets, grafts etc.

- b. Infections – Gross infections, specific infection of the jaws and mouth. Fungal infections of interest to oral surgeons.
- c. Actinomycosis, Granulomatous lesions of the oral cavity.
- d. Specific, non specific granulomas, pyogenic, lethal midline granulomas etc., Osteomyelitis developing from dentoalveolar abscess, Odontolysis, teeth fracture.
- e. Immune responses of the body, and its role in disease process, collagen diseases are related to the oral cavity. Recent concepts of immune reactions in transplants and oncology.
- f. Developmental abnormalities, atrophy, hypertrophy, dysplasia hypoplasia and hyperplasias, hamartomas – Osseous, Odontogenic etc. Congenital and hereditary anomalies of jaws, atrophy of jaws, diseases of T.M.Joint.
- g. Cyst and cyst like conditions – their pathogenesis, pathology and sequelae. Odontogenic cyst, follicular cyst, radicular cyst, dermoid cysts, median cysts, nasopalatine cysts, globule maxillary cysts, simple retention cysts, retention cysts of jaw
- h. Pre – malignant conditions of the oral cavity, leukoplakia, erythroplakia of Quayrat, Bowens disease, Lichen planus etc. Grading of tumours – significance and prognosis in relation to therapy.
- i. Neoplasms - Benign & malignant, modern concepts of oncogenesis, Diagnostic criteria and methods for benign neoplasm. General character, classification of pathology of benign tumours of jaws, salivary glands and other tissues of oral cavity.
- j. Tumours of oral cavity including bony tumours, classifications, morphology and etiology of benign and malignant tumours.
- k. Disease of the salivary glands and ducts.
- l. Pathology of the Maxillary Sinus
- m. Neurological disorders of the maxillofacial region

PAPER III – TRAUMATOLOGY AND MAXILLOFACIAL SURGERY

1. Maxillofacial trauma
 - 1.1. General examination
 - 1.2. Primary care and management of the patient
 - 1.3. Treatment planning
 - 1.4. Diagnostic aids – recent advances
2. Fractures of the Mandible

- 
- 2.1. Classification
 - 2.2. Diagnosis and treatment planning
 - 2.3. Different method of treatment
 - 2.4. Recent advances in the management.
 3. Fractures of the middle third of the facial skeleton
 - 3.1. Classification, signs & symptoms
 - 3.2. Diagnosis and treatment planning
 - 3.3. Different method of treatment
 - 3.4. Recent advances in the management.
 4. Fractures of the upper third of the facial skeleton
 - 4.1. Classification, signs & symptoms
 - 4.2. Diagnosis and treatment planning
 - 4.3. Different method of treatment
 - 4.4. Recent advances in the management.
 5. Surgical procedures in relation to endodontic therapy – Apicoectomy
 6. Implantology
 - 6.1. Endosseous, mucosal, subperiosteal, transosseous implants
 - 6.2. Osseointegration, tissue integration and tissue regeneration
 - 6.3. Intraoral, extraoral and extra cranial implants
 - 6.4. Recent advances in implantology
 7. Pre-prosthetic surgery
 - 7.1. Principles and minor procedures
 - 7.2. Grafting technique
 - 7.3. Augmentation of alveolar ridge
 - 7.4. Vestibuloplasty
 8. Orthognathic surgery
 - 8.1. Recognition and etiology of facial deformity
 - 8.2. Assessment of the patient
 - 8.3. Clinical examination
 - 8.4. Diagnostic aids- Cephalometrics
 - 8.5. Treatment planning
 - 8.6. Surgical procedures

- 8.6.1.Mandible
- 8.6.2.Midfacial skeleton
9. Plastic and Reconstructive Surgery – Congenital & Acquired Defects
- 9.1. Surgical correction of Cleft lip & palate
 - 9.2. Correction of post – traumatic deformities
 - 9.3. Major flaps used in reconstruction – skin & mucosal
 - 9.4. Repair of bone defects
 - 9.5. Microvascular Surgery in orofacial reconstruction
10. Facial Aesthetic Surgical procedures
- 10.1. Rhinoplasty
 - 10.2. Liposuction
 - 10.3. Face lifting procedures
 - 10.4. Laser cosmetic procedures
 - 10.5. Neuromodulators
 - 10.6. Dermal Fillers
11. Distraction osteogenesis:
- 11.1. Concepts and techniques, Histiogenesis
12. Tissue engineering and stem cell therapy
13. Endoscopy in maxillofacial surgery
14. Computer assisted surgical planning, virtual osteotomies, 3D planning, virtual splints, 3D printing, Stereolithography.
15. Navigation surgery in maxillofacial region.
16. Basics of molecular biology of common oral lesions and its application in oral and maxillofacial surgery.

PAPER IV – RECENT ADVANCES IN ORAL AND MAXILLOFACIAL SURGERY

A 3 hour essay pertaining to Oral & Maxillofacial surgery, mentioned above with emphasis on recent advances

Essential Skills to be learned by the student during the course of the study

Students shall be on full-time resident job in the department of OMFS and will manage/ help in manage cases of dento- alveolar surgery, trauma, tumors, cysts, facial deformities, oncology, infections and clefts. They are under guidance should also carry out all oral & maxillofacial surgery programme throughout the three academic years, particularly in tutorials, seminars lectures and clinical discussions. Treatment planning and its execution is to be learned under the supervision of a postgraduate Guide.

Requirements for the students are as follows

Key for the chart below

O -Observer

A- Assisting a senior

PA- Performs procedure under the direct supervision of a senior specialist

PI- Performs independently

Procedure	Category	Year	Number
Injection I.M. and I.V.	PI	I,II	50,20
Minor suturing and removal of sutures	PI	I	N,A
Incision & drainage of an abscess	PI	I	10
Surgical extraction	PI	I	15
Impacted teeth	PA, PI	I, II	20,10
Pre prosthetic surgery-	PI		
a) corrective procedures	PI	I	5
b) ridge extension	PA	I,II	3
c) ridge reconstruction	A	II,III	3
OAF closure	PI, PA	I, II	3,3
Maxillary fractures	PA, A	II, III	3, 5
Orbito- zygomatic fractures	PA, A	II, III	3, 5
Cyst enucleation	Pl.PA	I, II	5,5
Mandibular fractures	PI, PA	I,II	10, 10
Periapical surgery	PI, PA	I	5

Infection management	Pl, PA	I, II, III	N. A
Biopsy procedures	PI	I, II, III	N. A
Removal of salivary calculi	PA	II, III	3, 5
Benign tumors	Pl, PA	II, III	3, 3
Mid face fractures	PA, A	II, III	3,5
Implants	Pl, PA	II, III	5, 5
Tracheostomy	PA, A	II, III	2,2
Orthognathic surgery	PA, A	II, III	3
Harvesting bone & cartilage grafts			2, 3
a) Iliaccrest	PA, O		2, 3
b) Rib	A, O	II, III	2, 3
c) Calvarial	A, O		2, 3
d) Fibula	A, O		2, 3
T.M. Joint surgery	PA, A	II, I,	1
Jaw resections	PA, A	III, II	3, 3
Onco surgery	A,0	III, III	3, 3
Micro vascular anastomosis	A,0	III	3, 5
Cleft lip & palate	PA,A	II, III	5, 10
Distraction osteogenesis	A,0	II, III	2, 3
Rhinoplasty	A,0	III	3, 5
Access osteotomies and base of skull surgeries	A,0	III	1, 1

The log book and record books are maintained about all work. Detailed history, investigations, treatment planning, preparation and assisting of all types of maxillofacial surgeries – major and cases – is to be recorded and to be presented in the examination.

SCHEME OF EXAMINATION

MDS Examination

1. Written examination

- i. Number of papers –4
- ii. Duration – 3 hrs each
- iii. Maximum marks per paper –75

- iv. Distribution of marks per paper – the type of questions in these papers will be two long essay questions carrying 20 marks each and five short essay questions each carrying seven marks. There will be no options in the question papers I, II and III.
- v. Title of the papers

Paper I – APPLIED BASIC SCIENCES: Applied Anatomy, Physiology, Biochemistry, General and Oral Pathology, Microbiology and Pharmacology

Paper II – Minor oral surgery, Diseases and Defects of orofacial region

Paper III- Traumatology and maxillofacial surgery.

Paper IV – Essay - All the above topics in Oral and Maxillofacial surgery with emphasis on recent advances.

1. Practical / Clinical examination (Total - 300marks)

- i. Duration – Two days
- ii. Time – 9 am to 4pm

Day I –

- | | |
|---|----------|
| 1. Minor Oral Surgery – impacted mandibular 3 rd molar removal or any other surgical procedure under LA. | 100marks |
| 2. Two Short cases discussion (2 x20marks) | 40marks |
| 3. One long case – discussion | 60marks |

Day II-

- 1. Pedagogy presentation and discussion (10marks)
- 2. Radiographs, instruments – identification and discussion (10marks)

Viva Voce – (100 marks)

Each examiner will have to evaluate the candidates independently, (20 x 4 = 80 marks) and viva voce marks compiled.

a. Total number of hours

As per the instruction given by the DCI.

b. Branches if any with definition

Oral and Maxillofacial Surgery

c. Teaching learning methods

Method of Training

The training of a postgraduate student 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, case demonstrations, clinics, journal review meetings, and clinical meetings. Every candidate shall be required to participate in the teaching and training programme of undergraduate students and interns. Training should include involvement in laboratory and experimental work, and research studies. Every Institution undertaking Post Graduate training programme shall set up an Academic cell or a Curriculum Committee, under the chairmanship of a Senior faculty member, which shall work out the details of the training programme in each speciality in consultation with other Department faculty staff and also coordinate and monitor the implementation of these training Programmes.

Based on the above guidelines for a structured training programme for postgraduate courses, the basic tenets of a successful postgraduate teaching programme, are detailed under the following heads.

- **Formal Lectures** by the faculty on varied subjects including general areas and systems. Both senior and junior faculty can do this. However, the number of these classes should be maintained at low levels to encourage self-learning.
- **Symposia / Seminars** form an integral part of PG learning. A monthly symposium will generate approximate 30-35 symposia / course. These symposia can include department faculty and HODs as chairpersons and maximum involvement of both students and faculty should be ensured.
- **Clinical Discussions** form the core of PG training and can be assigned to various clinical units on rotating basis. However other faculty could also actively participate in the discussion. The discussions must be 3-4/week. One suggestion is to score the performance of the candidate by a small panel of faculty and convey the scores to the candidate / PG at the end of the session.
- **Journal Club /Clinical Club** should be conducted at least once in a week in each postgraduate department. Journal clubs not only imparts new information but also trains the candidate to objectively assess and criticize various articles which come out and should be useful in ensuring evidence based dentistry.
- **Guest Lectures** can be integrated into the PG program at least once in a month. Even the retired faculty can be invited for delivering the lectures and will ensure importing of greater wisdom to the candidates.
- **Orientation Classes** for newcomers should also be incorporated. These classes can even be assigned to junior faculty/senior PGs.

- **Clinical posting.** Each PG student should work in the clinics on regular basis to acquire adequate professional skills and competency in managing various cases to be treated by a specialist.
- **Clinico Pathological Conferences** should be held once a year involving the faculties of Oral Medicine and Radiology, Oral Pathology and concerned clinical department. The student should be encouraged to present the clinical details, radiological and histo- pathological interpretations and participation in the discussions.
- **Rotation postings in other departments** should be worked out by each department in order to bring in more integration between the speciality and allied fields.
- **Periodical Quiz** can be both informative and entertaining and should be encouraged and planned.
- **Computer Training and Internet Applications** are now becoming a must for both faculty and students. These areas should be strengthened as a next step. There can be a sort of internet information club in the departments.
- **Conferences/CDEs** – All postgraduate students should be encouraged to attend conferences and CDEs. They should also be asked to present papers wherever appropriate and should be rewarded by assigning scores for them.
- **Publication of scientific papers** – It is desirable and advisable to have at least two publications in the State/National/International indexed dental journals.
- **Involvement in Teaching Activity** – PG students can be assigned the job of teaching the undergraduate students and these will definitely improve the teaching skills in the postgraduate students.

Examinations

Evaluation is a continuous process, which is based upon criteria developed by the concerned authorities with certain objectives to assess the performance of the learner. This also indirectly helps in the measurement of effectiveness and quality of the concerned MDS programme. Evaluation is achieved by two processes

- 1) Formative or internal assessment
- 2) Summative or university examinations.

Formative evaluation is done through a series of tests and examinations conducted periodically by the institution. Summative evaluation is done by the university through examination conducted at the end of the specified course.

A candidate registered for MDS course must clear the final examination within six years of the date of admission. The examinations should be so organized that this shall be used as the mechanism to confirm that the candidate has acquired appropriate knowledge, skill and competence at the end of the training that he/she can act as a specialist and/or a medical teacher as per expectation. University examination will be held regularly by KUHS in April-May/October-November every year.

A candidate who wishes to study for MDS in a second specialty should have to take the full course of 3 years in that specialty and appear for examinations.

2.10 Content of each subject in each year

Present in clause 2.6

2.11 No: of hours per subject

Present in clause 2.6

2.12 Practical training

Present in clause 2.6

2.13 Records

Present in clause 2.20

2.14 Dissertation: As per Dissertation Regulations of KUHS

Every candidate pursuing MDS degree course is required to carry out work on a selected research project under the guidance of a recognized postgraduate 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, and comparison of results and drawing conclusions.

Every candidate shall submit to the University in the prescribed format a synopsis containing particulars of proposed dissertation work after obtaining ethical clearance from the Institutional Ethical Committee **within six months from the date of commencement of the course or before the dates notified by the University**. The synopsis shall be sent only through the Principal of the institution.

Such synopsis will be reviewed and the dissertation topic will be registered by the university. No change in the dissertation topic or guide/coguide shall be made without prior approval of the University. The dissertation should not be just a repetition of a previously undertaken study but it should try to explore some new aspects. The dissertation should be written under the following headings:

- i. Introduction
- ii. Aims and Objectives of the study
- iii. Review of Literature
- iv. Methodology
- v. Results
- vi. Discussion
- vii. Conclusion
- viii. Summary
- ix. References
- x. Annexures

The written text of dissertation shall be not less than 50 pages and shall not exceed 150 pages excluding references, tables, questionnaires, and other annexures. It should be neatly typed (font size 13-Times New Roman or font size 13-Cambria) in 1.5 line spacing on one side of the paper (A4 size, 8.27" x 11.69") and bound properly. Spiral binding should be avoided. (Refer KUHS website). The guide, co-guide if any, Head of the Department and the Head of the Institution shall certify the dissertation.

For uniformity, it was suggested that the colour of the hard bind of the dissertation for all branches of MDS course in the purview of KUHS shall be dark brown with letters of gold colour. The title, author, and year of study should also be imprinted or embossed on the spine of the book. **Three hard copies and one properly labeled soft copy in a CD (refer KUHS website) of the dissertation thus prepared shall be submitted to KUHS on the 29th month of commencement of the course / 31st Oct. of the 3rd academic year, whichever falls first.** Dissertation should preferably be sent to a minimum of three reviewers / examiners / assessors, of which two shall be from out side the state and one from the affiliated colleges o KUHS. If modifications are to be made as specified, three hard copies and one soft copy of the dissertation after corrections made by the candidate should be submitted with in a minimum of 30 days to the University. Consent for acceptance for evaluation of dissertation should be obtained from the reviewer/examiner/assessor before the dissertation are despatched. Proforma for evaluation of dissertation should be sent along with the copies of the dissertation to the reviewers appointed by the university. The proforma should contain all the assessment criteria with the clause – **Accepted/Accepted with modifications/Rejected** and reasons for rejection by the examiner. This proforma should be sent back to the University within two weeks / within the date specified after receipt of dissertation. The dissertation may be declared accepted if more than 50% of the reviewers (2 in the case of 3 reviewers) have accepted it. If modifications are to be made as specified, 3 hard copies and one soft copy of the dissertation after corrections made by the candidate should be submitted within 30 days to the University which may be sent back to the same examiner/s by the University for Acceptance after a fee has been levied from the candidate. If the dissertation has been rejected by more than 50% of the reviewers (2 in the case of 3 reviewers), the dissertation may be reviewed by an Expert Reviewing Committee comprising of not less than two subject experts, Dean (Research) of KUHS and Guide of the candidate provided the Guide requests for a review, after a fee has been levied from the candidate. If rejected by the Reviewing Committee, the candidate should take up a new topic and undergo all the procedures of submitting the synopsis, fees, IEC clearance, etc as prescribed by the University. The candidate who takes up the new topic can appear only for the subsequent examination.

Approval of dissertation work is an essential precondition for a candidate to appear in the University examination. Hall tickets for the university examination should be issued to the candidate only if the dissertation has been accepted.

A candidate whose dissertation has been accepted by the examiners and approved by the University, but who is declared to have failed at the final examination will be

permitted to reappear at the subsequent MDS examination without having to prepare a dissertation.

Guide – The academic qualification and teaching experience required for recognition by the University as a guide for dissertation work is as laid down by the Dental Council of India / KUHS.

Co-guide – A co-guide may be included provided the work requires substantial contribution from the same department or a sister department or from another institution recognized for teaching/training by KUHS/DCI. The co-guide should fulfill the academic qualification and teaching experience required for recognition by the University as a co-guide for dissertation work.

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.

2.15 Speciality training if any

Present in clause 2.6

2.16 Project work to be done if any

Present in clause 2.6

2.17 Any other requirements [CME, Paper Publishing etc.]

Present in clause 2.6

2.18 Prescribed/recommended textbooks for each subject

Applied Basic Sciences

SUBJECT	NAME OF AUTHOR	NAME OF BOOK
Anatomy	BD Chaurasia	BD Chaurasia's Human Anatomy
	William, Peter L	Grays Anatomy
Oral Anatomy	Ash, Major M	Wheeler's Dental Anatomy, Physiology and Occlusion
	Sicher, Harry, Du Brull, Llyod	Oral Anatomy
Oral Histology	Bhaskar B.N. Ed	Orban's Oral Histology and Embryology
	Avery, James K	Essentials of Oral Histology and

		Embryology
Embryology	Sadler	Langmans Medical Embryology
	Inderbeer Singh	Human Embryology
Physiology	Guyton Arthur and John L Hall	Text Book of Medical Physiology
	Ganong, William F	Review of Medical Pysiology
Pharmacology	KD Tripathi	Essentials of Medical Pharmachology
	Hardman, Joel G	Goodman and Gillmans pharmacological basis of Therapeutics
Nutrition	Nizel	Nutrition in Preventive Dentistry: Science and Practice
General Pathology	Cotran, Ramzi S and Others	Robbins Pathologic Basis of Disease
	Harsh Mohan	Textbook of Pathology
Oral Pathology	Shaffer, William and Others	Textbook of Oral Pathology
	Neville, Brad W and Others	Oral and Maxillofacial Pathology
Microbiology	Ananthanarayan and Panicker	Textbook of Microbiology
	Lakshman S	Essential Microbiology for Dentistry
Biostatistics	Dr. Symalan	Statistics in Medicine
	Soben Peter	Essentials of Preventive and Community Dentistry
	Sunder Rao and Richard J.	Introduction to Biostatistics and Research Methods

Oral and Maxillofacial Surgery

- Maxillofacial injuries L- Rowe &Williams
- Oral &Maxillofacial Trauma Raymond J Fonseca
- Surgery of the Mouth & Jaws JR.Moore
- Oral & Maxillofacial Surgery Vol I & II Daniel M.Laskin
- Oral &Maxillofacial infections Richard G.Topazion
- Dentofacial Deformities (Vol, II & III) Brunce N., Epker, L C.Fish
- Text book of Oral & Maxillofacial Surgery Neelima A.Malik
- Oral & Maxillofacial Surgery Raymond J Fonseca
- Oral Cancers McGregor
- Local Anesthesia Malamed

- Medical Emergencies Malamed
- Plastic Surgery Joseph J. McCarthy
- Surgical Orthodontics Hell, Profitt, Moore
- TMJ Disorders David A. Keith
- A Practical Guide to Hospital Dentistry George Varghese
- A Practical Guide to the Management of Impacted Teeth George Varghese
- Peterson's Principles of Oral & Maxillofacial Surgery Vol I & II Edited by G.E. Ghali
- Oral and Maxillofacial Surgery Vol I and II Peter Ward Booth
- Craniofacial Distraction Osteogenesis Samchukov
- Approaches to the Facial Skeleton Edward Ellis
- Oral Cancer Jatin Shah
- Medical Problems in Dentistry Scully and Cowson
- Anaesthesia R.D. Miller
- Wylie and Churchill Davidson's A Practice of Anaesthesia Healy, Knight, Lina
- Pain Bonca
- Local flaps in Facial Reconstruction Shah L. Baker
- Plastic Surgery (8vol) Joseph McCarthy
- ENT (7vol) Scott and Brown
- Surgical Correction of Facial Deformities Varghese Mani
- Head and Neck Surgery Stell and Maran
- Salivary Gland Disorders Carlson and Ord
- Contemporary Implant Dentistry Carl E. Misch
- Oral and Maxillofacial Surgery Secrets Abubaker
- Sedation- A Guide to Patient management Malamed
- Infection Control & Management of Hazardous Material Miller & CPalnik
- Clinical Review of Oral & Maxillofacial Surgery Bagheni
- Principles of Dental Suturing: A Complete Guide to Surgical Closure -Silverstein
- Craniomaxillofacial Reconstruction & Corrective Bone Surgery- Greenberg and Prin

- Bell's Orofacial Pain Oksan,Bell
- Osseointegration in Dentistry:An Overview Worthington,Lang
- Surgical Correction of Dentofacial Deformities-New Concepts William Bell
- Grab and Smith's Plastic Surgery William C.Grab
- Endoscopic Facial Plastic Surgery Gregory S.Keller
- Facial Paralysis: Rehabilitation

2.19 Reference books

As suggested by HOD

2.20 Journals

- 1 Journal of Oral & Maxillofacial Surgery
- 2 Journal of Craniofacial Surgery
- 3 British Journal of Oral & Maxillofacial Surgery
- 4 American Journal of Oral & Maxillofacial Surgery
- 5 Journal of Dental Research
- 6 Journal of American Dental Association.
- 7 Journal of Indian Dental Association.
- 8 Journal foams
- 9 Oral and Maxillofacial Surgery Clinics of North America
- 10 Journal of Dentistry
- 11 International DentalJournal
- 12 Dental Clinics of NorthAmerica
- 13 Triple 'O' (Jr. of Oral Path..., Oral medicine , Oral Surgery and Endodontics)
- 14 Quintessence International.

2.21 Logbook

▫ Work Diary / Log Book

Logbooks serve as a document of the trainee's work. The trainee shall maintain this Logbook of the special procedures/operations observed/assisted/performed by him/her during the training

period right from the point of entry and its authenticity shall be assessed weekly by the concerned Post Graduate Teacher / Head of the Department. This shall be made available to the Board of Examiners for their perusal at the time of his / her appearing at the Final examination. The logbook should record clinical cases seen and presented, procedures and tests performed, seminars, journal club and other presentations. Logbook entries must be qualitative and not merely quantitative, focusing on learning points and recent advances in the area and must include short review of recent literature relevant to the entry. A work diary containing all the various treatment done by the candidate in the course of the study should also be maintained. The work diary shall be scrutinized and certified by both the guide/co guide and Head of the Department and presented in the University practical/clinical examination

28 EXAMINATIONS

3.1 Eligibility to appear for exams

Every candidate to become eligible to appear for the **MDS examination** shall fulfill the following requirements.

Attendance

Every candidate shall have fulfilled the attendance prescribed by the University during **each academic year** of the Postgraduate course. A candidate becomes eligible for writing the University examination only after the completion of 36 months from the date of commencement of the course. The candidates should have completed the training period before the commencement of examination.

Dissertation

Approval of the dissertation is mandatory requirement for the candidate to appear for the university examinations.

Library Dissertation

Submission of the library dissertation as per the regulations of DCI / KUHS is mandatory for a candidate to appear for the university examination.

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.

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.

The certification of satisfactory progress by the Head of the Department and Head of the Institution shall be based on the checklist given in 5.1 to 5.8.

- Students should note that in case they do not complete the exercises and work allotted to them within the period prescribed, their course requirements will be considered unfulfilled.
- Clinical Records, Work Diaries and Logbooks should be maintained regularly and approved by the guide, duly certified by the Head of the Department.

3.2 Schedule of Regular/Supplementary exams

The MDS examination shall be held at the end of the third academic year. The university shall conduct two examinations in a year at an interval of four to six months between two examinations. **Not more than two examinations shall be conducted in an academic year.**

3.3 Scheme of examination showing maximum marks and minimum marks

- MDS examination will consist of Written (Theory), Viva Voce, and Practical / Clinical examinations

Written Examination (Theory) : 300 Marks

Written examination shall consist of **four question papers**, each of three hours duration. Each paper shall carry 75 marks. The type of questions in the first three papers will be two long essay questions carrying 20 marks each and five short essay questions each carrying seven marks. **There will be no options in the questions in the first 3 papers. Fourth paper will be a single essay question paper which will carry an option and the candidate is to answer only one of the essays.** Questions on recent advances may be asked in any or all the papers. **The syllabus for the theory papers of the concerned specialty should cover the entire field of the subject. Though the topics assigned to the different papers are generally evaluated under designated papers, a strict division of the subject may not be possible and some overlapping of topics is inevitable. Students should be prepared to answer overlapping topics.** The theory examinations shall be held sufficiently earlier than the practical/clinical examinations so that the answer books can be assessed and evaluated before the start of the practical/clinical examination. The total marks for the theory examination shall be 300.

Practical Examination: 200 Marks

In case of practical examination, it should aim 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 actual format of clinical examinations in various specialities is given in Section III. The total mark for practical/clinical examinations shall be 200.

Viva voce : 100 Marks

Viva voce examination shall aim at assessing depth of knowledge, logical reasoning, confidence and oral communication skills. The candidate may be given a topic for the pedagogy in the beginning of the clinical examination and asked to make a presentation on the topic for 8-10 minutes. The total marks shall be 100 of which 80 would be for the viva voce (20 marks/examiner) and 20 marks for the pedagogy.

3.4 Papers in each year

Paper-I - Applied Anatomy, Physiology and Pathology
Paper-II - Minor oral Surgery and Trauma
Paper-III -Maxillofacial Surgery and Oral Implantology
Paper-IV - Essay

3.5 Details of theory exams

Distribution of topics for each paper will be as follows :

Paper I : Applied Basic Sciences: Applied Anatomy, Physiology, Biochemistry, General and Oral Pathology and Microbiology and Pharmacology

Paper II : Minor Oral Surgery and Trauma

Paper III: Maxillofacial Surgery

Paper IV: Essay

3.6 Model Question Papers

MDS Branch IV – Oral and Maxillofacial Surgery

Paper- 1: Applied Anatomy, Physiology, Biochemistry, General and Oral Pathology, Microbiology and Pharmacology

Time 3 Hours

Max. Marks75

Note: 1) Your answer should be specific to the questions

2) Draw net labeled diagrams whenever necessary

3) Answer all questions

Long essays

[2X20 = 40MARKS]

1. Discuss the lymphatic drainage of head and neck and its role in the spread of oral malignancies.

2. How does the hemostasis occur? Describe the various measures to control intra-operative and post-operative bleeding.

Short essays

[5X7=35MARKS]

3. Principles of antibiotic therapy
4. Type I hypersensitivity reaction
5. Keratocystic odontogenic tumor
6. Cone Beam CT scan
7. Sialography

Paper- II – Minor Oral Surgery , Diseases and Defects of Oro facial region

Time 3 Hours

Max. Marks 75

- Note:
- 1) Your answer should be specific to the questions
 - 2) Draw neat labeled diagrams wherever necessary
 - 3) Answer all questions

Long essays

[2X20 = 40marks]

1. Classify odontogenic tumors. Discuss the options for the surgical management of ameloblastoma of maxilla.
2. Classify condylar fractures of mandible. Discuss the management of displaced condylar fractures.

Short essays

[5X7 = 35marks]

3. Caldwell - Luc operation
4. Retrobulbar hemorrhage
5. Oroantral fistula
6. Diplopia
7. Frey's syndrome

Paper- III - TRAUMATOLOGY AND MAXILLOFACIAL SURGERY

Time 3 Hours

Max. Marks 75

- Note:
- 1) Your answer should be specific to the questions
 - 2) Draw neat labeled diagrams wherever necessary

3) Answer all questions

Long essays

[2X 20 = 40marks]

1. How will you manage a case of bilateral TMJ ankylosis in an 8 year old boy? Discuss in detail the associated complications.
2. Discuss the pre-surgical evaluation and management of mandibular prognathism

Short essays

[5x 7=35marks]

3. Alveolar bone grafting
4. Cryosurgery
5. Arteriovenous malformation
6. Hemifacial microsomia
7. Maxillectomy

Paper- IV – Essay-Recent advances in Maxillofacial Surgery

Time 3 Hours

Max. Marks 75

- Note:
- 1) Your answer should be specific to the questions
 - 2) Draw neat labeled diagrams wherever necessary
 - 3) Answer any ONE question

1. Craniofacial anomalies
2. Distraction osteogenesis

3.7 Internal assessment component

Not applicable.

3.8 Details of practical exams

Practical / Clinical examination (Total - 200marks)

- iii. Duration – Two days
- iv. Time – 9 am to 4 pm

Day I –

1. Minor Oral Surgery – impacted mandibular 3rd molar removal or any other surgical procedure under LA. 100marks

2. Two Short cases discussion (2 x 20 marks) 40 marks
3. One long case–discussion 60 marks

Day II-

4. Pedagogy presentation and discussion 20 marks
5. Radiographs, instruments – identification and discussion

Viva Voce – (100 marks)

All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach, expression, interpretation of data and communication skills. It includes all components of course contents. (20 x 4 = 80 marks)

3.9 Number of examiners needed (Internal & External) and their qualifications

There shall be at least four examiners in each branch of study. Out of four, two (50%) should 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 DCI. The external examiners shall ordinarily be invited from another recognized University from outside the state. An external examiner may ordinarily be appointed for the same institute for not more than two years consecutively. Thereafter he may be reappointed after an interval of one year. The same set of examiners shall ordinarily be responsible for the practical and oral part of the examination.

The Head of the Department shall ordinarily be one of the examiners and the chairperson of the Board of Examinations; second internal examiner shall rotate after every two consecutive examinations if there are more than two postgraduate teachers in the department other than the Head of the department. No person who is not an active Postgraduate teacher in that subject can be appointed as Examiner. However in case of retired personnel, a teacher who satisfies the above conditions could be appointed as examiner up to one year after retirement.

For the MDS examination, if there are no two qualified internal examiners in an institute the second internal examiner can be from a neighbouring DCI and KUHS approved / recognized Dental College having PG course in the specific speciality. This examiner should be an active PG teacher in the same speciality with the qualifications and experience recommended for a teacher for postgraduate degree programme. The examination can also be conducted by one qualified internal examiner and three qualified external examiners if there is no qualified second internal examiner.

Reciprocal arrangement of Examiners should be discouraged, in that, the internal examiner in a subject should not accept external examinership of a college from which the external examiner is appointed in his subject in the same academic year.

3.10 Details of viva

Viva Voce : 100 Marks

- i. Viva-Voce examination : 80 marks

All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach, expression, interpretation of data and communication skills. It includes all components of course contents. It includes presentation and discussion on dissertation also.

ii. Pedagogy and thesis presentation : 10 +10 = 20marks

4. INTERNSHIP

Not applicable for PG Courses

5. ANNEXURES

5. Check Lists for Monitoring: Log Book, Seminar Assessment etc.

CHECKLISTS and LOGBOOK

5.1 Checklist 1

Model Checklist for Evaluation of Preclinical Exercises

Name of Student:

Date:

Name of the Faculty-
in-charge:

Name of Exercise

Sl. No:	Items for observation during evaluation	Score
1	Quality of Exercise	
2	Ability to answer to questions	
3	Punctuality in submission of exercise	
4	TOTAL SCORE	

Performance	Score
Poor	0
Below Average	1
Average	2
Good	3
Very good	4

Signature of Faculty-in-charge

5.2 :Checklist 2

Model Checklist for Evaluation of Journal Review / Seminar Presentation

Name of Student:

Date:

Name of the Faculty/Observer:

Name of Journal / Seminar:

Sl. No:	Items for observation during evaluation	Score
1	Relevance of Topic	
2	Appropriate Cross references	
3	Completeness of Preparation	
4	Ability to respond to questions	
5	Effectiveness of Audio-visual aids used	
6	Time Scheduling	
7	Clarity of Presentation	
8	Overall performance	
9	TOTAL SCORE	

Performance	Score
Poor	0
Below Average	1
Average	2
Good	3
Very good	4

Signature of Faculty/Observer

5.3:Checklist 3

Model Checklist for Evaluation of Clinical Case and Clinical Work

Name of Student:

Date:

Sl. No:	Items for observation during evaluation	Score
1	History	
	Elicitation	
	Completeness	
2	Examination	
	General Examination	
	Extraoral examination Intraoral examination	
3	Provisional Diagnosis	
4	Investigation	
	Complete and Relevant Interpretation	
5	Diagnosis	
	Ability to defend diagnosis	
6	Differential Diagnosis	
	Ability to justify differential diagnosis	
7	Treatment Plan	
	Accuracy	
	Priority order	
8	Management	
9	Overall Observation	
	Chair side manners	
	Rapport with patient	
	Maintenance of Case Record	
	Quality of Clinical Work	
	Presentation of Completed Case	
10	TOTAL SCORE	

Performance	Score
Poor	0
Below Average	1
Average	2
Good	3
Very good	4

Name of the Faculty/Observer:

5.4:Checklist4

Model Checklist for Evaluation of Library Dissertation Work

Name of Student:

Date:

Name of the Faculty/Guide:

Sl. No:	Items for observation during evaluation	Score
1	Interest shown in selecting topic	
2	Relevance of Topic	
3	Preparation of Proforma	
4	Appropriate review	
5	Appropriate Cross references	
6	Periodic consultation with guide	
7	Completeness of Preparation	
8	Ability to respond to questions	
9	Quality of final output	
9	TOTAL SCORE	

Performance	Score
Poor	0
Below Average	1
Average	2
Good	3
Very good	4

Signature of Faculty/Guide

5.5: Checklist5

Model Checklist for Evaluation of Dissertation Work

Name of Student:

Date:

Name of the Faculty/Guide/Co-guide:

Sl. No:	Items for observation during evaluation	Score	Performance	Score
1	Interest shown in selecting topic		Poor	0
2	Relevance of Topic		Below Average	1
3	Preparation of Proforma		Average	2
4	Appropriate review		Good	3
5	Appropriate Cross references		Very good	4
6	Periodic consultation with guide/co- guide			
7	Depth of Analysis / Discuss			
8	Ability to respond to questions			
9	Department Presentation of findings			
10	Quality of final output			
	TOTAL SCORE			

Signature of Faculty/Guide/Co-guide

5.6:CHECKLIST-6

CONTINUOUS EVALUATION OF DISSERTATION WORK BY GUIDE/CO-GUIDE

Name of the Trainee:

Date

Name of the Faculty/Observer:

Sl.No	Items for observation during presentation	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Periodic consultation with guide / co- guide					
2.	Regular collection of case material					
3.	Depth of Analysis / Discussion					
4.	Department presentation of findings					
5.	Quality of final output					
6.	Others					
	Total score					

Signature of the guide / co-guide

5.7:CHECKLIST -7

OVERALL ASSESSMENT SHEET

Name of the College:

Date:

Name of Department:

Check List No	PARTICULARS	Name of trainee		
		First Year	Second Year	Third Year
1	Preclinical Exercises			
2.	Journal Review Presentation			
3.	Seminars			
4	Library dissertation			
5.	Clinical work			
6-	Clinical presentation			
7.	Teaching skill practice			
8.	Dissertation			
	TOTAL			

Signature of HOD

Signature of Principal

The above overall assessment sheet used along with the logbook should form the basis for certifying satisfactory completion of course of study, in addition to the attendance requirement.

Key:

Mean score: Is the sum of all the scores of checklists 1 to 6

5.8;LOGBOOK

DEPARTMENT OF

MDS Programme

LOG BOOK OF

NAME.....

BIODATA OF THE CANDIDATE

EXPERIENCE BEFORE JOINING P.G. COURSE

DETAILS OF POSTING :

- **FIRST YEAR**
- **SECOND YEAR**
- **THIRD YEAR**

DETAILS OF LEAVE AVAILED

PRECLINICAL EXERCISES

LIBRARY DISSERTATION

RESEARCH WORK

PARTICIPATION IN CONFERENCES – CDE PROGRAMMES

DETAILS OF PARTICIPATION IN ACADEMIC PROGRAMME

SEMINARS /SYMPOSIA PRESENTED

JOURNAL CLUBS

TEACHING ASSIGNMENTS – UNDERGRADUATES / PARAMEDICAL.

SPECIAL DUTIES (IF ANY)

INTERNAL ASSESSMENT

DAILY ACTIVITIES RECORD (BLANK PAGES)

ONE PAGE FOR EACH MONTH X 36 PAGES

MISCELLANEOUS

SUMMARY

5.8.1 :LOGBOOK-1

ACADEMIC ACTIVITIES ATTENDED

Name:

Admission Year: College:

Date	Type of activity - Specify Seminar, Journal club, Presentation, UG teaching	Particulars

5.8.3 :LOGBOOK-3

DIAGNOSTIC AND OPERATIVE PROCEDURES PERFORMED

Name Admission

Year: College:

Date	Name	OP No.	Procedure	Category O, A, PA, PI

Key:

O- WASHED UP AND OBSERVED - INITIAL 6 MONTHS OF ADMISSION

A- ASSISTED A MORE SENIOR SURGEON -1 YEAR MDS

PA - PERFORMED PROCEDURE UNDER THE DIRECT SUPERVISION OF A SENIOR SURGEON - II YEAR MDS

PI- PERFORMED INDEPENDENTLY - III YEAR MDS



SYLLABUS

**for Courses affiliated to the
Kerala University of Health Sciences**

Thrissur 680596



Master of Dental Surgery (MDS)

Conservative Dentistry and Endodontics

Course Code: 244

(2016-17 Academic year onwards)

2 COURSE CONTENT

2.1 Title of course:

MDS Conservative Dentistry and Endodontics

2.2 . Objectives of course

1. Goals

The goals of postgraduate training in various specialties are to train the BDS graduate who will:

- Practice respective specialty efficiently and effectively, backed by scientific knowledge and skill.
- Exercise empathy and a caring attitude and maintain high ethical standards.
- Continue to evince keen interest in continuing professional education in the specialty and allied specialties irrespective of whether in teaching or practice.
- Willing to share the knowledge and skills with any learner, junior or a colleague.
- To develop the faculty for critical analysis and evaluation of various concepts and views, to adopt the most rational approach.

2. Objectives

The objective is to train a candidate so as to ensure higher competence in both general and special area of interest and prepare him for a career in teaching, research and specialty practice. A candidate must achieve a high degree of clinical proficiency in the subject matter and develop competence in research and its methodology as related to the field concerned.

The above objectives are to be achieved by the time the candidate completes the course.

The objectives may be considered as under –

1. Knowledge (Cognitive Domain)
2. Skills (Psychomotor Domain)
3. Human values, ethical practice and communication abilities.

2.1. Knowledge

- Demonstrate understanding of basic sciences relevant to the specialty.
- Describe etiology, pathophysiology, principles of diagnosis and management of common problem within the specialty in adults and children.
- Identify social, economic, environmental and emotional determinants in a given case and take them into account for planning treatment.
- Recognize conditions that may be outside the area of specialty/competence and to refer them to an appropriate specialist.
- Update knowledge by self-study and by attending courses, conferences and seminars relevant to specialty.

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

2.2. Skills

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

2.3. Human values, ethical practice and communication abilities

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

2.3 Medium of instruction:

The medium of instruction for the course shall be English.

2.4 Course outline

Conservative Dentistry and Endodontics deals with the etiology, diagnosis, prevention and treatment of the diseases and injuries of the hard dental tissues, pulp of the tooth and associated periapical conditions.

2.5 Duration

The course shall be of **three 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 KUHS, observing the norms put forward by the DCI.

- i. There will be no reduction for the course duration for any of the students including service candidates, diploma holders and those who have done senior house surgery or equivalent research experience.
- ii. No student shall be permitted to complete the course by attending more than 6 continuous years.
- iii. A candidate selected for admission in a Dental College is obliged to follow the curriculum, rules and regulations as approved by the Dental Council of India and the University. Curriculum, rules or regulations are subject to changes from time to time.

2.6 Subjects

Syllabus for MDS – Conservative Dentistry and Endodontics

The syllabus for the theory of Conservative Dentistry and Endodontics should cover the entire field of the subject and the following topics may be used as guidelines.

The concept of health care counseling shall be incorporated in all relevant areas.

Course Contents

Paper I : Applied Anatomy, Physiology, Pathology and Dental materials

1.DENTAL MATERIALS

1.1. Categories of Dental Materials

- 1.1.1. Direct and indirect materials
- 1.1.2. History of restorative materials

1.2. Structure of Matter

- 1.2.1 Primary and secondary bonding
- 1.2.2. Crystalline and non crystalline structure
- 1.2.3. Adhesion and bonding

1.3. Physical Properties

- 1.3.1. Abrasion resistance, viscosity, creep, flow, color
- 1.3.2. Tarnish and corrosion

1.4. Mechanical Properties

- 1.4.1. Stress and strain



- 1.4.2. Elastic deformation
- 1.4.3. Strength – different types
- 1.4.4. Toughness, brittleness, ductility and malleability, hardness

1.5. Solidification and Microstructure of Pure Metals and Alloys

- 1.5.1. Metallic bond
- 1.5.2. Solidification of metals. Grain size
- 1.5.3. Solid solutions
- 1.5.4. Equilibrium phase diagram
- 1.5.5. Coring, homogenization, dendrite formation
- 1.5.6. Eutectic alloys, peritectic alloys, solid state reactions

1.6. Polymer Science

- 1.6.1. Classification, chemistry, physical properties, types, copolymerization

1.7. Biocompatibility

- 1.7.1. Adverse effects of dental materials
- 1.7.2. Measuring biocompatibility
- 1.7.3. Responses to specific materials

1.8. Impression Materials

- 1.8.1. Elastomeric impression materials—composition, chemistry, properties, manipulation
- 1.8.2. Hydrocolloids
- 1.8.3. Alginate, impression compound, impression pastes

1.9. Gypsum products

- 1.9.1. Types, composition, setting reaction, properties

1.10. Inlay Casting Wax

Types, composition, properties, flow, manipulation.

1.11. Casting Investments and Procedures

- 1.11.1. Types, composition, setting expansion
- 1.11.2. Die materials, sprue, casting ring liner, investing and casting procedures, defective casting

1.12. Burs, Abrasives, Dentifrices

- 1.12.1. Principles of cutting, types

1.13. Bonding and Restorative Resins

- 1.13.1. Acid etch technique, bonding agents, pit and fissure sealants
- 1.13.2. Composites. Classification, composition, properties, polymerization,



finishing and polishing

1.13.3. Posterior composites, Indirect composites and composite veneers

1.14. Dental Cements

1.14.1. Classification, composition, properties, uses

1.14.2. Liners and varnishes

1.15. Dental Amalgam

1.15.1. Composition, manufacture, properties, advantages and disadvantages

1.15.2. Steps in placement, mercury hygiene

1.16. Direct Filling Gold

1.16.1. Forms, removal surface impurities, compaction

1.17. Casting Alloys

1.17.1 Classification. Noble and base metal alloys.

1.18. Dental Ceramics

1.18.1. Classification, methods of strengthening, metal ceramics

1.18.2. Newer materials

1.19. Bio ceramic materials

1.19.1. Bioceramic cements

1.19.2. Bioceramic sealers

1.20. Emerging technologies

1.20.1. Nanotechnology

1.20.2. Bone-grafting materials

1.20.3. Stimulus - responsive "SMART" materials

1.20.4. Materials in Regenerative dentistry

1.20.5. Computer driven fabrication systems

2. Applied Anatomy of Head and Neck

2.1 Development of face, paranasal sinuses and the associated structures and their anomalies.

2.2 Cranial and facial bones.

2.3 TMJ anatomy and function

2.4 Arterial and venous drainage of head and neck

2.5 Muscles of face and neck including muscles of mastication and deglutition

2.6 Brief consideration of structures and function of brain.

2.7 Brief consideration of all cranial nerves and autonomic nervous system of head and neck.

2.8 Salivary glands – structure, function and clinical considerations.

2.9 Functional anatomy of mastication, deglutition and speech.

2.10 Detailed anatomy of permanent teeth, general consideration in physiology of permanent dentition, form, function, alignment, contact, occlusion.

2.11 Internal anatomy of permanent teeth and its significance



2.12 Applied histology, histology of skin, oral mucosa, connective tissue, bone cartilage, blood vessels, lymphatics, nerves, muscles, tongue.

3. Development of Teeth

3.1 Enamel-development and composition, physical characteristics, chemical properties, structure, Age changes- clinical structure, clinical considerations.

3.2 Dentin-development, physical and chemical properties, structure type of dentin, innervations, age and functional changes, clinical considerations.

3.3 Pulp-development, histological structures, innervations, functions, regressive changes, clinical considerations.

3.4 Cementum-composition, cementogenesis, structure, function, clinical consideration.

3.5 Periodontal ligament-development, structure, function and clinical consideration.

4. Applied Physiology

4.1 Mastication, deglutition, digestion and assimilation.

4.2 Fluid and electrolyte balance.

4.3 Blood composition, volume, function, blood groups, haemostasis, coagulation, blood transfusion.

4.4 Circulation, heart, pulse, blood pressure, shock.

4.5 Respiration, control, anoxia, hypoxia, asphyxia, artificial respiration.

4.6 Calcium and phosphorous metabolism.

4.7 Physiology of saliva - composition, function, clinical significance.

4.8 Clinical significance of vitamins, diet and nutrition – balanced diet.

4.9 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.

4.10 Biochemical tests and their significance.

4.11 Enzymes, vitamin and minerals, metabolism of inorganic elements, detoxification in the body, anti metabolites, chemistry of blood lymph and urine.

5. Pathology

5.1 Inflammation, repair, degeneration, necrosis and gangrene.

5.2 Circulatory disturbances - ischemia, hyperemia, edema, thrombosis, embolism, infarction, allergy and hypersensitivity reaction.

5.3 Neoplasms - classifications of tumors, characteristics of benign and malignant tumors, spread tumors.

5.4 Blood dyscrasias

5.5 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.

5.6 Cysts and tumours of oral cavity

5.7 Wound and fracture healing.

6. Microbiology

6.1 Microbes of relevance to dentistry - streptococci, staphylococci, lactobacilli, corynebacterium, actinomycetes, Clostridium, neisseria, vibrio, bacteriodes, fusobacteria, spirochetes, mycobacterium, virus and fungi.

6.2 Pathways of pulpal infection, oral flora and microorganisms associated with endodontic



diseases, pathogenesis.

6.3 Host defense, bacterial virulence factors, healing, theory of focal infections.

6.4 Cross infection, infection control, infection control procedure, sterilization and disinfection.

6.5 Immunology - antigen antibody reaction, allergy, hypersensitivity and anaphylaxis, autoimmunity, grafts, viral hepatitis, HIV infections and AIDS

6.6 Identification and isolation of microorganisms from infected root canals. Culture medium and culturing technique Microscopy, Immunological Methods, Molecular biology techniques (PCR, DNA-DNA Hybridisation, Denaturing Gradient Gel Electrophoresis, Terminal-RFLP, DNA Microarrays, Fluorescence In Situ Hybridization)

6.7 Aerobic and anaerobic interpretation and antibiotic sensitivity test.

7. Pharmacology

7.1. General pharmacology

7.1.1.. Definitions - Pharmacokinetics with clinical applications, routes of administration including local drug delivery in endodontics

7.1.2.. Adverse drug reactions and drug interactions

7.2. Detailed pharmacology of

7.2.1.. Analgesics - opioid and nonopioid

7.2.2. Local anesthetics

7.2.3. Haematinics and coagulants, anticoagulants

7.2.4. VitD and calcium preparations

7.2.5. Antidiabetic drugs

7.2.6.. Steroids

7.2.7. Antibiotics

7.2.8. Antihypertensives

7.2.9. Immunosuppressive drugs and their effects on oral tissues

7.2.10. Antiepileptic drugs

7.2.11. Anti histamines

7.2.12. Anti sialagogues

7.2.13. Anti virals

7.3. Brief pharmacology, dental use and adverse effects of

7.3.1. General anesthetics

7.3.2. Antipsychotics

7.3.3. Antidepressants

7.3.4. Anxiolytic drugs

7.3.5. Sedatives

7.3.6. Antiepileptics

7.3.7. Antihypertensives

7.3.8. Antianginal drugs

7.3.9. Diuretics

7.3.10. Hormones

7.3.11. Pre-anesthetic medications

7.4. Drug therapy of

7.4.1. Emergencies

7.4.2. Seizures

7.4.3. Anaphylaxis

7.4.4. Bleeding

7.4.5. Shock



- 7.4.6. Diabetic ketoacidosis
- 7.4.7. Acute Addisonian crisis
- 7.5. Dental Pharmacology
 - 7.5.1. Antiseptics and disinfectants
 - 7.5.2.. Astringents
 - 7.5.3.. Sialogues
 - 7.5.4. Disclosing agents
 - 7.5.5. Antiplaque agents
 - 7.5.6. Dentrifices
 - 7.5.7. Artificial saliva
- 7.6. Fluoride pharmacology
- 7.7. Pharmacology of re - mineralizing agents

7. Biostatistics

- 7.1 Introduction, Basic concepts, Types of data. Compilation and presentation of data.
- 7.2 Health information systems - collection, compilation, presentation of data.
- 7.3 Measures of central tendency, measures of dispersion. Normal distribution.
- 7.4 Methods of sampling.
- 8.5. Estimation and hypothesis testing. Standard error, confidence interval, P value, Type I, II errors. Tests of significance - parametric (z test, t test, paired t test, analysis of variance) and non-parametric tests. (Mann Whitney U test, Kruskal-Wallis test, chi squared test)
- 8.6 Correlation and regression.
- 8.7 Developing a protocol. Epidemiologic (descriptive and analytic) study designs
- 8.8 Determining cause-effect relationship. Odds ratio and relative risk, prognosis.
- 8.9 Bias and confounding.
- 8.10 Sample size calculation and power.
- 8.11 Sensitivity and specificity.

9 Research Methodology

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

Paper II : CONSERVATIVE DENTISTRY & AESTHETIC DENTISTRY

1. Introduction to Operative Dentistry

1.1. Definition, history

2. Dental Anatomy, Histology, Physiology, Occlusion

3. Cariology, Etiology, Prevention and Control

3.1. Definition, hypotheses, classification.

3.2. Plaque. Definition, pathophysiology, clinical characteristics, histopathology

3.3. Caries diagnosis, prevention, treatment, recent advances

3.4. Probiotics

4. Enamel and Dentin Adhesion

4.1. Challenges to dentin bonding

4.2. Hybridlayer

4.3. Dentin bonding agents

5. Tooth preparation

5.1. Terminology

5.2. Stages and steps in cavity preparation

5.3. Factors affecting tooth preparation

6. Instruments and Equipment for Tooth Preparation

6.1. Hand cutting instruments

6.2. Powered cutting equipment

6.3. Rotary cutting instruments – burs and abrasives

6.4. Hazards with cutting instruments

6.5. Alternative methods for tooth preparation

7. Infection Control

7.1. HIV and AIDS

7.2. Viral hepatitis

7.3. Aseptic techniques

7.4. Sterilization



7.5. Dental control unit water systems and hand piece asepsis

7.6. Infection control of impressions

8. Patient Examination, Diagnosis and Treatment Planning

8.1. Patient assessment

9. Initial steps prior to treatment

9.1. Patient and operator position

9.2. Pain control – newer techniques.

9.3. Isolation of operating field

10. Material Considerations in Composite Restorations

10.1. Properties

10.2. General considerations

10.3. Clinical technique

11. Class I to Class VI Composite Restorations

11.1. Tooth preparation, adhesive application, incremental placement and polymerization techniques

11.2. Matrix systems for composites, contact forming instruments, special placement methods, alternative polymerization techniques..

12. Tooth Colored Inlays and Onlays

12.1. preparation, impression, provisional restoration, cementation.

13. Other Conservative Esthetic Procedures

13.1. Aesthetics and golden proportion

13.2. Bleaching

13.3. Veneers and resin bonded splints

13.4. Conservative bridges

14. Advanced Aesthetic dentistry

14.1. Color and Shade selection and matching

14.2. Ultra conservative restorative dentistry

14.3. Clark's preparation for posterior composite restorations

14.4. Finishing and Polishing

14.5. Facial and Dental proportions

14.6. Emergence profiles

14.7. Smile design

14.8. Diastema closure

14.9. Direct and Porcelain veneers

14.10. Esthetic posts and cores

14.11. Perioesthetics

14.12. Orthoesthetics

14.13.Endoesthetics

15.General Considerations for Amalgam restorations

16.Class I to Class VI Amalgam

- 16.1.Indications and contraindications
- 16.2.Advantages and disadvantages
- 16.3.Clinical technique
- 16.4.Restoration procedures

17.Complex Amalgam Restorations

- 17.1. preparation, pin retained restorion

18.Cast Metal Restorations

- 18.1.Indications and Contraindications
- 18.2.Advantages and Disadvantages
- 18.3.Clinical Technique
- 18.4.Impression taking and fabrication
- 18.5.Cementation of the restoration

19.Direct Gold Restoration.

20.Lasers and its applications.

21.Minimal Invasive Dentistry.

22. Management of non carious lesions

23. Hypersensitivity theories, causes & management

24. CAD CAM & CAD CIM in restorative dentistry

25. Dental imaging and its application in restorative dentistry

26. Case documentation

- 26.1 Dental photography

27. Nanoparticles in Restorative dentistry

Paper III : ENDODONTICS

1. Pulp development, structure & function

- 1.1. Pulp & dentin development, structure
- 1.2. Dentin sensitivity and painful pulpitis
- 1.3. Vital pulp therapy

2. Pulpal Reaction to Dental Caries & Dental Procedures

- 2.1. Dental caries and sequelae
- 2.2. Reaction of pulp to local anaesthetics, cavity and crown preparation

2.3. Reaction of pulp to restorative materials

2.4. Periapical pathology

3. Microbiology and Immunology

3.1. Role of bacteria in pulpal and periradicular diseases

3.2. Pathways of pulpal and periapical infections

3.3. Flora of root canal and periradicular space

3.4. Endodontic biofilm

3.5. Identification and isolation of microorganisms from infected root canals. Culture medium and culturing technique, Microscopy, Immunological Methods, Molecular biology techniques.

3.6. Aerobic and anaerobic interpretation and antibiotic sensitivity test

4. Endodontic Diagnosis

4.1. History Taking

4.2. Examination and Testing

4.3. Clinical Classification of Pulpal and Periapical Diseases

4.4. Referred Pain

5. Instruments, Materials and Devices

5.1. Classification of instruments & materials

5.2. Instruments for root canal preparation

5.3. Physical and mechanical properties of hand instruments

5.4. Instruments for sealing the root canal

5.5. Auxiliary instruments & devices

5.6. Endosonics (Ultrasonic)

5.7. Greater taper instruments

5.8. Rotary endodontic system

5.9. Reciprocating endodontic systems

5.10. Endodontics materials - core and sealer materials

5.11. Lasers

5.12. Instruments in Endodontic micro surgery.

5.13. Magnification in endodontics.

5.14. Calcium Silicate based materials

6. Endodontic Emergencies

6.1. Diagnosis and management.

7. Non-odontogenic Facial Pain

8. Cases Selection and Treatment Planning

8.1. Evaluation of patient

8.2. Evaluation of the tooth

8.3. Treatment planning

9. Preparation for Treatment

- 9.1.Preparation of patient
- 9.2.Preparation of operatory
- 9.3.Isolation of tooth
- 9.4. Pain control

10.Endodontic radiography

- 10.1.Intra oral radiography - routine, modified and special views
- 10.2.Digital Imaging
- 10.3.CBCT and Micro CT in endodontics
- 10.4. Ultrasound

11.Armamentarium and Sterilization

12.Tooth Morphology and Access Preparation

- 12.1.Tooth anatomy and its relation
- 12.2. Ideal access, guidelines, principles, special instruments, illumination and magnification
- 12.3.Access preparation for individual tooth, modifications.
- 12.4.Access preparation in calcified pulp chambers, complex restorations and ceramic crowns

13.Cleaning and Shaping the Root Canal System

- 13.1.Working length determination
- 13.2.Instrumentation methods
- 13.3.Instrumentation techniques
- 13.4.Engine driven, power driven, sonic and ultrasonic instruments
- 13.5.Smear layer in endodontics and its importance
- 13.6.Iatrogenic complications during cleaning and shaping canal

14.Root Canal Disinfection

- 14.1. Irrigants, techniques, devices, recent advances
- 14.2.Photodisinfection – principle, protocols
- 14.3. Intra canal medicaments

15.Obturation of the Root Canal System

- 15.1.Objectives of canal obturation
- 15.2.Techniques of obturation using different types of filling materials and sealers
- 15.3.Newer techniques of obturation
- 15.4.Healing of periapical tissue following obturation

16.Endodontic Traumatology

- 16.1.Traumatic injuries
- 16.2.Classification and treatment
- 16.3.Crown fractures - fracture of enamel, fracture involving dentin, fracture involving the pulp, pulp

capping, pulpotomy, apexogenesis, follow up

16.4. Root fractures, diagnosis, types, management, healing of fractured roots, follow up.

16.5 Treatment of fractured root not communicating with oral cavity, pulp obliteration, apexification.

16.6. Treatment of fractured root communicating with the oral cavity.

16.7. Minor fractures of alveolar – process

16.8. Subluxation, avulsion and replantation

16.9. Splinting of teeth

16.10. Prevention of traumatic injuries to teeth.

16.11. Cracks and Fractures of teeth

17. Fracture mechanics

17.1. Cracked and Fractured cusps

17.2. Cracked and split tooth

17.3. Vertical root fracture

18. Root Resorption

18.1. Definition, causes

18.2. External root resorption and management

18.3. Internal root resorption and management

18.4. Systemic causes of root resorption

19. Endodontic – Periodontic Interrelationship

19.1. Effect of pulpal disease on periodontium

19.2. Effect of endodontic treatment on periodontium

19.3. Effect of periodontal disease and its treatment on pulp

20. Endodontic – Orthodontic Interrelationship

20.1. Effect of orthodontic treatment on pulp and root morphology

20.2. Orthodontic extrusion of tooth for endodontic treatment

21. Surgical Endodontics

21.1. Definition, scope and prognosis

21.2. Contraindications and indication

21.3. Pre-surgical work up

21.4. Soft tissue management in endodontic surgery

21.5. Hard tissue management

21.6. Root resection and retro filling procedures

21.7. Post operative complication and management

21.8. Magnification and recent advances in endodontic surgery

22. Bleaching of Vital and Pulpless teeth

- 22.1. Case selection for bleaching and contraindications
- 22.2. Causes of discoloration – extrinsic and intrinsic
- 22.3. Micro abrasion technique
- 22.4. In office bleaching of vital teeth
- 22.5. Bleaching pulpless teeth
- 22.6. Night guard vital bleaching

23. Pediatric & Geriatric Endodontics

24. Endodontic Failure and Treatment

- 24.1. Extent of Endodontic failures
- 24.2. Criteria for evaluating treatment results
- 24.3. Causes of endodontic failures
- 24.4. Retreatment of endodontic failures
- 24.5. The Apexum Procedure.

25. Endodontic implants

- 25.1. Material systems, techniques, types.

26. Pre and Post Endodontic Restorations

- 26.1. Materials, concepts, procedures.
- 26.2. Anatomical, biological and mechanical considerations for post endodontic restorations.
- 26.3. Post and cores- materials, types, fabrication.

27. Regenerative endodontics

- 27.1. Pulp Regeneration
- 27.2. Stem cells, Scaffolds and Growth factors
- 27.3. Revascularization

28. Nanoparticles in Endodontics

- 28.1. characteristics, use in endodontic disinfection- irrigants, medicaments, sealers, obturating materials, biofilm elimination, endodontic posts

29. Endodontic retreatment

- 29.1. rationale, nonsurgical and surgical retreatment
- 29.2. coronal disassembly, removal of obturation materials
- 29.3. separated instrument removal, post removal, locating missed canals
- 29.4. managing procedural errors, perforation repair.

30. Evaluation of endodontic treatments

PAPER IV : ESSAY

A 3 hour essay from the syllabus on Conservative Dentistry and Endodontics with emphasis on recent advances.

PRE-CLINICAL EXERCISES

1. Exercises on Plaster Models

1.1. For Amalgam Restorations

1.1.1. Class II cavity, MO with distal pit and palatal extension on 16.

1.1.2. Class II MOD cavity with distal cusp capping on 36.

1.1.3. Class II distal cavity on 36.

1.1.4. Class II distal cavity, conventional, on 36.

1.2. For Cast Restorations

1.2.1. Class II Box Preparation on 36.

1.2.2. Class II Modified Slice on 36

1.2.3. Class II Modified flare on 36

1.2.4. Onlay preparation with missing buccal cusps on 36

1.3. For Acid – Etch Restorations

1.3.1. Class III typical cavity on 11

1.3.2. Class III with lingual wall missing on 11

1.3.3. Class IV with both line angles missing on 11

2. Exercises On Typodont

2.1. Class II amalgam

2.1.1. Conservative MO on 16

2.1.2. Conservative DO on 46

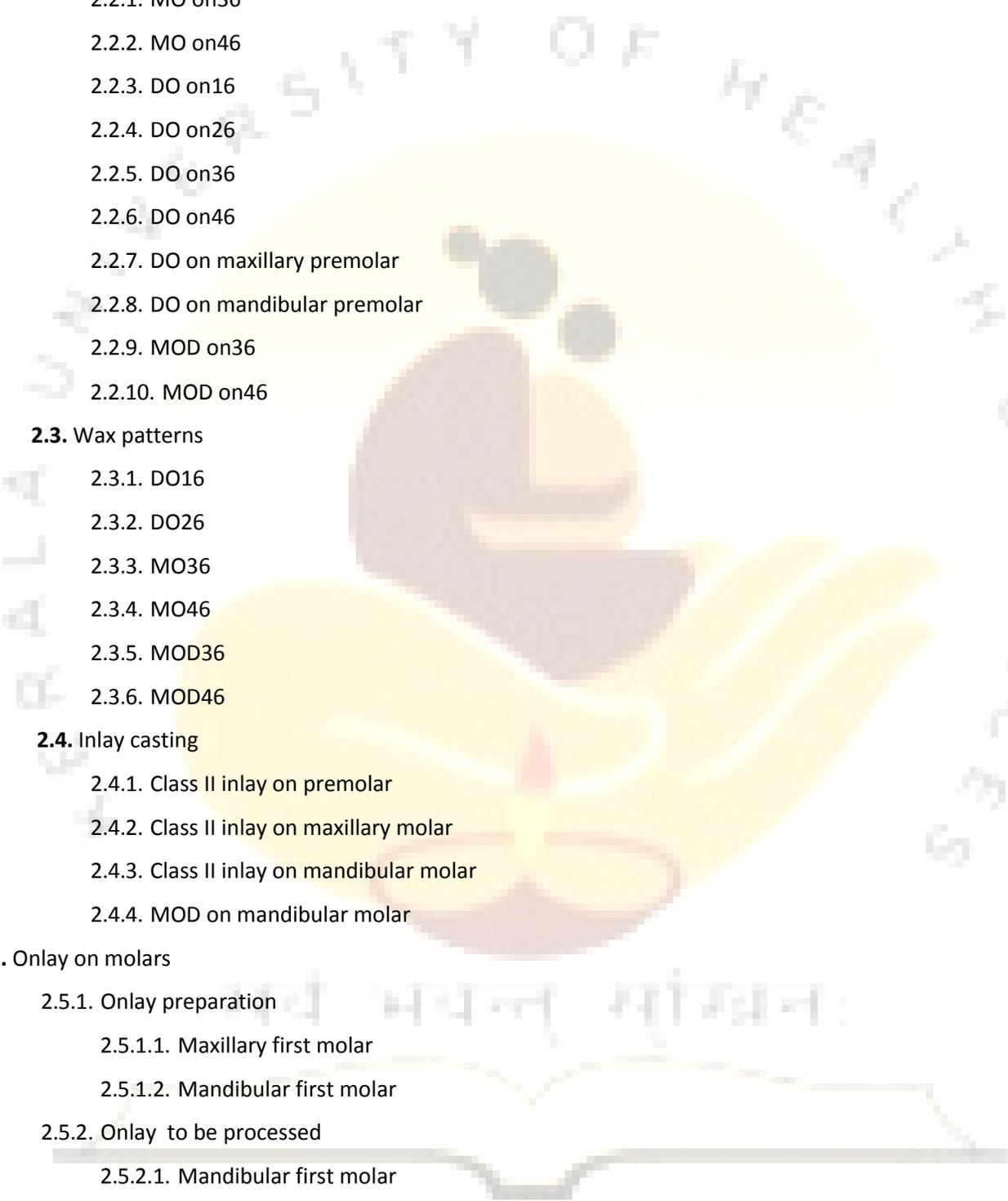
2.1.3. Conservative MOD on 36

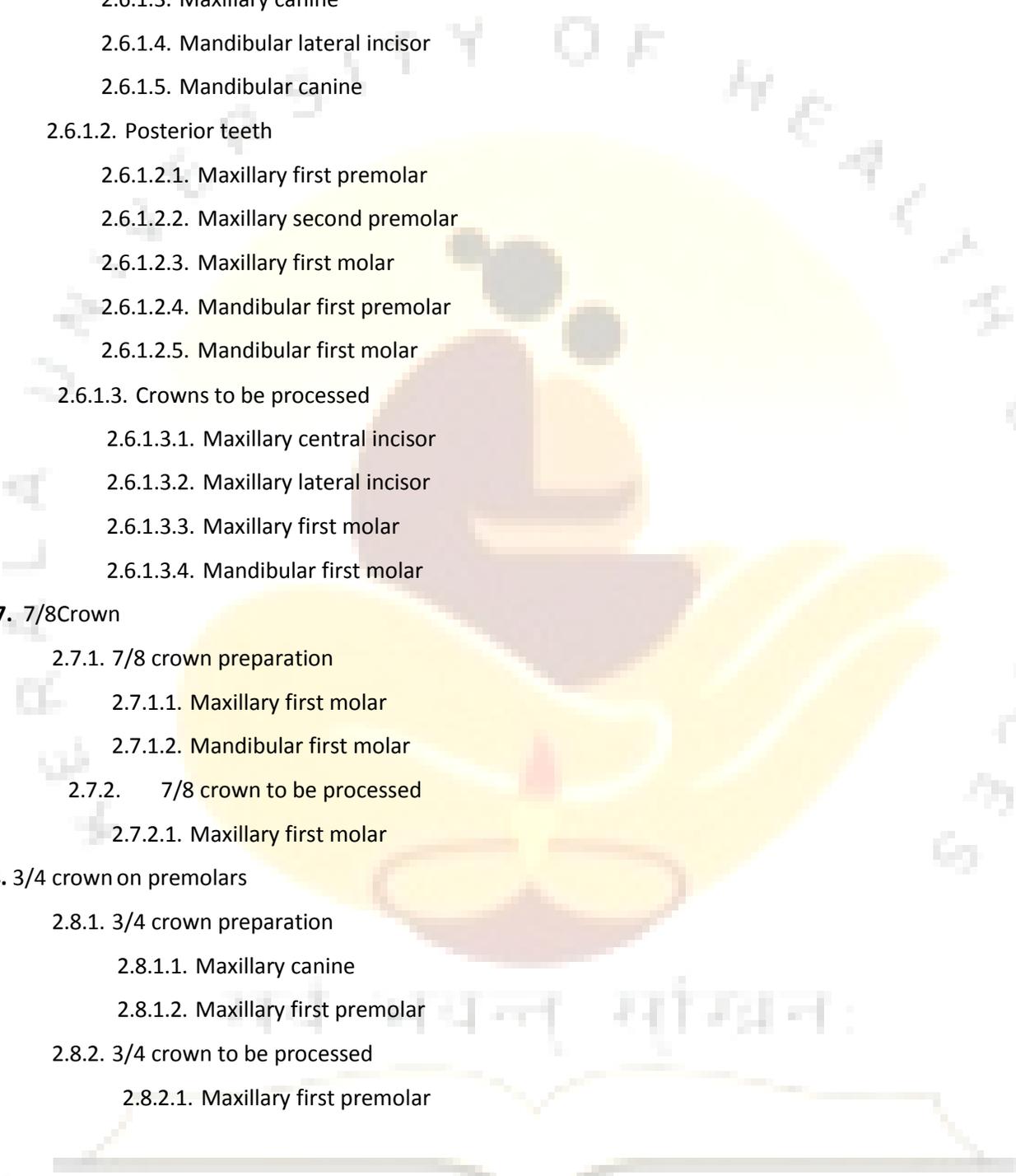
2.1.4. Conventional MO on 26

2.1.5. Conventional DO on 36

2.1.6. Conventional MOD on 46

2.2. Inlay cavity preparations

- 
- 2.2.1. MO on36
- 2.2.2. MO on46
- 2.2.3. DO on16
- 2.2.4. DO on26
- 2.2.5. DO on36
- 2.2.6. DO on46
- 2.2.7. DO on maxillary premolar
- 2.2.8. DO on mandibular premolar
- 2.2.9. MOD on36
- 2.2.10. MOD on46
- 2.3. Wax patterns**
- 2.3.1. DO16
- 2.3.2. DO26
- 2.3.3. MO36
- 2.3.4. MO46
- 2.3.5. MOD36
- 2.3.6. MOD46
- 2.4. Inlay casting**
- 2.4.1. Class II inlay on premolar
- 2.4.2. Class II inlay on maxillary molar
- 2.4.3. Class II inlay on mandibular molar
- 2.4.4. MOD on mandibular molar
- 2.5. Onlay on molars**
- 2.5.1. Onlay preparation
- 2.5.1.1. Maxillary first molar
- 2.5.1.2. Mandibular first molar
- 2.5.2. Onlay to be processed
- 2.5.2.1. Mandibular first molar
- 2.6. Full crowns**
- 2.6.1. Anterior teeth
- 2.6.1.1. Maxillary central incisor
- 2.6.1.2. Maxillary lateral incisor

- 
- 2.6.1.3. Maxillary canine
 - 2.6.1.4. Mandibular lateral incisor
 - 2.6.1.5. Mandibular canine
 - 2.6.1.2. Posterior teeth
 - 2.6.1.2.1. Maxillary first premolar
 - 2.6.1.2.2. Maxillary second premolar
 - 2.6.1.2.3. Maxillary first molar
 - 2.6.1.2.4. Mandibular first premolar
 - 2.6.1.2.5. Mandibular first molar
 - 2.6.1.3. Crowns to be processed
 - 2.6.1.3.1. Maxillary central incisor
 - 2.6.1.3.2. Maxillary lateral incisor
 - 2.6.1.3.3. Maxillary first molar
 - 2.6.1.3.4. Mandibular first molar
- 2.7. 7/8 Crown**
- 2.7.1. 7/8 crown preparation
 - 2.7.1.1. Maxillary first molar
 - 2.7.1.2. Mandibular first molar
 - 2.7.2. 7/8 crown to be processed
 - 2.7.2.1. Maxillary first molar
- 2.8. 3/4 crown on premolars**
- 2.8.1. 3/4 crown preparation
 - 2.8.1.1. Maxillary canine
 - 2.8.1.2. Maxillary first premolar
 - 2.8.2. 3/4 crown to be processed
 - 2.8.2.1. Maxillary first premolar

3. Full tooth wax carving – all permanent teeth

4. Exercises on natural teeth

4.1. Inlay preparation.

- 4.1.1. Maxillary molar – Mesio- Occlusal
- 4.1.2. Maxillary molar – Disto -Occlusal
- 4.1.3. Maxillary molar – Mesio- Occluso- Distal
- 4.1.4. Mandibular Molar – Mesio- Occlusal
- 4.1.5. Mandibular Molar – Disto- Occlusal
- 4.1.6. Mandibular Molar – Mesio- Occluso – Distal
- 4.1.7. Maxillary Premolar – Mesio - Occlusal
- 4.1.8. Mandibular Premolar _Disto-Occlusal
- 4.1.2. Wax Pattern
 - 4.1.2.1. Maxillary molar – Mesio- occlusal
 - 4.1.2.2. Mandibular Molar – Mesio -Occluso –Distal
- 4.1.3. Casting
 - 4.1.3.1. Class II inlay on maxillary molar
 - 4.1.3.2. Class II inlay on mandibular molar

4.2. Amalgam preparation

- 4.2.1. Class II conventional preparation & amalgam restoration on maxillary molar
- 4.2.2. Class II conservative preparation & amalgam restoration on maxillary molar
- 4.2.3. Class II conventional preparation & amalgam restoration on mandibular molar
- 4.2.4. Class II conservative preparation & amalgam restoration on mandibular molar

4.3. Pin retained amalgam restoration

- 4.3.1. Maxillary molar
- 4.3.2. Mandibular molar

4.4. Post and Core

- 4.4.1. Anterior teeth
 - 4.4.1.1. Direct post and core build up (Resin/Fiber Post & aesthetic core)
 - 4.4.1.1.1 Maxillary centrals –(11 & 21)- 2
 - 4.4.1.1.2. Maxillary lateral-1
 - 4.4.1.1.3. Maxillary canine –1
 - 4.4.1.1.4. Mandibular lateral –1

4.4.1.2. Indirect post and core – wax pattern

4.4.1.2.1. Maxillary central

4.4.1.2.2. Maxillary lateral

4.4.1.2.3. Maxillary canine

4.4.1.2.4. Mandibular lateral

4.4.1.2.5. Mandibular canine

4.4.1.3. Posterior teeth – Indirect post & core – wax pattern

4.4.1.3.1. Maxillary first premolar

4.4.1.3.2. Maxillary first molar

4.4.1.3.3. Maxillary second molar

4.4.1.3.4. Mandibular first molar

4.4.1.3.5. Mandibular second molar

4.4.1.4. Casting

4.4.1.4.1. Anterior post and core

4.4.1.4.1. Maxillary central

4.4.1.4.2. Maxillary lateral

4.4.1.4.3. Maxillary canine

4.4.1.4.4. Mandibular canine

4.4.1.5. Posterior post and core

4.4.1.5.1. Maxillary premolar

4.4.1.5.2. Mandibular molar

4.5. Onlay on molars

4.5.1. Onlay preparation

4.5.1.1. Maxillary first molar

4.5.1.2. Mandibular first molar

4.5.1.3. Mandibular second molar

4.5.1.2. Onlay casting

4.5.1.2.1. Onlay prepared on Mandibular first molar

4.6. Crown preparation

4.6.1. Full crown preparation

4.6.1.1. Maxillary central incisor

4.6.1.2. Maxillary lateral incisor

- 4.6.1.3. Maxillary canine
- 4.6.1.4. Maxillary premolar
- 4.6.1.5. Maxillary molar
- 4.6.1.6. Mandibular central incisor
- 4.6.1.7. Mandibular lateral incisor
- 4.6.1.8. Mandibular canine
- 4.6.1.9. Mandibular premolar
- 4.6.1.10. Mandibular molar
- 4.6.2. Full crowns to be processed (Casting)
 - 4.6.2.1. Maxillary central incisor
 - 4.6.2.2. Maxillary lateral incisor
 - 4.6.2.3. Maxillary canine
 - 4.6.2.4. Maxillary molar
 - 4.6.2.5. Mandibular molar

4.7. Veneers on anterior teeth (Indirect method)

- 4.7.1. Full veneer on maxillary central incisor (window design)
- 4.7.2. Full veneer with incisal lapping on maxillary central incisor (incisal lapdesign)

4.8. Composite Inlay

- 4.8.1. Class II composite inlay preparation
 - 4.8.1.1. Class II DO on maxillary first premolar
 - 4.8.1.2. Class II MO on maxillary first molar
 - 4.8.1.3. Class II MO on mandibular first molar
 - 4.8.1.2. Composite inlay to be processed
 - 4.8.1.2.1. Class II MO on mandibular first molar

4.9. Midline diastema closure of maxillary incisors

4.10. Composite restorations

- 4.10.1. Class I
 - 4.10.1.1. Conventional preparation (Box preparation)on maxillary first molar
- 4.10.1.2. Modified preparation on mandibular premolar
 - 4.10.1.3. Extensive modified preparation on maxillary first molar (splint design)
- 4.10.2.1. Class II
 - 4.10.2.1. Conventional preparation on mandibular molar

- 4.10.2.2. Beveled conventional preparation on maxillary molar
- 4.10.2.3. Modified preparation on maxillary premolar
- 4.10.2.4. Extensive modified preparation on mandibular first molar (wraparound design)

4.11. Endocrown preparation on mandibular molar –(1)

4.12. Bridge for missing upper second premolar -(1)

5. Endodontic Preclinical Exercises on Extracted Teeth

5. Sectioning Of Extracted Teeth

5.1 Horizontal Section Showing Pulp Chamber

- 5.1.1 Maxillary Central Incisor
- 5.1.2. Maxillary Canine
- 5.1.3. Maxillary First Premolar
- 5.1.4. Maxillary Second Premolar
- 5.1.5. Maxillary First Molar
- 5.1.6 Mandibular Central Incisor
- 5.1.7. Mandibular Canine
- 5.1.8. Mand First Premolar
- 5.1.9. Mandibular Second premolar.
- 5.1.10. Mandibular First Molar

5.2. Vertical Section Showing Pulp Chamber And Root Canals

- 5.2.1. Maxillary Central Incisor
- 5.2.2. Maxillary Canine
- 5.2.3. Maxillary First Premolar
- 5.2.4. Maxillary Second Premolar
- 5.2.5. Maxillary First Molar
- 5.2.6. Mandibular Central Incisor
- 5.2.7. Mandibular Canine
- 5.2.8. Mandibular First Premolar
- 5.2.9. Mandibular Second Premolar

- 5.2.10. Mandibular First Molar
- 5.3. Access Cavity Preparations (under magnifying loupe)
- 5.3.1. Maxillary Central Incisor
- 5.3.2. Maxillary Canine
- 5.3.3. Maxillary First Premolar
- 5.3.4. Maxillary Second Premolar
- 5.3.5. Maxillary First Molar
- 5.3.6. Mandibular Central Incisor
- 5.3.7. Mandibular Canine
- 5.3.8. Mandibular First Premolar
- 5.3.9. Mandibular Second Premolar
- 5.3.10. Mandibular First Molar
- 5.4. Endodontics Exercises On Extracted Teeth (under magnifying loupe)
- 5.4.1. Stepback preparation and lateral condensation technique on 16 and 36.
- 5.4.2. Preparation using protaper and 4% taper instruments, & lateral condensation.
- 5.4.3. 5.4.3. Crown down preparation and vertical condensation on 11 with thermoplasticized guttapercha.
- 5.4.4. Section obturated teeth and observe under operating microscope.

CLINICAL REQUIREMENTS:

1. *First Year:*

- 1.1. Anterior aesthetic restorations-GIC, Composite - 30cases
- 1.2. Anterior Endodontics- - 30cases
- 1.3. Amalgam fillings - Pin retained and bonded amalgams - 10cases
- 1.4. Management of deep caries lesion-Pulpotomy, Pulp Capping - 20cases
- 1.5. Apexification and Apexogenesis - 5cases

2. *Second Year:*

- 2.1. Cast restorations-inlays and Onlays - 15cases
- 2.2. Direct posterior tooth colored restorations - 20cases
- 2.3. Bleaching-Vital and nonvital - 10 cases each
- 2.4. Post and core restorations-Prefabricated

- [light transmitting and metal] -10 cases each
- 2.5. Core build up and full crown - 15cases
- 2.6. Anterior and posterior endodontics - 50cases
- 2.7. Rotation Posting of 15 days each in
 - 2.7.1.Periodontics
 - 2.7.2.Prostodontics
 - 2.7.3.Oral surgery

3. *Third Year:*

- 3.1. Aesthetic and functional rehabilitation of complex conditions
[such as amelogenesis imperfecta] - 5cases
- 3.2. Complex cases with multi disciplinary approach-
Endo-perio/Endo-ortho/Endo-prostho cases - 10cases
- 3.3. Surgical Endodontics- Apicoectomy -10cases
- 3.4. Post and core fabrication – custom made and cast-anterior -15cases
-posterior -5cases
- 3.5. Veneer -5cases
- 3.6. Retreatment and fractured instrument removal -5cases
- 3.7. Rehabilitation in cases of endodontic traumatology -15cases
- 3.8. Posterior endodontics – difficult cases management -25cases
- 3.9. Revascularization and regenerative endodontic treatment -5cases

Library Dissertation: Should be a comprehensive review of the selected topic which should be finalized and approved by the end of the first six months and the same to be submitted at the end of the first year . It should be approved by the guide and certified by the Head of the Department.

Conferences and Publication of Scientific Papers: During the MDS course the student should attend national conferences and attempts should be made to present at least three scientific papers and publish at least two scientific articles in a journal relevant to the speciality.

Minimum Requirements:

- 1. Seminars - 15
- 2. Journal Clubs -15
- 3. Teaching training programme for under graduate students – lecture and clinical – 10
- 4. Scientific paper publication in a journal related to the speciality – 2articles

5. Scientific paper presentation in conference –State/National/Speciality– 3

6. Should attend at least one workshop in dental materials research

Scheme of Examination

Third Year M.D.S. Examination

1. Written Examination

- i. Number of papers - 4
- ii. Duration - 3 hours each
- iii. Maximum marks per paper - 75
- iv. Distribution of marks per paper- First three papers will be having two long essay questions carrying 20 marks each and five short essay questions each carrying seven marks. There will be no choice in the questions for any of the first three papers. Fourth paper will be a single essay question paper where there will be an option and the candidate should answer only one essay.
- v. Title of the papers
 - a. **Paper I –Applied Anatomy, Physiology, Pathology and Dental materials**
 - b. **Paper II–Conservative dentistry & Aesthetic Dentistry**
 - c. **Paper III –Endodontics**
 - d. **Paper IV – Essay on Recent advances on Conservative Dentistry and Endodontics**

2. Practical/Clinical and Viva Voce Examination

- I. Duration - Two Days
- II. Time - 9 am to 4pm
Clinical examination –Three Exercises - 300marks

The Practical / Clinical examination will include Conservative Dentistry, Endodontics and Dental Materials.

Day 1

Forenoon

- Exercise I – Tooth preparation for cast post and core and inlay wax impression

- Exercise II- Rubber dam placement, access cavity preparation, pulp extirpation, working length determination, biomechanical preparation and master cone radiograph – on molar tooth.
- Evaluation of preclinical exercises, clinical records and other academic activities.

After noon

- Exercise III – Posterior Class II Composite Restoration.

Day II

Forenoon

- Gingival retraction and Impression taking after cementation of post and core.

After noon

- Viva voce (including presentation of dissertation /pedagogy).

Marks 100

MARK DISTRIBUTION OF PRACTICAL EXAMINATION & VIVA- VOCE

Practical /Clinical Examination-

200Marks

1. Evaluation of preclinical exercises, clinical records, other academic activities and overall performance during the course **25marks**

2. Clinical procedures

2.1. Cast Post and Core

50marks

- a. Case presentation and treatment plan 10
- b. Evaluation of post space preparation 10
- c. Coronal preparation 10
- d. Wax pattern 10
- e. Gingival retraction and impression 10

2.2. Molar RCT

75marks

- a. Case presentation and treatment plan 10
- b. Isolation and fluid control 10
- c. Access cavity preparation 20
- d. Working length determination 10
- e. Pulp space preparation 15
- f. Master Cone Selection 10

2.3. Posterior Class II Composite restoration

50marks

- a. Case presentation and treatment planning 10

- b. Isolation and fluid control 10
- c. Tooth preparation 10
- d. Matricing and wedging 10
- e. Restoration 10

Viva Voce - 100Marks

- i. Viva-Voce examination: 80

All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach, expression, interpretation of data and communication skills.

- ii. Dissertation presentation/Pedagogy 20

2.7 Total number of hours

As per the regulations of the DCI.

2.8 Branches if any with definition

Conservative Dentistry and Endodontics

2.9 Teaching learning methods

Method of Training

The training of a postgraduate student shall be full time but 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, case demonstrations, clinics, journal review meetings, and clinical meetings. Every candidate shall be required to participate in the teaching and training programme of undergraduate students and interns. Training should include involvement in laboratory and experimental work, and research studies. Every Institution undertaking Post Graduate training programme shall set up an Academic cell or a Curriculum Committee, under the chairmanship of a Senior faculty member, which shall work out the details of the training programme in each speciality in consultation with other Department faculty staff and also coordinate and monitor the implementation of these training Programmes.

Based on the above guidelines for a structured training programme for postgraduate courses, the basic tenets of a successful postgraduate teaching programme, are detailed under the following heads.

- **Formal Lectures** by the faculty on varied subjects including general areas and systems. Both senior and junior faculty can do this. However, the number of these classes should be maintained of low levels to encourage self-learning.
- **Symposia / Seminars** form an integral part of PG learning. A monthly symposium will generate approximate 30-35 symposia / course. These symposia can include department faculty and HODs as chairpersons and maximum involvement of both students and faculty should be ensured.
- **Clinical Discussions** form the core of PG training and can be assigned to various clinical units on rotating basis. However other faculty could also actively participate in the discussion. The discussions must be 3-4/week. One suggestion is to score the performance of the candidate by a small panel of faculty and convey the scores to the candidate / PG at the end of the session.
- **Journal Club /Clinical Club** should be conducted at least once in a week in each postgraduate department. Journal clubs not only imparts new information but also trains the candidate to objectively assess and criticize various articles which come out and should be useful in ensuring evidence based dentistry.
- **Guest Lectures** can be integrated into the PG program at least once in a month. Even the retired faculty can be invited for delivering the lectures and will ensure importing of greater wisdom to the candidates.
- **Orientation Classes** for newcomers should also be incorporated. These classes can even be assigned to junior faculty/senior PGs.
- **Clinical posting.** Each PG student should work in the clinics on regular basis to acquire adequate professional skills and competency in managing various cases to be treated by a specialist.
- **Clinico Pathological Conferences** should be held once a year involving the faculties of Oral Medicine and Radiology, Oral Pathology and concerned clinical department. The student should be encouraged to present the clinical details, radiological and histo- pathological interpretations and participation in the discussions.
- **Rotation postings in other departments** should be worked out by each department in order to bring in more integration between the speciality and allied fields.
- **Periodical Quiz** can be both informative and entertaining and should be encouraged and planned.
- **Computer Training and Internet Applications** are now becoming a must for both faculty and students. These areas should be strengthened as a next step. There can be a sort of internet information club in the departments.
- **Conferences/CDEs** – All postgraduate students should be encouraged to attend conferences and CDEs. They should also be asked to present papers wherever appropriate and should be rewarded by assigning scores for them.
- **Publication of scientific papers** – It is desirable and advisable to have at least two publications in the State/National/International indexed dental journals.
- **Involvement in Teaching Activity** – PG students can be assigned the job of teaching the undergraduate students and these will definitely improve the teaching skills in the postgraduate students.

Examinations

Evaluation is a continuous process, which is based upon criteria developed by the concerned authorities with certain objectives to assess the performance of the learner. This also indirectly helps in the measurement of effectiveness and quality of the concerned MDS programme. Evaluation is achieved by two processes

- 1) Formative or internal assessment
- 2) Summative or university examinations.

Formative evaluation is done through a series of tests and examinations conducted periodically by the institution. Summative evaluation is done by the university through examination conducted at the end of the specified course.

A candidate registered for MDS course must clear the final examination within six years of the date of admission. The examinations should be so organized that this shall be used as the mechanism to confirm that the candidate has acquired appropriate knowledge, skill and competence at the end of the training that he/she can act as a specialist and/or a medical teacher as per expectation. University examination will be held regularly by KUHS in April-May/October-November every year.

A candidate who wishes to study for MDS in a second specialty should have to take the full course of 3 years in that specialty and appear for examinations.

2.10 Content of each subject in each year

Present in clause 2.6

2.11 No: of hours per subject

Present in clause 2.6

2.12 Practical training

Present in clause 2.6

2.13 Records

Present in clause 2.20

2.14 Dissertation: As per Dissertation Regulations of KUHS

Every candidate pursuing MDS degree course is required to carry out work on a selected research project under the guidance of a recognized postgraduate 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, and comparison of results and drawing conclusions.

Every candidate shall submit to the University in the prescribed format a synopsis containing particulars of proposed dissertation work after obtaining ethical clearance from the Institutional Ethical Committee **within six months from the date of commencement of the course or before the dates notified by the University.** The synopsis shall be sent only through the Principal of the institution.

Such synopsis will be reviewed and the dissertation topic will be registered by the university. No change in the dissertation topic or guide/coguide shall be made without prior approval of the University. The dissertation should not be just a repetition of a previously undertaken study but it should try to explore some new aspects. The dissertation should be written under the following headings:

- i. Introduction
- ii. Aims and Objectives of the study
- iii. Review of Literature
- iv. Methodology
- v. Results
- vi. Discussion
- vii. Conclusion
- viii. Summary
- ix. References
- x. Annexures

The written text of dissertation shall be not less than 50 pages and shall not exceed 150 pages excluding references, tables, questionnaires, and other annexures. It should be neatly typed (font size 13-Times New Roman or font size 13-Cambria) in 1.5 line spacing on one side of the paper (A4 size, 8.27" x 11.69") and bound properly. Spiral binding should be avoided. (Refer KUHS website). The guide, co-guide if any, Head of the Department and the Head of the Institution shall certify the dissertation.

For uniformity, it was suggested that the colour of the hard bind of the dissertation for all branches of MDS course in the purview of KUHS shall be dark brown with letters of gold colour. The title, author, and year of study should also be imprinted or embossed on the spine of the book. **Three hard copies and one properly labeled soft copy in a CD (refer KUHS website) of the dissertation thus prepared shall be submitted to KUHS on the 29th month of commencement of the course / 31st Oct. of the 3rd academic year, whichever falls first.** Dissertation should preferably be sent to a minimum of three reviewers / examiners / assessors, of which two shall be from outside the state and one from the affiliated colleges of KUHS. If modifications are to be made as specified, three hard copies and one soft copy of the dissertation after corrections made by the candidates should be submitted within a minimum of 30 days to the University.

Consent for acceptance for evaluation of dissertation should be obtained from the reviewer/examiner/assessor before the dissertation are despatched. Proforma for evaluation of dissertation should be sent along with the copies of the dissertation to the reviewers appointed by the university. The proforma should contain all the assessment criteria with the clause – **Accepted/Accepted with modifications/Rejected** and reasons for rejection by the examiner. This proforma should be sent back to the University within two weeks / within the date specified after receipt of dissertation. The dissertation may be declared accepted if more than 50% of the reviewers (2 in the case of 3 reviewers) have accepted it. If modifications are to be made as specified, 3 hard copies and one soft copy of the dissertation after corrections made by the candidate should be submitted within 30 days to the University which may be sent back to the same examiner/s by the University for Acceptance after a fee has been levied from the candidate. If the dissertation has been rejected by more than 50% of the reviewers (2 in the case of 3 reviewers), the dissertation may be reviewed by an Expert Reviewing Committee comprising of not less than two subject experts, Dean (Research) of KUHS and Guide of the candidate provided the Guide requests for a review, after a fee has been levied from the candidate. If rejected by the Reviewing Committee, the candidate should take up a new topic and undergo all the procedures of submitting the synopsis, fees, IEC clearance, etc as prescribed by the University. The candidate who takes up the new topic can appear only for the subsequent examination.

Approval of dissertation work is an essential precondition for a candidate to appear in the University examination. Hall tickets for the university examination should be issued to the candidate only if the dissertation has been accepted.

A candidate whose dissertation has been accepted by the examiners and approved by the University, but who is declared to have failed at the final examination will be permitted to reappear at the subsequent MDS examination without having to prepare a dissertation.

Guide – The academic qualification and teaching experience required for recognition by the University as a guide for dissertation work is as laid down by the Dental Council of India / KUHS.

Co-guide – A co-guide may be included provided the work requires substantial contribution from the same department or a sister department or from another institution recognized for teaching/training by KUHS/DCI. The co-guide should fulfill the academic qualification and teaching experience required for recognition by the University as a co-guide for dissertation work.

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.

2.15 Speciality training if any

Present in clause 2.6

2.16 Project work to be done if any

Present in clause 2.6

2.17 Any other requirements [CME, Paper Publishing etc.]

Present in clause 2.6

2.18 Prescribed/recommended textbooks for each subject**Applied Basic Sciences**

SUBJECT	NAME OF AUTHOR	NAME OF BOOK
Anatomy	BD Chaurasia	BD Chaurasia's Human Anatomy
	William, Peter L	Grays Anatomy
Oral Anatomy	Ash, Major M	Wheeler's Dental Anatomy, Physiology and Occlusion
	Sicher, Harry, Du Brull, Llyod	Oral Anatomy
Oral Histology	Bhaskar B.N. Ed	Orban's Oral Histology and Embryology
	Avery, James K	Essentials of Oral Histology and Embryology
Embryology	Sadler	Langman's Medical Embryology
	Inderbeer Singh	Human Embryology
Physiology	Guyton Arthur and John L Hall	Text Book of Medical Physiology
	Ganong, William F	Review of Medical Physiology
Pharmacology	KD Tripathi	Essentials of Medical Pharmacology
	Hardman, Joel G	Goodman and Gilman's pharmacological basis of Therapeutics
Nutrition	Nizel	Nutrition in Preventive Dentistry: Science and Practice
General Pathology	Cotran, Ramzi S and Others	Robbins Pathologic Basis of Disease
	Harsh Mohan	Textbook of Pathology
Oral Pathology	Shaffer, William and Others	Textbook of Oral Pathology
	Neville, Brad W and Others	Oral and Maxillofacial Pathology
Microbiology	Ananthanarayan and Panicker	Textbook of Microbiology
	Lakshman S	Essential Microbiology for Dentistry

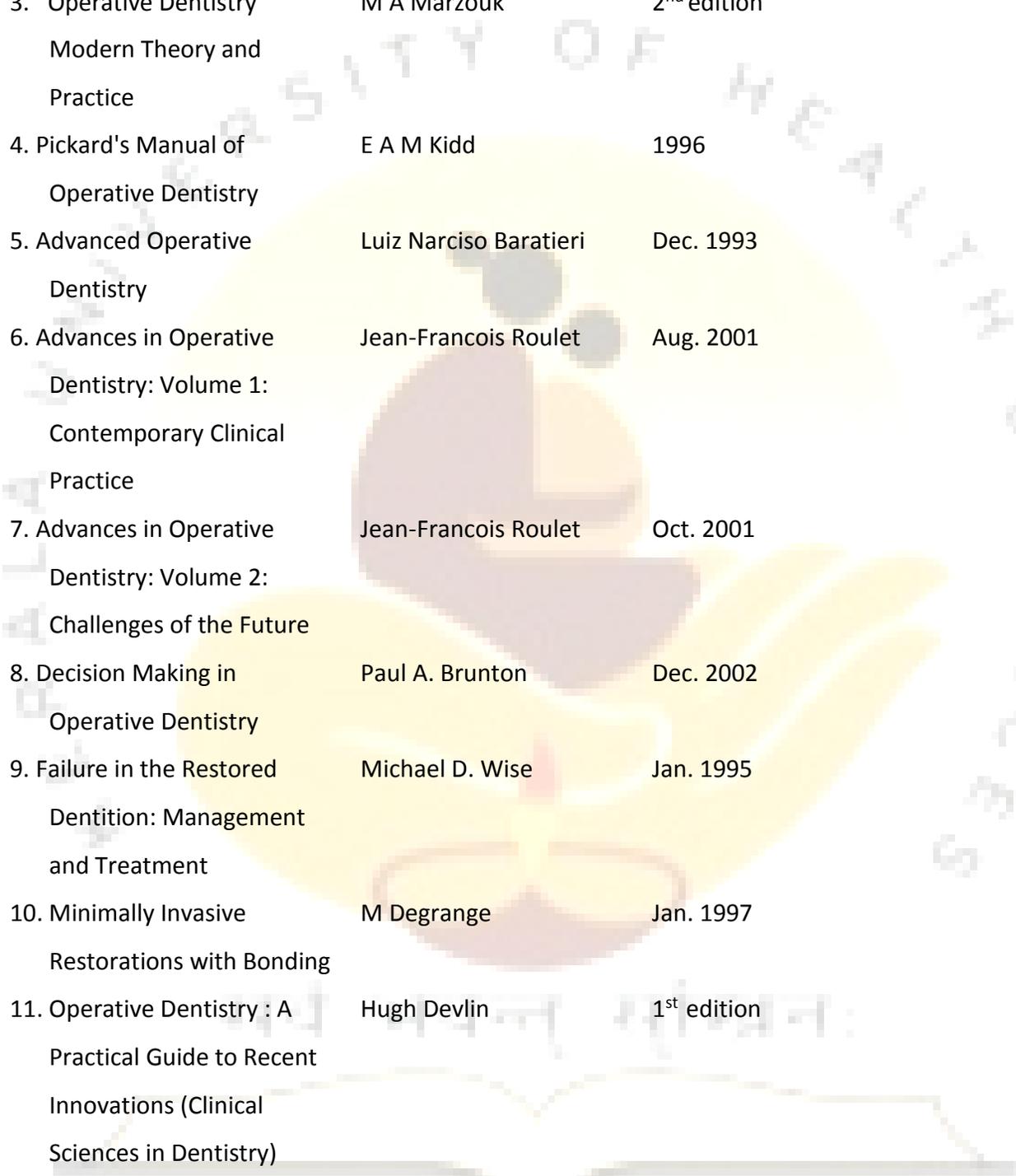
Biostatistics	Dr. Symalan	Statistics in Medicine
	Soben Peter	Essentials of Preventive and Community Dentistry
	Sunder Rao and Richard J.	Introduction to Biostatistics and Research Methods

ENDODONTICS

- | | | |
|---|--|--------------------------|
| 1. Pathways of the Pulp | Stephen Cohen | 10th Edition |
| 2. Ingle's Endodontics | John Ingle | 6 th Edition |
| 3. Endodontic Therapy | Franklin S. Weine | 7 th Edition |
| 4. Grossman's Endodontic Practice | Suresh Chandra, Gopikrishna | 12 th Edition |
| 5. Color Atlas Of Microsurgery In Endodontics | Syngcuk Kim | Nov. 2000 |
| 6. Endodontic Microsurgery | Enrique Merino | 1 st Edition |
| 7. Endodontic Surgery | C R Stockdale | Nov. 1992 |
| 8. Endodontics | Christopher J. R. Stock, Kishor Gulabivala And Richard T. Walker | 3 rd Edition |
| 9. Endodontics | Mahmoud Torabinejad | 4 th Edition |
| 10. Essential End odontology | D Orstavik | |
| 11. Text Book Of Endodontics | MithraHegde | |
| 12. Textbook Of Endodontics | <u>Garg</u> | |

CONSERVATIVE DENTISTRY

- | | | |
|--|-----------------|-------------------------|
| 1. Sturdevant's Art & Science of Operative Dentistry | Harold Heymann | 6 th edition |
| 2. Summit's Fundamentals of Operative Dentistry: A Contemporary Approach | Thomas J Hilton | 4 th edition |

- 
3. Operative Dentistry
Modern Theory and
Practice M A Marzouk 2nd edition
4. Pickard's Manual of
Operative Dentistry E A M Kidd 1996
5. Advanced Operative
Dentistry Luiz Narciso Baratieri Dec. 1993
6. Advances in Operative
Dentistry: Volume 1:
Contemporary Clinical
Practice Jean-Francois Roulet Aug. 2001
7. Advances in Operative
Dentistry: Volume 2:
Challenges of the Future Jean-Francois Roulet Oct. 2001
8. Decision Making in
Operative Dentistry Paul A. Brunton Dec. 2002
9. Failure in the Restored
Dentition: Management
and Treatment Michael D. Wise Jan. 1995
10. Minimally Invasive
Restorations with Bonding M Degrange Jan. 1997
11. Operative Dentistry : A
Practical Guide to Recent
Innovations (Clinical
Sciences in Dentistry) Hugh Devlin 1st edition
12. Restorative Dentistry A. D. Walmsley June 2002
13. Restorative Dentistry An
Integrated Approach P H Jacobsen Aug. 1998
14. Clinical Operative Ramya Raghu.

Dentistry-
DENTAL MATERIALS

1. Phillips' Science of Dental Materials Kenneth J 11th Edition
2. Craig's Restorative Dental Materials John M. 12th Edition
3. Restorative Dental Materials Robert G. Craig 11th Edition
4. Applied Dental Materials J F McCabe 7th Edition
5. Clinical Aspects of Dental Materials: Theory Practice and Cases Marcia Gladwin 2nd Edition
6. Clinical Aspects of Dental Materials: Theory Practice and Cases Marcia A Gladwin 3rd Edition
7. Dental Biomaterials Bagby
8. Dental Materials and Their Selection William J. O'Brien 3rd Edition
9. Dental Materials: Properties and Manipulation John M. Powers 9th edition
10. Introduction to Dental Materials Richard Van Noort 2nd Edition
11. Introduction to Dental Materials Richard Van Noort 3rd Edition
12. Materials in Dentistry Principles and Applications Jack L Ferracane 2nd Edition
13. Materials Science for Dentistry Dr. Brian W. Darvell 9th Edition
S. Mahalaxmi
14. Materials Used in Dentistry

2.19 Reference books

As suggested by HOD

2.20 Journals

1. Journal of Endodontics
2. International Endodontic Journal
3. Journal of Operative Dentistry
4. Dental Clinics of North America
5. Dental Materials
6. Endodontics & Dental Traumatology
7. Australian Dental Journal
8. JADA
9. Journal of Dental Research
10. Journal of Restorative & Esthetic Dentistry
11. British Dental Journal
12. Journal of Indian Dental Association
13. Journal of Conservative Dentistry
14. International Dental Journal
15. Journal of Dentistry
16. Journal of Dental Materials

2.21 Logbook

▫ Work Diary / Log Book

Logbooks serve as a document of the trainee's work. The trainee shall maintain this Logbook of the special procedures/operations observed/assisted/performed by him/her during the training period right from the point of entry and its authenticity shall be assessed weekly by the concerned Post Graduate Teacher / Head of the Department. This shall be made available to the Board of Examiners for their perusal at the time of his / her appearing at the Final examination. The logbook should record clinical cases seen and presented, procedures and tests performed, seminars, journal club and other presentations. Logbook entries must be qualitative and not merely quantitative, focusing on learning points and recent advances in the area and must include short review of recent literature relevant to the entry. A work diary

containing all the various treatment done by the candidate in the course of the study should also be maintained. The work diary shall be scrutinized and certified by both the guide/co guide and Head of the Department and presented in the University practical/clinical examination.

3 EXAMINATIONS

3.1 Eligibility to appear for exams

Every candidate to become eligible to appear for the **MDS examination** shall fulfill the following requirements.

Attendance

Every candidate shall have fulfilled the attendance prescribed by the University during **each academic year** of the Postgraduate course. A candidate becomes eligible for writing the University examination only after the completion of 36 months from the date of commencement of the course. The candidates should have completed the training period before the commencement of examination.

Dissertation

Approval of the dissertation is mandatory requirement for the candidate to appear for the university examinations.

Library Dissertation

Submission of library dissertation as per the regulations of DCI / KUHS is mandatory for a candidate to appear for the university examination.

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.

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.

The certification of satisfactory progress by the Head of the Department and Head of the Institution shall be based on checklist given in 5.1 to 5.8..

- **Students should note that in case they do not complete the exercises and work allotted to them within the period prescribed, their course requirements will be considered unfulfilled.**
- **Clinical Records, Work Diaries and Logbooks should be maintained regularly and approved by the guide, duly certified by the Head of the Department.**

3.2 Schedule of Regular/Supplementary exams

The MDS examination shall be held at the end of the third academic year. The university shall conduct two examinations in a year at an interval of four to six months between two examinations. **Not more than two examinations shall be conducted in an academic year.**

3.3 Scheme of examination showing maximum marks and minimum marks

- MDS examination will consist of written (Theory), Viva Voce, and Practical / Clinical examinations.

Written Examination (Theory) : 300 Marks

Written examination shall consist of **four question papers**, each of three hours duration . Each paper shall carry 75 marks. The type of questions in the first three papers will be two long essay questions carrying 20 marks each and five short essay questions each carrying seven marks. **There will be no options in the questions in the first 3 papers. Fourth paper will be a single essay question paper which will carry an option and the candidate is to answer only one of the essays.** Questions on recent advances may be asked in any or all the papers. **The syllabus for the theory papers of the concerned specialty should cover the entire field of the subject. Though the topics assigned to the different papers are generally evaluated under designated papers, a strict division of the subject may not be possible and some overlapping of topics is inevitable. Students should be prepared to answer overlapping topics.** The theory examinations shall be held sufficiently earlier than the practical/clinical examinations so that the answer books can be assessed and evaluated before the start of the practical/clinical examination. The total marks for the theory examination shall be 300.

Practical Examination ; 200 Marks

In case of practical examination, it should aim 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 mark for practical/clinical examinations shall be 200.

Viva voce : 100 Marks

Viva voce examination shall aim at assessing depth of knowledge, logical reasoning, confidence and oral communication skills. The candidate may be given a topic for the pedagogy in the beginning of the clinical examination and asked to make a presentation on the topic for 8-10 minutes. The total marks shall be 100 of which 80 would be for the viva voce (20 marks/examiner) and 20 marks for the pedagogy.

3.4 Papers in each year

- Paper-I-** Applied Anatomy, Physiology, Pathology and dental materials
- Paper-II -** Conservative dentistry & Aesthetic Dentistry
- Paper-III-** Endodontics
- Paper IV -** Essay

3.5 Details of theory exams

Distribution of topics for each paper will be as follows:

- PAPER-I : Applied Basic Sciences: Applied Anatomy, Physiology, Pathology including Oral Microbiology, Pharmacology, Biostatistics and Research Methodology and Applied Dental Materials.
- PAPER-II : Conservative Dentistry
- PAPER-III: Endodontics
- PAPER-IV: Essay

3.6 Model Question papers

MDS - CONSERVATIVE DENTISTRY AND ENDODONTICS

Paper – I - Applied Anatomy, Physiology, Pathology and Dental materials

(Answer all questions)

Time 3hrs.

Marks 75

Long essay

(2 x 20 = 40 marks)

1. Discuss the various impression materials used for fabrication of cast restorations.
2. Pain pathway and management of pain in endodontics.

Short essays

(5 x 7 == 35marks)

3. Anticariogenic materials
4. Hyper sensitivity and anaphylaxis
5. CAD – CAM
6. Methods of testing biocompatibility of dental materials
7. Inlay Wax

Paper II – Conservative Dentistry & Aesthetic Dentistry

(Answer all questions)

Time 3hrs

Marks 75

Long Essays

(2x 20 = 40marks)

- 1.Explain the different types of tooth contacts and contours. How will you attain contacts and contours in class II composite restorations.
- 2.What are the modern techniques in caries detection? How will you prevent dental caries.

Short essays

(5 x 7 =35marks)

- 3.Bleaching of vital teeth
- 4.Isolation of operating field
- 5.Golden proportion in aesthetics
- 6.Advances in minimal invasive dentistry
- 7.Gingival retraction

Paper–III

Endodontics

(Answer all questions)

Time 3hrs

Marks 75

Long Essays

(2x 20= 40marks)

- 1.Write on rationale of endodontic treatment. add a note on various phases of treatment.
- 2.Classify traumatic injuries of teeth. Write on management of horizontal root fractures.

Short essays

(5 x 7 = 35marks)

- 3.Recent advances in endodontic irrigants
- 4.Materials used to repair root perforations
- 5.Management of cervical resorption
- 6.Laser Doppler Flowmetry
- 7.Lasers in endodontics

Paper – IV Conservative Dentistry and Endodontics with emphasis on Recent advances

(Answer only one question)

Time 3 hrs

Marks 75

Recent Advances in Dentin Bonding

OR

Biofilm in Endodontics

3.7 Internal assessment component

Not applicable.

3.8 Details of practical

III. Duration	-	Two Days
IV. Time	-	9 am to 4pm
Clinical examination – Three Exercises-		200marks

The Practical / Clinical examination will include Conservative Dentistry, Endodontics and Dental Materials.

Day 1 Fore noon

- Exercise I–Tooth preparation for cast post and core and inlay wax impression
- Exercise II- Rubber dam placement, access cavity preparation, pulp extirpation, working length determination, biomechanical preparation and master cone radiograph – on molar tooth.
- Evaluation of preclinical exercises, clinical records and other academic activities.

After noon

- Exercise III –Class II Composite Restoration on molar

Day II

Forenoon

- Gingival retraction and Impression taking after cementation of post and core.

After noon

- Viva voce (including presentation of dissertation /pedagogy).

Marks

100

MARK DISTRIBUTION OF PRACTICAL EXAMINATION & VIVA- VOCE

Practical /Clinical Examination-

200Marks

1. Evaluation of preclinical exercises, clinical records, other academic activities and overall performance during the course

25marks

2. Clinical procedures

2.1 Cast Post and Core

50 marks

- a. Case presentation and treatment plan 10
- b. Evaluation of post space preparation 10
- c. Coronal preparation 10
- d. Wax pattern 10
- e. Gingival retraction and impression 10

2.2. Molar RCT

75 marks

- a. Case presentation and treatment plan 10
- b. Isolation and fluid control 10
- c. Access cavity preparation 20
- d. Working length determination 10
- e. Pulp space preparation 15
- f. Master Cone Selection 10

2.3. Class II Composite restoration on molar

50marks

- a. Case presentation and treatment planning 5
- b. Isolation and fluid control 10
- c. Tooth preparation 15
- d. Matricing and wedging 10
- e. Restoration 10

i. Viva-Voce examination: 80

All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach, expression, interpretation of data and communication skills.

ii. Dissertation presentation /Pedagogy(10+10=20) 20

3.9 Number of examiners needed (Internal & External) and their qualifications

There shall be at least four examiners in each branch of study. Out of four, two (50%) should 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 DCI. The external examiners shall ordinarily be invited from another recognized University from outside the state. An external examiner may ordinarily be appointed for the same institute for not more than two years consecutively. Thereafter he may be reappointed after an interval of one year. The same set of examiners shall ordinarily be responsible for the practical and oral part of the examination.

The Head of the Department shall ordinarily be one of the examiners and the chairperson of the Board of Examinations; second internal examiner shall rotate after every two consecutive examinations if there are more than two postgraduate teachers in the department other than the Head of the department. No person who is not an active Postgraduate teacher in that subject can be appointed as Examiner. However in case of retired personnel, a teacher who satisfies the above conditions could be appointed as examiner up to one year after retirement.

For the MDS examination, if there are no two qualified internal examiners in an institute the second internal examiner can be from a neighbouring DCI and KUHS approved / recognized Dental College having PG course in the specific speciality. This examiner should be an active PG teacher in the same speciality with the qualifications and experience recommended for a teacher for postgraduate degree programme. The examination can also be conducted by one qualified internal examiner and three qualified external examiners if there is no qualified second internal examiner.

Reciprocal arrangement of Examiners should be discouraged, in that, the internal examiner in a subject should not accept external examinership of a college from which the external examiner is appointed in his subject in the same academic year.

3.10 Details of viva

Viva Voce :100 Marks

i. Viva-Voce examination :80marks

All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach, expression, interpretation of data and communication skills. It includes all components of course contents. It includes presentation and discussion on dissertation also.

ii. Pedagogy and thesis presentation : 10 +10 = 20marks

4. INTERNSHIP

Not applicable in PG Courses

5. ANNEXURES

5. Check Lists for Monitoring: Log Book, Seminar Assessment etc.

CHECKLISTS and LOGBOOK

5.1 Checklist 1

Model Checklist for Evaluation of Preclinical Exercises

Name of Student:

Date:

Name of the Faculty-in-charge:

Name of Exercise

Sl. No:	Items for observation during evaluation	Score
1	Quality of Exercise	
2	Ability to answer to questions	
3	Punctuality in submission of exercise	
4	TOTAL SCORE	

Performance	Score
Poor	0
Below Average	1
Average	2
Good	3
Very good	4

Signature of Faculty-in-charge

5.2: Checklist 2

Model Checklist for Evaluation of Journal Review / Seminar Presentation

Name of Student:

Date:

Name of the Faculty/Observer:

Name of Journal / Seminar:

Sl. No:	Items for observation during evaluation	Score
	Relevance of Topic	
2	Appropriate Cross references	
3	Completeness of Preparation	
4	Ability to respond to questions	
5	Effectiveness of Audio-visual aids used	
6	Time Scheduling	
7	Clarity of Presentation	
8	Overall performance	
9	TOTAL SCORE	

Performance	Score
Poor	0
Below Average	1
Average	2
Good	3
Very good	4

Signature of Faculty/Observer

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5.3: Checklist 3

Model Checklist for Evaluation of Clinical Case and Clinical Work

Name of Student:

Date:

Sl. No:	Items for observation during evaluation	Score
1	History	
	Elicitation	
	Completeness	
2	Examination	
	General Examination	
	Extra oral examination	
	Intraoral examination	
3	Provisional Diagnosis	
4	Investigation	
	Complete and Relevant	
	Interpretation	
5	Diagnosis	
	Ability to defend diagnosis	
6	Differential Diagnosis	
	Ability to justify differential diagnosis	
7	Treatment Plan	
	Accuracy	
	Priority order	
8	Management	
9	Overall Observation	
	Chair side manners	
	Rapport with patient	
	Maintenance of Case Record	
	Quality of Clinical Work	
	Presentation of Completed Case	
10	TOTAL SCORE	

Performance	Score
Poor	0
Below Average	1
Average	2
Good	3
Very good	4

Name of the Faculty/Observer:

5.4: Checklist 4

Model Checklist for Evaluation of Library Dissertation Work

Name of Student:

Date:

Name of the Faculty/Guide:

Sl. No:	Items for observation during evaluation	Score
1	Interest shown in selecting topic	
2	Relevance of Topic	
3	Preparation of Proforma	
4	Appropriate review	
5	Appropriate Cross references	
6	Periodic consultation with guide	
7	Completeness of Preparation	
8	Ability to respond to questions	
9	Quality of final output	
9	TOTAL SCORE	

Performance	Score
Poor	0
Below Average	1
Average	2
Good	3
Very good	4

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Signature of Faculty/Guide

5.5: Checklist 5

Model Checklist for Evaluation of Dissertation Work

Name of Student:

Date:

Name of the Faculty/Guide/Co-guide:

Sl. No:	Items for observation during evaluation	Score	Performance	Score
1	Interest shown in selecting topic		Poor	0
2	Relevance of Topic		Below Average	1
3	Preparation of Proforma		Average	2
4	Appropriate review		Good	3
5	Appropriate Cross references		Very good	4
6	Periodic consultation with guide/co- guide			
7	Depth of Analysis / Discuss			
8	Ability to respond to questions			
9	Department Presentation of findings			
10	Quality of final output			
	TOTAL SCORE			

Signature of Faculty/Guide/Co-guide

5.6:CHECKLIST-6

CONTINUOUS EVALUATION OF DISSERTATION WORK BY GUIDE/CO-GUIDE

Name of the Trainee:

Date

Name of the Faculty/Observer:

Sl.No	Items for observation during presentation	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Periodic consultation with guide / co- guide					
2.	Regular collection of case material					
3.	Depth of Analysis / Discussion					
4.	Department presentation of findings					
5.	Quality of final output					
6.	Others					
	Total score					

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Signature of the guide / co-guide

5.7:CHECKLIST -7

OVERALL ASSESSMENT SHEET

Name of the College:

Date:

Name of Department:

Check List No	PARTICULARS	Name of trainee		
		First Year	Second Year	Third Year
1	Preclinical Exercises			
2.	Journal Review Presentation			
3.	Seminars			
4	Library dissertation			
5.	Clinical work			
6-	Clinical presentation			
7.	Teaching skill practice			
8.	Dissertation			
	TOTAL			

Signature of HOD

Signature of Principal

The above overall assessment sheet used along with the logbook should form the basis for certifying satisfactory completion of course of study, in addition to the attendance requirement.

Key:

Mean score:Is the sum of all the scores of checklists 1 to 6

5.8.

LOGBOOK

DEPARTMENT OF

MDS Programme

LOG BOOK OF

NAME.....

BIODATA OF THE CANDIDATE

EXPERIENCE BEFORE JOINING P.G. COURSE

DETAILS OF POSTING :

- **FIRST YEAR**
- **SECOND YEAR**
- **THIRD YEAR**

DETAILS OF LEAVE AVAILED

PRECLINICAL EXERCISES

LIBRARY DISSERTATION

RESEARCH WORK

PARTICIPATION IN CONFERENCES – CDE PROGRAMMES

DETAILS OF PARTICIPATION IN ACADEMIC PROGRAMME

SEMINARS /SYMPOSIA PRESENTED

JOURNAL CLUBS

TEACHING ASSIGNMENTS – UNDERGRADUATES / PARAMEDICAL.

SPECIAL DUTIES (IF ANY)

INTERNAL ASSESSMENT

DAILY ACTIVITIES RECORD (BLANK PAGES)

ONE PAGE FOR EACH MONTH X 36 PAGES

MISCELLANEOUS

SUMMARY

5.8.1.

LOGBOOK-1

ACADEMIC ACTIVITIES ATTENDED

Name:

Admission Year:

College:

Date	Type of activity - Specify Seminar, Journal club, Presentation, UG teaching	Particulars

5.8.2.

LOG BOOK -2

ACADEMIC PRESENTATIONS MADE BY THE TRAINEE

Name :

Admission Year:

College:

Date	Topic	Type of activity - Specify Seminar, Journal club, Presentation, UG teaching

5.8.3. LOGBOOK-3

DIAGNOSTIC AND OPERATIVE PROCEDURES PERFORMED

Name

Admission Year:

College:

Date	Name	OP No.	Procedure	Category O, A, PA, PI

Key:

O- WASHED UP AND OBSERVED - INITIAL 6 MONTHS OF ADMISSION

A- ASSISTED A MORE SENIOR SURGEON -1 YEAR MDS

PA - PERFORMED PROCEDURE UNDER THE DIRECT SUPERVISION OF A SENIOR SURGEON - II YEAR MDS

PI- PERFORMED INDEPENDENTLY - III YEAR MDS

SYLLABUS

for Courses affiliated to the
Kerala University of Health Sciences
Thrissur 680596



Master of Dental Surgery (MDS)
Orthodontics and Dentofacial Orthopaedics
Course Code:245
(2016-17 Academic year onwards)

2016

2. COURSE CONTENT

2.1 Title of course:

MDS Orthodontics and Dentofacial Orthopaedics

2.2 Objectives of course

1. Goals

The goals of postgraduate training in various specialities are to train the BDS graduate who will:

- Practice respective specialty efficiently and effectively, backed by scientific knowledge and skill.
- Exercise empathy and a caring attitude and maintain high ethical standards.
- Continue to evince keen interest in continuing professional education in the specialty and allied specialties irrespective of whether in teaching or practice.
- Willing to share the knowledge and skills with any learner, junior or a colleague.
- To develop the faculty for critical analysis and evaluation of various concepts and views, to adopt the most rational approach.

2. Objectives

The objective is to train a candidate so as to ensure higher competence in both general and special area of interest and prepare him for a career in teaching, research and specialty practice. A candidate must achieve a high degree of clinical proficiency in the subject matter and develop competence in research and its methodology as related to the field concerned.

The above objectives are to be achieved by the time the candidate completes the course.

The objectives may be considered as under –

1. Knowledge (Cognitive Domain)
2. Skills (Psychomotor Domain)
3. Human values, ethical practice and communication abilities.

2.1. Knowledge

- Demonstrate understanding of basic sciences relevant to the specialty.
- Describe etiology, pathophysiology, principles of diagnosis and management of common problem within the specialty in adults and children.
- Identify social, economic, environmental and emotional determinants in a given case and take them into account for planning treatment.
- Recognize conditions that may be outside the area of specialty/competence and to refer them to an appropriate specialist.

- Update knowledge by self-study and by attending courses, conferences and seminars relevant to specialty.
- Undertake audit; use information technology and carryout research both basic and clinical with the aim of publishing or presenting the work at various scientific gatherings.

2.2. Skills

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

2.3. Human values, ethical practice and communication abilities

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

2.3 Medium of instruction:

The medium of instruction for the course shall be English.

2.4 Course outline

Orthodontics deals with the prevention, interception and correction of dentofacial anomalies and malocclusion and the harmonizing of the structures involved, so that the dental mechanisms will function in a normal way.

2.5 Duration

The course shall be of **three 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 KUHS, observing the norms put forward by the DCI.

- i. There will be no reduction for the course duration for any of the students including service candidates, diploma holders and those who have done senior house surgeoncy or equivalent research experience.
- ii. No student shall be permitted to complete the course by attending more than 6 continuous years.
- iii. A candidate selected for admission in a Dental College is obliged to follow the curriculum, rules and regulations as approved by the Dental Council of India and the University. Curriculum, rules or regulations are subject to changes from time to time.

2.6 Subjects

The program outlined, address both the knowledge needed in Orthodontics and allied Medical specialties in its scope. A minimum of three years of formal training through a graded system of education as specified, will equip the trainee with skill and knowledge at its completion to be able to practice basic Orthodontics and have the ability to intelligently pursue further apprenticeship towards advanced orthodontics.

SPREAD OF THE CURRICULUM

- A. 6 months teaching of basic subjects including completion of pre-clinical exercises.
- B. 2 ½ years of coverage of all the relevant topics in orthodontics, clinical training involving treatment of patients and submission of dissertation. These may be divided into blocks of 6 to 8 months duration each, depending on the training policies of each institution.

1. Pre-Clinical Exercises

A general outline of the type of exercise is given here. Every institution can decide the details of exercises under each category.

1. General Wire bending exercises to develop the manual dexterity.
2. Clasps, Bows and springs used in the removable appliances.
3. Soldering and welding exercises.
4. Fabrication of removable habit braking, mechanical and functional appliances, also all types of space maintainers and space regainers.
5. Bonwill Hawley ideal arch preparation

6. Construction of orthodontic models trimmed and polished preferably as per specifications of Tweed or A.B.O.
7. Cephalometric tracings and various Analyses, also superimposition methods.
8. Fixed appliance typodont exercises.
 - 8.1. Training shall be imparted in one basic technique i.e. Standard Edgewise/Begg technique or its derivatives/Straight wire etc. with adequate exposure to other techniques.
 - 8.2. Typodont exercise.
 - 8.2.1. Band making
 - 8.2.2. Bracket positioning and placement
 - 8.2.3. Different stages in treatment appropriate to technique taught.
9. Clinical Photography – Submit album containing
 - 9.1. Basic principles of photography, details of clinical photography
 - 9.2. Camera and adjustment specifications
 - 9.3. Standard, Extra and Intra oral photographs with photographic analysis
10. Computerized imaging
11. Preparation of surgical splints, and splints for TMJ problems
12. Handling of equipments like vacuum forming appliances and hydrosolder etc.

First Year

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

First 6 Months

1. NON-APPLIANCE EXERCISES

All the following exercises should be done with round wire of appropriate thickness

Sl. No.	Exercise	No.
1	Straightening of 6" & 8" long wire	1 each
2	Square of 2" side	1
3	Rectangle of 2" x 1" sides	1
4	Triangle of 2" side	1
5	Circle of 2" diameter	1
6	Bending of 5 U's	1
7	Bending of 5 V's	1

2. CLASPS

SI. No	Exercise	No.
1	¾ Clasps	2
2	Full clasps	2
3	Triangular Clasps	2
4	Adam's clasp - upper molar	2
5	Adam's Clasp - lower molar	2
6	Adam's Clasp - Pre-molar	2
7	Adam's Clasp – Incisor	2
8	Modification of Adam's - With Helix	2
9	Modification of Adam's - With distal extension	2
10	Modification of Adam's - With soldered tube	2
11	Duyzing Clasps on Molars	2
12	Southend Clasp	1

C. LABIALBOWS

SL NO	Exercise	NO
1	Short labial bow (upper & lower)	1
2	Long labial bow (upper & lower)	1
3	Robert's retractor	1
4	High labial bow-with apron springs	1
5	Mill's labial bow	1
6	Reverse loop labial bow	1
7	Fitted labial bow	1
8	Split high labial bow	1

D. SPRINGS

SI No	Exercise	No
1	Finger spring-mesial movement	2

2	Finger spring-distal movement	2
3	Double cantilever spring	2
4	Flapper spring	2
5	Coffin spring	2
6	T spring	2

E. CANINE RETRACTORS

SI No	Exercise	No
1	U loop canine retractor	2 PAIRS
2	Helical canine retractor	2 PAIRS
3	Palatal canine retractor	2 PAIRS

F. APPLIANCES

SI No	Exercise
1	Hawley's retention appliance with anterior bite plane
2	Upper Hawley's appliance with posterior bite plane
3	Upper expansion appliance with coffin spring
4	Upper expansion appliance with expansion screw
5	Habit breaking appliance with tongue crib
6	Oral screen and double oral screen
7	Lip bumper
8	Splint Headgear
9	Catalans appliance
10	Activator
11	Bionator
12	Frankel-FR 2 appliance
13	Twin block
14	Lingual arch
15	TPA
16	Quad helix
17	Bonded Rapid Maxillary Expander

18	Utility arches
19	Pendulum appliance

7. SOLDERING EXERCISES

SI.No.	Exercise	No.
1	Star	1
2	Comb	1
3	Christmas tree.	1
4	Soldering buccal tube on molar bands	1

8. WELDING EXERCISES

SI.No.	Exercise
1	Pinching and welding of molar, premolar, canine and Incisor bands
2	Welding of buccal tubes and brackets on molar bands and incisor bands

9. Impression of upper and lower arches in alginate

10. Study model preparation

11. Model analysis

SI. No.	Exercise
1	Impression of upper and lower dental arches
2	PREPARATION OF STUDY MODEL -1 And all the permanent dentition analyses to be done.
3	PREPARATION OF STUDY MODEL -2 And all the permanent dentition analyses to be done.
4	PREPARATION OF STUDY MODEL -3 And all the mixed dentition analyses to be done.

12. CEPHALOMETRICS

SI. No.	Exercise
1	Lateral cephalogram to be traced in five different colors and super imposed to see the accuracy of tracing
2	Steiner's analysis

3	Down's analysis
4	Tweed analysis
5	Rickett's analysis
6	Burrstone analysis
7	Rakosi's analysis
8	McNamara analysis
9	Bjork analysis
10	Coben's analysis
11	Harvold's analysis
12	Soft tissue analysis - Holdaway and Burstone

13. Basics of Clinical Photography including Digital Photography

14. Light wire bending exercises for the Begg technique

SI. No.	Exercise
1	Wire bending technique on 0.016' wire circle "Z" Omega
2	Bonwill-Hawley diagram
3	Making a standard arch wire
4	Intermaxillary hooks- Boot leg and Inter Maxillary type
5	Upper and Lower arch wire
6	Bending a double back arch wire
7	Bayonet bends (vertical and horizontal offsets)
8	Stage-III arch wire
9	Torquing auxiliary (upper)
10	Reverse Torquing (lower)
11	Up righting spring

15. TYPHODONT EXERCISES

15.1 BEGG Technique

15.1.1 Teeth setting in Class-II division I malocclusion with maxillary anterior proclination and mandibular anterior crowding

- 15.1.2 Band pinching, welding brackets and buccal tubes to the bands
- 15.1.3 Stage-I
- 15.1.4 Stage-II
- 15.1.5 Pre Stage-III
- 15.1.6 Stage-III
- 15.2 Pre Adjusted Edgewise
 - 15.2.1 Bonding full upper and lower arches
 - 15.2.2 Upper/lower 016/018 continuous archwires with reverse curves
 - 15.2.3 Making first, second and third order bends
 - 15.2.4 .019x.025 stainless steel arch wires with soldered hook formation and putting reverse curves
 - 15.2.5 Fabrication of U loop, Tear drop loop, T loop and putting alpha-beta bends

Orthodontic Topics

The under mentioned topics will be part of study in 3 year course. The educational methods recommended are: seminars, and workshops, review of literature and auto tutorials/ self-learning packages.

The syllabus for the theory of Orthodontics should cover the entire field of the subject and the following topics may be used as guidelines.

The concept of health care counseling shall be incorporated in all relevant areas.

Paper-I : Applied Basic Sciences: Applied anatomy, Physiology, Dental Materials, Genetics, Pathology, Physical Anthropology, Applied Research methodology, Bio-Statistics and Applied Pharmacology.

1. APPLIED ANATOMY:

1.1 Prenatal growth of head:

Stages of embryonic development, origin of head, origin of face, origin of teeth.

1.2 Postnatal growth of head:

Bones of skull, the oral cavity, development of chin, the hyoid bone, general growth of head, face growth.

1.3 Bone growth:

Origin of bone, composition of bone, units of bone structure, schedule of Ossification, mechanical properties of bone, roentgenographic appearance of bone

1.4 Assessment of growth and development:

Growth prediction, growth spurts, the concept of normality and growth increments of growth, differential growth, gradient of growth, methods of gathering growth data. Theories of growth and recent advances, factors affecting physical growth.

1.5 Muscles of mastication:

Development of muscles, muscle change during growth, muscle function and facial development, muscle function and malocclusion

1.6 Development of dentition and occlusion:

Dental development periods, order of tooth eruption, chronology of permanent tooth formation, periods of occlusal development, pattern of occlusion.

1.7 Assessment of skeletal age

The carpal bones, carpal x – rays, cervical vertebrae

2. PHYSIOLOGY:

2.1 Endocrinology and its disorders

(Growth hormone, thyroid hormone, parathyroid hormone, ACTH) pituitary gland hormones, thyroid gland hormones, parathyroid gland hormones

2.2 Calcium and its metabolism

2.3 **Nutrition-metabolism and their disorders:** proteins, carbohydrates, fats, vitamins and minerals.

2.4 Muscle physiology

2.5 **Craniofacial Biology:** Cell adhesion molecules and mechanism of adhesion

2.6 Bleeding disorders: Hemophilia

3. DENTAL MATERIALS:

3.1 **Gypsum products:** dental plaster, dental stone and their properties, setting reaction etc.

3.2 **Impression materials:** impression materials in general and particularly of alginate impression material.

3.3 **Acrylics:** chemistry, composition physical properties

3.4 **Composites:** composition types, properties setting reaction

3.5 **Banding and bonding cements:** Zn (PO₄)₂, zinc silicophosphate, Zinc polycarboxylate, resin cements and glass ionomer cements

3.6 **Wrought metal alloys:** deformation, strain hardening, annealing, recovery, recrystallization,

grain growth, properties of metal alloys

3.7 **Orthodontic arch wires:** stainless steel gold, wrought cobalt chromium nickel alloys, alpha & beta titanium alloys , Nitinol, Aesthetic wires, Newer archwires

3.8 **Elastics:** Latex and non-latex elastics.

3.9 **Applied physics,** Bioengineering and metallurgy.

3.10 **Specification and tests methods** used for materials used in Orthodontics

3.11 **Survey of all contemporary literature and Recent advances in above – mentioned materials.**

4. GENETICS:

4.1 Cell structure, DNA, RNA, protein synthesis, cell division

4.2 Chromosomal abnormalities

4.3 Principles of orofacial genetics

4.5 Genetics in malocclusion

4.6 Molecular basis of genetics

4.7 Studies related to malocclusion

4.8 Recent advances in genetics related to malocclusion

4.9 Genetic counseling

4.10 Bioethics and relationship to Orthodontic management of patients.

5. PHYSICAL ANTHROPOLOGY:

5.1 Evolutionary development of dentition

5.2 Evolutionary development of jaws.

6. PATHOLOGY:

6.1 Inflammation

6.2 Necrosis

7. BIostatISTICS:

7.1 Statistical principles

7.2 Data Collection

7.3 Method of presentation

7.4 Method of Summarizing

7.5 Methods of analysis – different tests/errors

7.6 Sampling and Sampling technique

7.7 Experimental models, design and interpretation

7.8 Development of skills for preparing clear concise and cogent scientific abstracts and publication

8. APPLIED RESEARCH METHODOLOGY IN ORTHODONTICS:

8.1 Experimental study designs

8.2 Animal experimental protocol

8.3 Principles in the development, execution and interpretation of methodologies in Orthodontics

8.4 Critical Scientific appraisal of literature.

9. APPLIED PHARMACOLOGY

9.1 Pain management in Orthodontics

9.2 Effect of medications in Orthodontics

10. Ethics

10.1. Introduction to ethics

10.2. What is ethics?

10.3. What are values and norms?

10.4. How to form a value system in one's personal and professional life?

10.5. Hippocratic oath.

10.6. Ethics of the Individual

10.6.1. The patient as a person

10.6.2. Right to be respected

10.6.3 Truth and confidentiality

10.6.4 Autonomy of decision

10.6.5 Doctor patient relationship

10.7. Professional Ethics

10.7.1 Code of conduct

10.7.2 Contract and confidentiality

Paper II: Orthodontic history, Concepts of Occlusion and Esthetics, Child and Adult Psychology, Etiology and

classification of malocclusion, Dentofacial Anomalies, Diagnostic procedures and treatment planning in

Orthodontics, Practice management in Orthodontics

2.1 ORTHODONTIC HISTORY:

2.1.1 Historical perspective,

2.1.2 Evolution of orthodontic appliances,

2.1.3 Pencil sketch history of Orthodontic peers

2.1.4 History of Orthodontics in India

2.2 CONCEPTS OF OCCLUSION AND ESTHETICS:

2.2.1 Structure and function of all anatomic components of occlusion,

2.2.2 Mechanics of articulation,

2.2.2.1 Recording of masticatory function,

2.2.2.2 Diagnosis of Occlusal dysfunction,

2.2.2.3 Relationship of TMJ anatomy and pathology and related neuromuscular physiology.

2.3 ETIOLOGY AND CLASSIFICATION OF MALOCCLUSION:

- A comprehensive review of the local and systemic factors in the causation of malocclusion
- Various classifications of malocclusion

2.4 DENTOFACIAL ANOMALIES:

- Anatomical, physiological and pathological characteristics of major groups of developmental defects of the orofacial structures.

2.5 CHILD AND ADULT PSYCHOLOGY:

- Stages of child development.
- Theories of psychological development.
- Management of child in orthodontic treatment.
- Management of handicapped child.
- Motivation and Psychological problems related to malocclusion /orthodontics
- Adolescent psychology
- Behavioral psychology and communication

2.6 DIAGNOSTIC PROCEDURES AND TREATMENT PLANNING IN ORTHODONTICS

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

Cephalometrics

- Instrumentation
- Image processing
- Tracing and analysis of errors and applications
- Radiation hygiene
- Advanced Cephalometrics techniques
- Comprehensive review of literature
- Video imaging principles and application.

Craniofacial Imaging - Advances

- Digital imaging
- Volumetric Imaging
- Computed Tomography
- Cone Beam Computed Tomography
- Laser Scanning
- Stereo photogrammetry
- Three dimensional facial Imaging
- Computed Tomography of TMJ
- Arthrography
- Magnetic Resonance Imaging

2.7 PRACTICE MANAGEMENT IN ORTHODONTICS:

- Economics and dynamics of solo and group practices
- Personal management
- Materials management
- Public relations
- Professional relationship
- Dental ethics and jurisprudence
- Office sterilization procedures
- Community based Orthodontics.

Paper III: Clinical Orthodontics

3.1 Myofunctional Orthodontics:

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

3.2 Dentofacial Orthopedics

- Principles
- Biomechanics
- Appliance design and manipulation –various appliances
- Review of contemporary literature

3.3 Cleft lip and palate rehabilitation:

- Diagnosis and treatment planning

- Mechanotherapy
- Special growth problems of cleft cases
- Speech physiology, pathology and elements of therapy as applied to orthodontics
- Team rehabilitative procedures.

3.4 Biology of tooth movement:

- Principles of tooth movement-review
- Review of contemporary literature
- Applied histophysiology of bone, periodontal ligament
- Molecular and ultra cellular consideration in tooth movement
 - Accelerated Orthodontics

3.5 Orthodontic / Orthognathic surgery:

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

3.6 Ortho / Perio / Prosth inter relationship

- Principles of interdisciplinary patient treatment
- Common problems and their management

3.7 Basic principles of Mechanotherapy Includes Removable appliances and all types of FIXED APPLIANCES (Edgewiswe, Begg, Preadjusted Edgewise, Tip Edge, Lingual etc.,)

- Design
- Construction
- Fabrication – arch wire fabrications/loop configurations/ Bracket positions/segmented/sectional
- Management
- Review of current literature on treatment methods and results

3.8 Applied preventive aspects in Orthodontics

- Caries and periodontal disease prevention
- Oral hygiene measures
- Clinical procedures

3.9 Interceptive Orthodontics

- Principles
- Growth guidance
- Diagnosis and treatment planning
- Therapy emphasis on:

- a. Dento-facial problems
- b. Tooth material discrepancies
- c. Minor surgery for Orthodontics

3.10 Retention and relapse

- Mechanotherapy – special reference to stability of results with various procedures
- Post retention analysis
- Review of contemporary literature

3.11 RECENT ADVANCES:

- Temporary Anchorage Devices
- Lasers
- Application of F.E.M.
- Distraction Osteogenesis
- Advances in Craniofacial Imaging
- Obstructive Sleep Apnoea-Orthodontic perspective
- Lingual Orthodontics
- Clear Aligners
- Self Ligating bracket system
- Periodontally Accelerated Osteogenic Orthodontics
- Orthodontic treatment impact on OHRQoL (Oral Health Related Quality of Life)

Paper IV :Essay

4. **The teaching program** should be structured one with following aspects clearly spelt out.
 - Objectives and the expected learning outcome from each block of 6-8 months duration
 - Methods of teaching, individual topics namely didactic lectures, seminars, journal club, tutorials, discussion, etc.
 - Assessing method and the frequency of assessment.
 - Remedial measures
5. **Clinical training** in the following aspects.
 - Removable active appliances- 5cases
 - Class-I malocclusion with Crowding
 - Class-I malocclusion with bi-maxillary protrusion
 - Class-II division-1
 - Class-II division-2

- Class-III (Orthopedic, Surgical, Orthodontic cases)
- Inter disciplinary cases
- Removable functional appliance cases like activator, Bionator, functional regulator, twin block and new developments
- Fixed functional appliances - Herbst appliance, Jasper jumper etc - 5 cases
- Dento-facial orthopedic appliances like Hegears, rapid maxillary expansion NiTi expander etc., - 5 cases
- Appliance for arch development such as molar distalization - 5 cases
- Fixed mechano therapy cases (Begg, PEA, Tip edge, Edgewise)
- Retention procedures of above treated cases.

Other work to be done during FIRST YEAR

1. **Seminars:** One Seminar per week to be conducted in the department. A minimum of five seminars should be presented by each student each year
2. **Journal club:** One Journal club per week to be conducted in the department. A minimum of five should be presented by each student each year.
3. **Library assignment** to be submitted on or before the end of 10 months.
4. Protocol for dissertation to be submitted on or before the end of nine months from the date of admission.
5. **Under graduate classes:** Around 4 - 5 classes should be handled by each post-graduate student
6. **Field survey:** To be conducted and submit the report
7. **Inter-departmental meetings:** should be held once in a month.
8. **Case discussions**
9. **Field visits:** To attend dental camps and to educate the masses
10. Basic subjects classes
11. Internal assessment or Term paper.

Second Year:

The clinical cases taken up should be followed under the guidance of a postgraduate teacher. More case discussions and cases to be taken up. Other routine work as follows.

1. **Seminars:** One Seminar per week to be conducted in the department. Each student should present a minimum of five seminars each year.
2. **Journal club:** One Journal club per week to be conducted in the department. Each student should present a minimum of five seminars each year.
3. **Undergraduate classes:** each post-graduate student should handle Around 4-5 classes.
4. **Inter-departmental meetings:** Should be held once in a month

5. **Case discussions**
6. **Field visits:** To attend dental camps and to educate the masses.
7. **Attendance in Conferences, CDEs, Workshops, etc.**
8. **Publication of Scientific Articles.**
9. **Internal assessment.**
10. **Dissertation work:** On getting the approval from the university work for the dissertation to be started.

Third Year:

The clinical cases taken up should be followed under the guidance. More cases discussions and cases to be taken up. Other routine work as follows:

- 1.**Seminars:** One Seminar per week to be conducted in the department. Each student should present a minimum of five seminars each year.
- 2.**Journal Club:** One Journal club per week to be conducted in the departments minimum of five should be presented by each student each year
- 3.**Under graduate classes:** each post - graduate student, should handle around 4-5classes.
- 4.**Inter-departmental meetings:** Should be held once in a month.
- 5.**The completed dissertation should be submitted six months before the final examination (by the end of 29th month of commencement of course)**
- 6.**Case discussions**
- 7.**Field visits:** To attend dental camps and to educate the masses.
- 8.**Attendance in Conferences, CDEs, Workshops, etc.**
- 9.**Publication of Scientific Articles**
- 10.**Finishing and presenting the cases taken up.**
- 11.**Preparation of finished cases and presenting the cases (to be presented for the examination)**

Mock examination

Allocation of patients

Each postgraduate student should start a minimum of 50 cases of his/her own: additionally he/she should handle a minimum of 25 transferred cases.

Active participation in or at least exposure to multi-disciplinary treatment is essential.

Dissertation

- 5.1. The protocol for dissertation should be submitted within 6months of start of course.
- 5.2. The completed dissertation should be submitted 6 months before the final examination.
- 5.3. The dissertation should not be just a repetition of a previously undertaken study but it should try to explore some new aspects.
- 5.4. The panel of examiners should approve the dissertation before the candidate appears for the

University examination.

6. Monitoring Learning Progress

It is essential to monitor the learning progress of each candidate through continuous app and regular assessment. It not only helps teachers to evaluate students, but also students to evaluate themselves. The monitoring should be done by the staff of the department and participation of students in various teaching / learning activities. It may be structured assessment be done using checklists that assess various aspects. Checklists are given in Section IV.

7. MDS Examination

Scheme of Examination: Theory : 300Marks
Practical: 200Marks
VivaVoce: 100Marks

Written examination shall consist of four question papers each of three hours duration. Total marks for each paper will be 75.

Title of the Papers

Paper I – Applied anatomy, physiology, pathology, genetics, physical anthropology & dental material

Paper II - Diagnosis and treatment planning

Paper III – Clinical Orthodontics and Mechanotherapy

Paper IV - Essay

Paper I, II and III shall consist of two long questions carrying 20 marks each and five short essay questions carrying seven marks each. Paper IV will be one Essay. Questions on recent advances may be asked in any or all the papers.

Practical /Clinical Examination : 200 Marks

Exercise No: 1 Functional Case : 50 Marks

Selection of case for functional appliance with case discussion and recording of construction bite.

Fabrication and delivery of the appliance the next day with chairside viva.

Exercise No: 2 Multiband exercise 50 Marks

1. III stage with auxiliary springs

OR

2. Bonding of SWA brackets and construction

of suitable arch wire.

Exercise No. 3 Display of records of the treated cases along with

patients (minimum of 5 cases) 5 cases x 15 marks = 75 Marks

(including seminars, thesis, Library dissertation, certificates of conferences, courses, paper publications etc)

Exercise No:4-Long case discussions:

25 Marks

No	Exercise	Marks allotted	Approximate time
1	Functional appliance	50	2 hours
2	III stage mechanics/ Bonding an arch wire fabrication	50	1 hour 30 min
3	Display of case records (minimum of 5 cases to be presented with the patients)	75	1 hour
4	Long cases	25	2 hours

Viva Voce – Total 100 (80 marks for the grand viva and 20 marks for thesis defense / pedagogy)

All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach expression, interpretation of data and communication skills. It includes all components of course contents. It includes presentation and discussion on dissertation also.

2.7 Total number of hours

As per the instruction given by the DCI

2.8 Branches if any with definition

Orthodontics and Dentofacial Orthopaedics

2.9 Teaching learning methods

Method of Training

The training of a postgraduate student shall be full time but 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, case demonstrations, clinics, journal review meetings, and clinical meetings. Every candidate shall be required to participate in the teaching and training programme of undergraduate students and interns. Training should include involvement in laboratory and experimental work, and research studies. Every Institution undertaking Post Graduate training programme shall set up an Academic cell or a Curriculum Committee, under the chairmanship of a Senior faculty member, which shall work out the details of the training programme in each speciality in consultation with other Department faculty staff and also coordinate and monitor the implementation of these training Programmes.

Based on the above guidelines for a structured training programme for postgraduate

courses, the basic tenets of a successful postgraduate teaching programme, are detailed under the following heads.

- **Formal Lectures** by the faculty on varied subjects including general areas and systems. Both senior and junior faculty can do this. However, the number of these classes should be maintained of low levels to encourage self-learning.
- **Symposia / Seminars** form an integral part of PG learning. A monthly symposium will generate approximate 30-35 symposia / course. These symposia can include department faculty and HODs as chairpersons and maximum involvement of both students and faculty should be ensured.
- **Clinical Discussions** form the core of PG training and can be assigned to various clinical units on rotating basis. However other faculty could also actively participate in the discussion. The discussions must be 3-4/week. One suggestion is to score the performance of the candidate by a small panel of faculty and convey the scores to the candidate / PG at the end of the session.
- **Journal Club /Clinical Club** should be conducted at least once in a week in each postgraduate department. Journal clubs not only imparts new information but also trains the candidate to objectively assess and criticize various articles which come out and should be useful in ensuring evidence based dentistry.
- **Guest Lectures** can be integrated into the PG program at least once in a month. Even the retired faculty can be invited for delivering the lectures and will ensure importing of greater wisdom to the candidates.
- **Orientation Classes** for newcomers should also be incorporated. These classes can even be assigned to junior faculty/senior PGs.
- **Clinical posting.** Each PG student should work in the clinics on regular basis to acquire adequate professional skills and competency in managing various cases to be treated by a specialist.
- **Clinico Pathological Conferences** should be held once a year involving the faculties of Oral Medicine and Radiology, Oral Pathology and concerned clinical department. The student should be encouraged to present the clinical details, radiological and histo- pathological interpretations and participation in the discussions.
- **Rotation postings in other departments** should be worked out by each department in order to bring in more integration between the speciality and allied fields.
- **Periodical Quiz** can be both informative and entertaining and should be encouraged and planned.
- **Computer Training and Internet Applications** are now becoming a must for both faculty and students. These areas should be strengthened as a next step. There can be a sort of internet information club in the departments.
- **Conferences/CDEs** – All postgraduate students should be encouraged to attend conferences and CDEs. They should also be asked to present papers wherever appropriate and should be rewarded by assigning scores for them.
- **Publication of scientific papers** – It is desirable and advisable to have at least two publications in the State/National/International indexed dental journals.
- **Involvement in Teaching Activity** – PG students can be assigned the job of teaching the undergraduate students and these will definitely improve the teaching skills in the postgraduate students.

Examinations

Evaluation is a continuous process, which is based upon criteria developed by the concerned authorities with certain objectives to assess the performance of the learner. This also indirectly helps in the measurement of effectiveness and quality of the concerned MDS programme. Evaluation is achieved by two processes

- 1) Formative or internal assessment
- 2) Summative or university examinations.

Formative evaluation is done through a series of tests and examinations conducted periodically by the institution. Summative evaluation is done by the university through examination conducted at the end of the specified course.

A candidate registered for MDS course must clear the final examination within six years of the date of admission. The examinations should be so organized that this shall be used as the mechanism to confirm that the candidate has acquired appropriate knowledge, skill and competence at the end of the training that he/she can act as a specialist and/or a medical teacher as per expectation. University examination will be held regularly by KUHS in April-May/October-November every year.

A candidate who wishes to study for MDS in a second specialty should have to take the full course of 3 years in that specialty and appear for examinations.

2.10 Content of each subject in each year

Present in clause 2.6

2.11 No: of hours per subject

Present in clause 2.6

2.12 Practical training

Present in clause 2.6

2.13 Records

Present in clause 2.20

2.14 Dissertation: As per Dissertation Regulations of KUHS

Every candidate pursuing MDS degree course is required to carry out work on a selected research project under the guidance of a recognized postgraduate 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, and comparison of results and drawing conclusions.

Every candidate shall submit to the University in the prescribed format a synopsis containing particulars of proposed dissertation work after obtaining ethical clearance from the Institutional Ethical Committee **within six months from the date of commencement of the course or before the dates notified by the University.** The synopsis shall be sent only

through the Principal of the institution.

Such synopsis will be reviewed and the dissertation topic will be registered by the university. No change in the dissertation topic or guide/coguide shall be made without prior approval of the University. The dissertation should not be just a repetition of a previously undertaken study but it should try to explore some new aspects. The dissertation should be written under the following headings:

- i. Introduction
- ii. Aims and Objectives of the study
- iii. Review of Literature
- iv. Methodology
- v. Results
- vi. Discussion
- vii. Conclusion
- viii. Summary
- ix. References
- x. Annexures

The written text of dissertation shall be not less than 50 pages and shall not exceed 150 pages excluding references, tables, questionnaires, and other annexures. It should be neatly typed (font size 13-Times New Roman or font size 13-Cambria) in 1.5 line spacing on one side of the paper (A4 size, 8.27" x 11.69") and bound properly. Spiral binding should be avoided. (Refer KUHS website). The guide, co-guide if any, Head of the Department and the Head of the Institution shall certify the dissertation.

For uniformity, it was suggested that the colour of the hard bind of the dissertation for all branches of MDS course in the purview of KUHS shall be dark brown with letters of gold colour. The title, author, and year of study should also be imprinted or embossed on the spine of the book. **Three hard copies and one properly labeled soft copy in a CD (refer KUHS website) of the dissertation thus prepared shall be submitted to KUHS on the 29th month of commencement of the course / 31st Oct. of the 3rd academic year, whichever falls first.** Dissertation should preferably be sent to a minimum of three reviewers / examiners / assessors, of which two shall be from outside the state and one from the affiliated colleges of KUHS. If modifications are to be made as specified, three hard copies and one soft copy of the dissertation after corrections made by the candidate should be submitted within a minimum of 30 days to the University. Consent for acceptance for evaluation of dissertation should be obtained from the reviewer/examiner/assessor before the dissertation are dispatched. Proforma for evaluation of dissertation should be sent along with the copies of the dissertation to the reviewers appointed by the university. The proforma should contain all the assessment criteria with the clause – **Accepted/Accepted with modifications/Rejected** and reasons for rejection by the examiner. This proforma should be sent back to the University within two weeks / within the date specified after receipt of dissertation. The dissertation may be declared accepted if more than 50% of the reviewers (2 in the case of 3 reviewers) have accepted it. If modifications are to be made as specified, 3 hard copies and one soft copy of the dissertation after corrections made by the candidate should be submitted within 30 days to the University which may be sent back to the same examiner/s by the University for Acceptance after a fee has been levied from the candidate. If the dissertation has been rejected by more than 50% of the reviewers (2 in the case of 3 reviewers), the dissertation

may be reviewed by an Expert Reviewing Committee comprising of not less than two subject experts, Dean (Research) of KUHS and Guide of the candidate provided the Guide requests for a review, after a fee has been levied from the candidate. If rejected by the Reviewing Committee, the candidate should take up a new topic and undergo all the procedures of submitting the synopsis, fees, IEC clearance, etc., as prescribed by the University. The candidate who takes up the new topic can appear only for the subsequent examination.

Approval of dissertation work is an essential precondition for a candidate to appear in the University examination. Hall tickets for the university examination should be issued to the candidate only if the dissertation has been accepted.

A candidate whose dissertation has been accepted by the examiners and approved by the University, but who is declared to have failed at the final examination will be permitted to reappear at the subsequent MDS examination without having to prepare a dissertation.

Guide – The academic qualification and teaching experience required for recognition by the University as a guide for dissertation work is as laid down by the Dental Council of India / KUHS.

Co-guide – A co-guide may be included provided the work requires substantial contribution from the same department or a sister department or from another institution recognized for teaching/training by KUHS/DCI. The co-guide should fulfill the academic qualification and teaching experience required for recognition by the University as a co-guide for dissertation work.

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.

2.15 Speciality training if any

Present in clause 2.6

2.16 Project work to be done if any

Present in clause 2.6

2.17 Any other requirements [CME, Paper Publishing etc.]

Present in clause 2.6

2.18 Prescribed/recommended textbooks for each subject

Applied Basic Sciences

SUBJECT	NAME OF AUTHOR	NAME OF BOOK
Anatomy	BD Chaurasia	BD Chaurasia's Human Anatomy
	William, Peter L	Grays Anatomy
Oral Anatomy	Ash, Major M	Wheeler's Dental Anatomy, Physiology and Occlusion
	Sicher, Harry, Du Brull, Llyod	Oral Anatomy
Oral Histology	Bhaskar B.N. Ed	Orban's Oral Histology and Embryology
	Avery, James K	Essentials of Oral Histology and Embryology
Embryology ☆	Sadler	Langman's Medical Embryology
	Inderbeer Singh	Human Embryology

Physiology	Guyton Arthur and John L Hall	Text Book of Medical Physiology
	Ganong, William F	Review of Medical Pysiology
Pharmacology	KD Tripathi	Essentials of Medical Pharmachology
	Hardman, Joel G	Goodman and Gillmans pharmacological basis of Therapeutics
Nutrition	Nizel	Nutrition in Preventive Dentistry: Science and Practice
General Pathology	Cotran, Ramzi S and Others	Robbins Pathologic Basis of Disease
	Harsh Mohan	Textbook of Pathology
Oral Pathology	Shaffer, William and Others	Textbook of Oral Pathology
	Neville, Brad W and Others	Oral and Maxillofacial Pathology
Microbiology	Ananthanarayan and Panicker	Textbook of Microbiology
	Lakshman S	Essential Microbiology for Dentistry
Biostatistics	Dr. Symalan	Statistics in Medicine
	Soben Peter	Essentials of Preventive and Community Dentistry
	Sunder Rao and Richard J.	Introduction to Biostatistics and Research Methods

Orthodontics and Dentofacial Orthopaedics

1. WILLIAM R.PROFFIT, Contemporary Orthodontics
2. GRABER & VANARSDALL, Orthodontics - Current Principles &Techniques
3. MOYERS, Text Book of Orthodontics
4. GRABER, Orthodontics Principles and practice.
5. GRABER,PETROVIC,&RAKOSI Dentofacial Orthopedics with Functional Appliances
6. ATHENASIOU E ATHENASIOU, Orthodontic Cephalometry
7. JACOBSON, Radiographic Cephalometry
8. RAKOSI, An Atlas And Manual of Cephalometric Radiography
9. ENLOW, Handbook of Facial Growth
- 10.EPKER & FISH, Dentofaical Deformities Vol.1
- 11.PROFFIT & WHITE, Surgical Orthodontic Treatment
- 12.NANDA, Biomechanics in Clinical Orthodontics

13. NANDA & BURSTONE, Retention and Stability in Orthodontics
14. OKESON, Management of T.M. Disorders And Occlusion
15. LOU NORTON & DAVIDOWITCH, Biology of tooth movement
16. GERHARD PFIEFER, Craniofacial Abnormalities and clefts of the lip, Alveolus and Palate.
17. OKESON, TMJ Disorders.
18. Mc LAUGHLIN, BENNET AND TREVESI – Systemised Orthodontic treatment mechanics
19. V. P. JAYADE – Refined Begg for Modern Times
20. NANDA – Temporary anchorage devices in Orthodontics
21. VINOD KRISHNAN, Ze'ev DAVIDOVITCH – Biologic Mechanisms of Tooth Movement
22. VINOD KRISHNAN, Ze'ev Davidovitch – Integrated Clinical Orthodontics
23. WILLIAM J CLARK – Twin Block Functional Therapy – Applications in Dentofacial Orthopedics
24. FARHAD B NAINI – Facial Aesthetics : Concepts and Clinical Diagnosis

2.19 Reference books

- L. JOHNSTON, New Vistas in Orthodontics
LEE GRABER, Orthodontics - State of the Art- The Essence of Science
NIKOLAI, Bio Engineering Analysis of Orthodontic Mechanics
M. RAKOSI & GRABER, A Color Atlas of Dental Medicine
BURSTONE, Modern Edgewise Mechanics and Segmented Arch Technique
W J CLARK, The Twin Block Functional Therapy
McNAMARA & BRUDON, Mixed Dentition
R D ROBLEE, Interdisciplinary Dentofacial Therapy
NANDA, The Developmental Basics of Occlusion and Malocclusion
TIMMS, Rapid Maxillary Expansion
WILLIAMS & COOKS, Fixed Orthodontic Appliances
RICKETTS, Bioprogressive Therapy
VAN DER LINDEN, Quintessence Series

MICHIGAN CENTER, Craniofacial Growth Series for human growth and Development

SALZMAN, Practice of Orthodontics Vol II and I

ROHIT SACHDEVA, Orthodontics for the next millennium

SCHWIDLING, The Jasper Jumper

ROBERT RICKETTS, Provocations and perceptions in Craniofacial Orthopedics

PETER MILES and D RINCHUSE – Evidence Based Clinical Orthodontics

GREG HUANG and STEPHENRICHMOND – Evidence Based Orthodontics

2.20 Journals

American Journal of Orthodontics and Dentofacial Orthopedics

Journal of Orthodontics (formerly British Journal of Orthodontics)

Angle Orthodontist

Journal of Clinical Orthodontics

Journal of Indian Orthodontic Society

Seminars in Orthodontics

Journal of Orthodontics and Dentofacial Orthopedics

European Journal of Orthodontics

Australian Journal of Orthodontics

International Journal of Adult Orthodontics and Orthognathic surgery

The Functional Orthodontist.

2.21 Logbook

▫ Work Diary / Log Book

Logbooks serve as a document of the trainee's work. The trainee shall maintain this Logbook of the special procedures/operations observed/assisted/performed by him/her during the training period right from the point of entry and its authenticity shall be assessed weekly by the concerned Post Graduate Teacher / Head of the Department. This shall be made available to the Board of Examiners for their perusal at the time of his / her appearing at the Final examination. The logbook should record clinical cases seen and presented, procedures and tests performed, seminars, journal club and other presentations. Log book entries must be

qualitative and not merely quantitative, focusing on learning points and recent advances in the area and must include short review of recent literature relevant to the entry. A work diary containing all the various treatment done by the candidate in the course of the study should also be maintained. The work diary shall be scrutinized and certified by both the guide/co guide and Head of the Department and presented in the University practical/clinical examination (Format given in Annexures)

3 EXAMINATIONS

3.1 Eligibility to appear for exams

Every candidate to become eligible to appear for the **MDS examination** shall fulfill the following requirements.

Attendance

Every candidate shall have fulfilled the attendance prescribed by the University during **each academic year** of the Postgraduate course. A candidate becomes eligible for writing the University examination only after the completion of 36 months from the date of commencement of the course. The candidates should have completed the training period before the commencement of examination.

Dissertation

Approval of the dissertation is mandatory requirement for a candidate to appear for the university examinations

Library Dissertation

Submission of Library dissertation as per the regulations of DCI/ KUHS is mandatory for a candidate to appear for the university examination.

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.

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.

The certification of satisfactory progress by the Head of the Department and Head of the Institution shall be based on checklist given in 5.1 to 5.8.

- **Students should note that in case they do not complete the exercises and work allotted to them within the period prescribed, their course requirements will be considered unfulfilled.**
- **Clinical Records, Work Diaries and Logbooks should be maintained regularly and approved by the guide, duly certified by the Head of the Department.**

3.2 Schedule of Regular/Supplementary exams

The MDS examination shall be held at the end of the third academic year .The university shall conduct two examinations in a year at an interval of four to six months between two examinations. **Not more than two examinations shall be conducted in an academic year.**

3.3 Scheme of examination showing maximum marks and minimum marks

- MDS examination will consist of Written (theory), Viva Voce, and Practical / Clinical examinations.

Written Examination (Theory) : 300 Marks

Written examination shall consist of **four question papers**, each of three hours duration . Each paper shall carry 75 marks. The type of questions in the first three papers will be two long essay questions carrying 20 marks each and five short essay questions each carrying seven marks. **There will be no options in the questions in the first 3 papers. Fourth paper will be a single essay question paper which will carry an option and the candidate is to answer only one of the essays.** Questions on recent advances may be asked in any or all the papers. **The syllabus for the theory papers of the concerned specialty should cover the entire field of the subject. Though the topics assigned to the different papers are generally evaluated under designated papers, a strict division of the subject may not be possible and some overlapping of topics is inevitable. Students should be prepared to answer overlapping topics.** The theory examinations shall be held sufficiently earlier than the practical/clinical examinations so that the answer books can be assessed and evaluated before the start of the practical/clinical examination. The total marks for the theory examination shall be 300.

Practical Examination: 200 Marks

In case of practical examination, it should aim 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 mark for practical/clinical examinations shall be 200.

Viva voce : 100 Marks

Viva voce examination shall aim at assessing depth of knowledge, logical reasoning, confidence and oral communication skills. The candidate may be given a topic for the pedagogy in the beginning of the clinical examination and asked to make a presentation on the topic for 8-10 minutes. The total marks shall be 100 of which 80 would be for the viva voce (20 marks/examiner) and 20 marks for the pedagogy.

3.4 Papers in each year

Paper-I- Applied anatomy, physiology, pathology, genetics, physical anthropology & dental material

Paper-II-Diagnosis and treatment planning.
Paper-III-Clinical Orthodontics and Mechanotherapy
Paper-IV-Essay

3.5 Details of theory exams

Distribution of topics for each paper will be as follows:

Paper-I : Applied Basic Sciences: Applied anatomy, Physiology, Dental Materials, Genetics, Pathology, Physical Anthropology, Applied Research methodology, Bio-Statistics and Applied Pharmacology.

Paper II: Orthodontic history, Concepts of occlusion and esthetics, Child and Adult Psychology, Etiology and classification of malocclusion, Dentofacial Anomalies, Diagnostic procedures and treatment planning in Orthodontics, Practice management in Orthodontics

PaperIII: Clinical Orthodontics

Paper IV : Essay

3.6 Model Question Papers

MDS – Orthodontics and Dentofacial Orthopedics

Paper I – Applied anatomy, Physiology, Pathology, Genetics, Physical anthropology & Dental material

Answer all questions

Max Marks 75

Time 3 hours

Long essays

(2 x 20 = 40 marks)

1. Discuss growth rotation of the jaws and it's clinical relevance in Orthodontic treatment.
2. Discuss the effects of various medications in Orthodontics

Short essays

(5 x 7 = 35 marks)

3. Sampling Errors
4. Aesthetic wires
5. Ricketts Growth prediction
6. Genetic Counselling
7. Calcium metabolism

Paper II – Diagnosis and treatment planning

Answer all questions

Max Marks 75

Time 3 hours

Long Essays

(2 x 20 = 40 marks)

1. Discuss Orthodontic treatment for the “special needs” child.
2. What are the advantages of digital imaging over conventional? Enumerate the various digital imaging- methods. Describe CBCT technology.

Short essays

(5 x 7 = 35marks)

3. Etiology of canine impaction
4. Orthodontic triage
5. Informed consent
6. COGS Analysis
7. Arch forms

Paper III – Clinical Orthodontics and Mechanotherapy

Answer all questions

Max Marks 75

Time 3 hours

Long Essays

(2 x 20 = 40 marks)

1. Discuss the management of deep bite in Preadjusted Edgewise Appliance system.
2. Discuss the role of Orthodontist in cleft palate rehabilitation.

Short essays

(5 x 7 = 35marks)

3. Biomechanics of incisor intrusion
4. Orthodontic treatment of diabetic patients
5. Role of Orthodontist in Obstructive sleep Apnoea
6. Dougherty's objectives of finishing and detailing
7. The Alt-RAMEC protocol

Paper IV – ESSAY
Answer any one question

Max Marks 75
Time 3 hours

1. Discuss the impact of Orthodontic treatment on OHRQoL (Oral Health Related Quality of Life) quoting appropriate references

OR

2. Periodontally Accelerated Osteogenic Orthodontics.

3.7 Internal assessment component

Not applicable.

3.8 Details of practical/clinical exams to include Duration Marks Types of cases/ questions

Practical /Clinical Examination : 200Marks

Exercise No: 1 Functional Case : 50Marks

Selection of case for functional appliance with case discussion and recording of construction bite.

Fabrication and delivery of the appliance the next day with chairside viva.

Exercise No: 2 Multiband exercise 50Marks

1. III stage with auxiliary springs

OR

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

Exercise No. 3 Display of records of the treated cases along with

patients (minimum of 5 cases) 5 cases x 15 marks = 75Marks

(including seminars, thesis, Library dissertation, certificates of conferences, courses, paper publications etc)

Exercise No:4-Long case discussions:

25Marks

No	Exercise	Marks allotted	Approximate time
1	Functional appliance	50	2 hours
2	III stage mechanics/ Bonding an arch wire fabrication	50	1 hour 30 min
3	Display of case records (a minimum of 5 cases to be presented with all the cases)	75	1 hour
4	Long cases	25	2 hours

Viva Voce – Total 100 (80 marks for the grand viva and 20 marks for thesis defense / pedagogy)

All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach expression, interpretation of data and communication skills. It includes all components of course contents. It includes presentation and discussion on dissertation also.

3.9 Number of examiners needed (Internal & External) and their qualifications

There shall be at least four examiners in each branch of study. Out of four, two (50%) should 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 DCI. The external examiners shall ordinarily be invited from another recognized University from outside the state. An external examiner may ordinarily be appointed for the same institute for not more than two years consecutively. Thereafter he may be reappointed after an interval of one year. The same set of examiners shall ordinarily be responsible for the practical and oral part of the examination.

The Head of the Department shall ordinarily be one of the examiners and the chairperson of the Board of Examinations; second internal examiner shall rotate after every two consecutive examinations if there are more than two postgraduate teachers in the department other than the Head of the department. No person who is not an active Postgraduate teacher in that subject can be appointed as Examiner. However in case of retired personnel, a teacher who satisfies the above conditions could be appointed as examiner up to one year after retirement.

For the MDS examination, if there are no two qualified internal examiners in an institute the second internal examiner can be from a neighbouring DCI and KUHS approved / recognized Dental College having PG course in the specific speciality. This examiner should be an active PG teacher in the same speciality with the qualifications and experience recommended for a teacher for postgraduate degree programme. The examination can also be conducted by one qualified internal examiner and three qualified external examiners if

there is no qualified second internal examiner.

Reciprocal arrangement of Examiners should be discouraged, in that, the internal examiner in a subject should not accept external examinership of a college from which the external examiner is appointed in his subject in the same academic year.

3.10 Details of viva

Viva Voce :100Marks

i. Viva-Voce examination :80marks

All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach, expression, interpretation of data and communication skills. It includes all components of course contents. It includes presentation and discussion on dissertation also.

ii. Pedagogy and thesis presentation : 10 +10 = 20marks

4.INTERNSHIP

Not applicable in PG courses

5.ANNEXURES

5.Check Lists for Monitoring: Log Book, Seminar Assessment etc.

सर्वे भवन्तु सुखिनः

CHECKLISTS and LOGBOOK

5.1 :Checklist 1

Model Checklist for Evaluation of Preclinical Exercises

Name of Student:

Date:

Name of the Faculty-in-charge:

Name of Exercise

Sl. No:	Items for observation during evaluation	Score
1	Quality of Exercise	
2	Ability to answer to questions	
3	Punctuality in submission of exercise	
4	TOTAL SCORE	

Performance	Score
Poor	0
Below Average	1
Average	2
Good	3
Very good	4

Signature of Faculty-in-charge

सर्वे भयन्तु मांश्रानः

5.2 :Checklist 2

Model Checklist for Evaluation of Journal Review / Seminar Presentation

Name of Student:

Date:

Name of the Faculty/Observer:

Name of Journal / Seminar:

Sl. No:	Items for observation during evaluation	Score
1	Relevance of Topic	
2	Appropriate Cross references	
3	Completeness of Preparation	
4	Ability to respond to questions	
5	Effectiveness of Audio-visual aids used	
6	Time Scheduling	
7	Clarity of Presentation	
8	Overall performance	
9	TOTAL SCORE	

Performance	Score
Poor	0
Below Average	1
Average	2
Good	3
Very good	4

Signature of Faculty/Observer

5.3 :Checklist 3

Model Checklist for Evaluation of Clinical Case and Clinical Work

Name of Student:

Date:

Sl. No:	Items for observation during evaluation	Score
1	History	
	Elicitation	
	Completeness	
2	Examination	
	General Examination	
	Extra oral examination	
	Intraoral examination	
3	Provisional Diagnosis	
4	Investigation	
	Complete and Relevant	
	Interpretation	
5	Diagnosis	
	Ability to defend diagnosis	
6	Differential Diagnosis	
	Ability to justify differential diagnosis	
7	Treatment Plan	
	Accuracy	
	Priority order	
8	Management	
9	Overall Observation	
	Chair side manners	
	Rapport with patient	
	Maintenance of Case Record	
	Quality of Clinical Work	
	Presentation of Completed Case	
10	TOTAL SCORE	

Performance	Score
Poor	0
Below Average	1
Average	2
Good	3
Very good	4

Name of the Faculty/Observer:

5.4 :Checklist 4

Model Checklist for Evaluation of Library Dissertation Work

Name of Student:

Date:

Name of the Faculty/Guide:

Sl. No:	Items for observation during evaluation	Score
1	Interest shown in selecting topic	
2	Relevance of Topic	
3	Preparation of Proforma	
4	Appropriate review	
5	Appropriate Cross references	
6	Periodic consultation with guide	
7	Completeness of Preparation	
8	Ability to respond to questions	
9	Quality of final output	
9	TOTAL SCORE	

Performance	Score
Poor	0
Below Average	1
Average	2
Good	3
Very good	4

सर्वे भयन्तु मांश्रुतः

Signature of Faculty/Guide

5.5 :Checklist 5

Model Checklist for Evaluation of Dissertation Work

Name of Student:

Date:

Name of the Faculty/Guide/Co-guide:

Sl. No:	Items for observation during evaluation	Score	Performance	Score
1	Interest shown in selecting topic		Poor	0
2	Relevance of Topic		Below Average	1
3	Preparation of Proforma		Average	2
4	Appropriate review		Good	3
5	Appropriate Cross references		Very good	4
6	Periodic consultation with guide/co- guide			
7	Depth of Analysis / Discuss			
8	Ability to respond to questions			
9	Department Presentation of findings			
10	Quality of final output			
	TOTAL SCORE			

Signature of Faculty/Guide/Co-guide

5.6 :CHECKLIST-6

CONTINUOUS EVALUATION OF DISSERTATION WORK BY GUIDE/CO-GUIDE

Name of the Trainee:

Date

Name of the Faculty/Observer:

Sl.No	Items for observation during presentation	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Periodic consultation with guide / co- guide					
2.	Regular collection of case material					
3.	Depth of Analysis / Discussion					
4.	Department presentation of findings					
5.	Quality of final output					
6.	Others					
	Total score					

Signature of the guide / co-guide

5.7 :CHECKLIST -7

OVERALL ASSESSMENT SHEET

Name of the College:

Date:

Name of Department:

Check List No	PARTICULARS	Name of trainee		
		First Year	Second Year	Third Year
1	Preclinical Exercises			
2.	Journal Review Presentation			
3.	Seminars			
4	Library dissertation			
5.	Clinical work			
6-	Clinical presentation			
7.	Teaching skill practice			
8.	Dissertation			
	TOTAL			

Signature of HOD

Signature of Principal

The above overall assessment sheet used along with the logbook should form the basis for certifying satisfactory completion of course of study, in addition to the attendance requirement.

Key:

Mean score: Is the sum of all the scores of checklists 1 to 6

5.8 LOGBOOK

DEPARTMENT OF

MDS Programme

LOG BOOK OF

NAME.....

BIODATA OF THE CANDIDATE

EXPERIENCE BEFORE JOINING P.G. COURSE

DETAILS OF POSTING :

- **FIRST YEAR**
- **SECOND YEAR**
- **THIRD YEAR**

DETAILS OF LEAVE AVAILED

PRECLINICAL EXERCISES

LIBRARY DISSERTATION

RESEARCH WORK

PARTICIPATION IN CONFERENCES – CDE PROGRAMMES

DETAILS OF PARTICIPATION IN ACADEMIC PROGRAMME

SEMINARS /SYMPOSIA PRESENTED

JOURNAL CLUBS

TEACHING ASSIGNMENTS – UNDERGRADUATES / PARAMEDICAL.

SPECIAL DUTIES (IF ANY)

INTERNAL ASSESSMENT

DAILY ACTIVITIES RECORD (BLANK PAGES)

ONE PAGE FOR EACH MONTH X 36 PAGES

MISCELLANEOUS

SUMMARY

5.8.1.LOGBOOK-1

ACADEMIC ACTIVITIES ATTENDED

Name:

Admission Year:

College:

Date	Type of activity - Specify Seminar, Journal club, Presentation, UG teaching	Particulars

5.8.2.LOG BOOK -2

ACADEMIC PRESENTATIONS MADE BY THE TRAINEE

Name :

Admission Year:

College:

Date	Topic	Type of activity - Specify Seminar, Journal club, Presentation, UG teaching

5.8.3. LOGBOOK-3

DIAGNOSTIC AND OPERATIVE PROCEDURES PERFORMED

Name

Admission Year:

College:

Date	Name	OP No.	Procedure	Category O, A, PA, PI

Key:

O- WASHED UP AND OBSERVED - INITIAL 6 MONTHS OF ADMISSION

A-ASSISTED A MORE SENIOR SURGEON -1 YEAR MDS

PA - PERFORMED PROCEDURE UNDER THE DIRECT SUPERVISION OF A SENIOR SURGEON - II YEAR MDS

PI-PERFORMED INDEPENDENTLY - III YEAR MDS

SYLLABUS

for Courses affiliated to the
Kerala University of Health Sciences
Thrissur 680596



Master of Dental Surgery (MDS)
Oral Pathology and Microbiology
Course Code: 246

(2016-17 Academic year onwards)

2. COURSE CONTENT

2.1 Title of course:

MDS Oral Pathology and Microbiology

2.2 . Objectives of course

1. Goals

The goals of postgraduate training in various specialties are to train the BDS graduate who will:

- Practice respective specialty efficiently and effectively, backed by scientific knowledge and skill.
- Exercise empathy and a caring attitude and maintain high ethical standards.
- Continue to evince keen interest in continuing professional education in the specialty and allied specialties irrespective of whether in teaching or practice.
- Willing to share the knowledge and skills with any learner, junior or a colleague.
- To develop the faculty for critical analysis and evaluation of various concepts and views, to adopt the most rational approach.

2. Objectives

The objective is to train a candidate so as to ensure higher competence in both general and special area of interest and prepare him for a career in teaching, research and specialty practice. A candidate must achieve a high degree of clinical proficiency in the subject matter and develop competence in research and its methodology as related to the field concerned.

The above objectives are to be achieved by the time the candidate completes the course.

The objectives may be considered as under –

1. Knowledge (Cognitive Domain)
2. Skills (Psychomotor Domain)
3. Human values, ethical practice and communication abilities.

2.1. Knowledge

- Demonstrate understanding of basic sciences relevant to the specialty.
- Describe etiology, pathophysiology, principles of diagnosis and management of common problem within the specialty in adults and children.
- Identify social, economic, environmental and emotional determinants in a given case and take them into account for planning treatment.
- Recognize conditions that may be outside the area of specialty/competence and to refer them to an appropriate specialist.
- Update knowledge by self-study and attending courses, conferences and seminars relevant to specialty.

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

2.2. Skills

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

2.3. Human values, ethical practice and communication abilities

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

2.3 Medium of instruction:

The medium of instruction for the course shall be English.

2.4 Course outline

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

2.5 Duration

The course shall be of three 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 KUHS, observing the norms put forward by the DCI.

- i. There will be no reduction for the course duration for any of the students including service candidates, diploma holders and those who have done senior house surgery or equivalent research experience.

- ii. No student shall be permitted to complete the course by attending more than 6 continuous years.
- iii. A candidate selected for admission in a Dental College is obliged to follow the curriculum, rules and regulations as approved by the Dental Council of India and the University. Curriculum, rules or regulations are subject to changes from time to time.

2.6 Syllabus

The concept of health care counseling shall be incorporated in all relevant areas.

PAPER 1 : Applied Anatomy, Physiology, Pathology and Research Methodology

1. Applied General Anatomy

- 1.1. Osteology of head and neck
- 1.2. Muscles of mastication
 - 1.2.1. blood supply & drainage
 - 1.2.2. innervation
- 1.3. Muscles of facial expression
 - 1.3.1. blood supply & drainage
 - 1.3.2. innervations
- 1.4. Cranial nerves- 5, 7, 9, 11.
- 1.5. Paranasal air sinuses
- 1.6. Palate
- 1.7. Submandibular gland
- 1.8. Sub lingual gland
- 1.9. Parotid gland
- 1.10. Anatomy of tongue –
 - 1.10.1. Muscles
 - 1.10.2. Blood and nerve supply.
- 1.11. TMJ
 - 1.11.1. structure
 - 1.11.2. movements of TMJ
 - 1.11.3. relations
 - 1.11.4. ankylosis
 - 1.11.5. age changes.

2. Embryology

- 2.1. Development of face
- 2.2. Development of paranasal air sinuses
- 2.3. Pharyngeal apparatus
- 2.4. Development of tooth in detail and the age changes
- 2.5. Development of salivary glands

- 2.6. Development of palate
- 2.7. Development of tongue
- 2.8. Congenital anomalies of face

3. Genetics applied to dentistry.

- 3.1. Modes of Inheritance
- 3.2. Chromosomal and genetic anomalies

4. Physiology

4.1. Blood and Lymph

- 4.1.1. Composition & functions of blood,
- 4.1.2. Plasma, plasma functions, Plasma proteins - Types, concentration, functions & variations, Erythrocyte: Morphology, functions and variations.
- 4.1.3. Erythropoiesis and factors affecting erythropoiesis
- 4.1.4. ESR- factors affecting, variations and significance.
- 4.1.5. Haemoglobin - Normal concentration, method of determination and variation in concentration, functions
- 4.1.6. Anaemia - Definition, classification, life span of RBC's destruction of RBC's , formation & fate of bile pigments, Jaundice -types.
- 4.1.6. Hemolysis and Fragility of RBC
- 4.1.7. Leukocytes: Classification, number, percentage, distribution morphology, properties, Functions & variation. Role of lymphocytes in immunity, life span & fate of Leukocytes.
- 4.1.8. Thrombocytes - Morphology, number, variations, function.
- 4.1.9. Haemostasis – Role of vasoconstriction, platelet plug formation in haemostasis, coagulation factors, intrinsic & extrinsic pathways of coagulation, clot retraction.
- 4.1.10. Fibrinolytic system.
- 4.1.11. Tests of haemostatic function, platelet count, clotting time, bleeding time, prothrombin time - normal values, method & variations. Anticoagulants - mechanism of action.
- 4.1.12. Hemorrhage
- 4.1.13. Bleeding disorders.
- 4.1.14. Blood groups: ABO & Rh system, method of determination, importance, indications & dangers of blood transfusion, blood substitutes.
- 4.1.15. Blood volume: Normal values, variations.
- 4.1.16. Functions of reticulo-endothelial system.
- 4.1.17. Specific gravity, Packed cell volume, Methods of estimation
- 4.1.18. Blood Indices - MCV, MCH, MCHC - definition, normal values, variation.
- 4.1.19. Leucopoiesis
- 4.1.20. Thrombopoiesis
- 4.1.21. Hydrogen ion concentration of blood.
- 4.1.22. Homeostasis, Fluid and Electrolyte Balance, Acid Base Balance.
- 4.1.23. Osmotic and Oncotic pressure.
- 4.1.24. Lymph – Composition and Functions – Comparison with Blood

4.2.Gastro - Intestinal Tract:

- 4.2.1. composition, functions and regulation of:
- 4.2.2. Saliva
- 4.2.3. Gastric juice
- 4.2.4. Pancreatic juice
- 4.2.5. Bile
- 4.2.6 Intestinal juice
- 4.2.7. Mastication
- 4.2.8.Deglutition

4.3.ENDOCRINE SYSTEM:

- 4.3.1.Growth hormone
- 4.3.2.Thyroid hormones
- 4.3.3.Parathyroid hormones
- 4.3.4.Calcium homeostasis

5.BIOCHEMISTRY

5.1.Nucleic acids

- 5.1.1.DNA/RNA-outline of structure
- 5.1.2.Transcription/translation steps of protein synthesis, inhibitors of protein synthesis, regulation of gene function

5.2.Energy Metabolism

- 5.2.1.Basal metabolic rate
- 5.2.2. Vitamins -specifically vitamin A, vitamin C, Vitamin D, Thiamin, Riboflavin, Niacin, Pyridoxine

6. General Histology

- 6.1.Different types of epithelium
- 6.2.Bone
- 6.3.Cellular elements of blood
- 6.4.Lymphatic system
- 6.5.Muscle
- 6.6.Neural tissue

7.Oral and Dental Anatomy

- 7.1.Morphology of individual teeth in primary dentition with variations.
- 7.2.Morphology of individual teeth in permanent dentition.
- 7.3.Anatomy of pulp canal and their variations.
- 7.4.Occlusion
- 7.5.Dental arch formation
- 7.6.Development of occlusion from gum pads
- 7.7.Deciduous, mixed and permanent dentition.
- 7.8.Sequence of eruption.
- 7.9.Age changes in the dentition.
- 7.10.Oral and dental developmental anomalies.
- 7.11.Amelogenesis imperfecta.
- 7.12.Dentinogenesis imperfecta.
- 7.13.Tooth numbering systems

8. Oral Histology

- 8.1. Structure of the oral tissues.
- 8.2. Cytoskeleton
- 8.3. Cell junctions
- 8.4. Hard tissue formation and destruction.
- 8.5. Development of the tooth and its supporting tissues.
- 8.6. Bone
- 8.7. Dentinogenesis
- 8.8. Dentin
- 8.9. Pulp
- 8.10. Amelogenesis
- 8.11. Enamel structure
- 8.12. Cementum
- 8.13. Periodontium
- 8.14. Physiologic tooth movement
- 8.15. Eruption and shedding
- 8.16. Salivary glands
- 8.17. Oral mucosa
- 8.18. Temporomandibular joint
- 8.19. Repair and regeneration of dental tissue
- 8.20. Prenatal facial growth and development
- 8.21. Postnatal facial growth and development.

9. General Pathology

- 9.1. Introduction – pathology of the cell
- 9.2. Cellular adaptation, cellular degeneration
- 9.3. Apoptosis and necrosis
- 9.4. Gangrene
- 9.5. Pathologic calcification
- 9.6. Intracellular accumulations – fatty changes, deposition of proteins, glycogen
- 9.7. Acute inflammation
- 9.8. Vascular events of inflammation
- 9.9. Cellular events of inflammation
- 9.10. Chronic inflammation
- 9.11. Mediators of inflammation
- 9.12. Exudate and transudate
- 9.13. Healing, regeneration, repair mechanisms
- 9.14. Wound healing.
- 9.15. Healing by primary intention
- 9.16. Healing by secondary intention
- 9.17. Fracture healing
- 9.18. Factors influencing healing process, complications
- 9.19. Immunological mechanisms in disease
- 9.20. Humoral & cellular immunity
- 9.21. Hypersensitivity and allergy

- 9.22.Autoimmunity.
- 9.23.Normal water and electrolyte balance
- 9.24.Derangements of body fluids
- 9.25.Bleeding disorders
- 9.26.Hemorrhage and shock
- 9.27.Metabolic disorders – kwashiorkar, maramus
- 9.28.Hypervitaminosis, hypovitaminosis,
- 9.29.Rickets, osteomalacia.
- 9.30.Physical and chemical injuries.
- 9.31.Atrophy, hypertrophy, hyperplasia, metaplasia, dysplasia
- 9.32.Premalignant lesions.

10. Microbiology

- 10.1.Culture media.
- 10.2.Infection control
- 10.3.Sterilization and asepsis with special reference to dental office
- 10.4.Hand washing and hand hygiene.
- 10.5.Personal protective equipments.
- 10.6.Handling of sharp instruments.
- 10.7.Needle-stick injury, exposure to body fluids.
- 10.8.Post-exposure prophylaxis.
- 10.9.Management and disposal of waste.
- 10.10.Communicable diseases and notification.
- 10.11.Infection and resistance-defense mechanisms
- 10.12.Experimental animals & hospital infections.

11. Basic Immunology

- 11.1.Cellular and humoral Immunity
- 11.2.Antigen and Antibody System
- 11.3. Hypersensitivity
- 11.4. Autoimmune diseases.

12. Biostatistics

- 12.1.Introduction, definition and branches of biostatistics
- 12.2.Collection of data
- 12.3.Sampling- types
- 12.4.Bias and errors
- 12.5.Compiling data-graphs and charts
- 12.6.Measures of central tendency (mean, median and mode)
- 12.7.Standard deviation
- 12.8.Tests of significance (chi square test't'test and z-test)
- 12.9.Null hypothesis

13. Ethics in Dentistry.

13.1. Introduction to ethics:

13.1.1. What is ethics?

13.1.2. What are values and norms?

13.1.3. How to form a value system in one's personal and professional life?

13.1.4. Hippocratic oath.

13.2. Ethics of the Individual

13.2.1. The patient as a person

13.2.2. Right to be respected

13.2.3. Truth and confidentiality

13.2.4. Autonomy of decision

13.2.5. Doctor patient relationship

13.3. Professional Ethics

13.3.1. Code of conduct

13.3.2. Contract and confidentiality

PAPER II: Oral pathology, Microbiology and Oncology

1. 1. Developmental defects of the oral and maxillofacial region. 1.2. Abnormalities of the teeth

1.3. Pulpal and periapical diseases

1.4. Bacterial infections

1.5. Fungal and protozoal diseases

1.6. Viral diseases

1.7. Physical & chemical injuries

1.8. Allergies and immunological diseases

1.9. Epithelial pathology

1.10. Salivary gland pathology

1.11. Soft tissue tumours

1.12. Haematologic disorders

1.13. Bone pathology

1.14. Odontogenic cyst and tumours

1.15. Dermatologic diseases

1.16. Oral manifestations of systemic disease

1.17. Facial pain and neuromuscular disease

1.18. Forensic odontology

1.19. Differential diagnosis of oral and maxillofacial lesions

1.20. Oral biopsies

1.21. Oral cytology

1.22. Dental caries

1.23. Oral bacterial flora

1.24. Basic immunology and virology

1.25. Lymph node and reticulo endothelial pathology

1.26. Dermatopathology

1.27. Radiation pathology

1.28. Regressive alterations of the teeth

1.29. Spread of oral infection

1.30. Healing of oral wounds

1.31. Oral aspects of metabolic disease

1.32. Disease of nerve and muscle

1.33. Diagnostic lab procedure

2. ORAL MICROBIOLOGY AND IMMUNOLOGY

2.1. Normal oral microbial flora

2.2. Defense mechanism of the oral cavity.

2.3. Microbiology and immunology of Dental Caries and Periodontal diseases

2.4. Dental Caries – Introduction, Epidemiology, Microbiology, cariogenic bacteria including properties, acid production in plaque, development of lesion, response of dentin-pulp unit, histopathology, Root caries, Sequelae and Immunology.

2.5. Tumor Immunology

2.6. Infections of the pulp and periodontal tissues

2.7. Oral Sepsis and

Bacteremia

2.8. Microbial Genetics

3. FORENSIC ODONTOLOGY

3.1. Legal procedures like inquest, medico legal evidences, post mortem examination of violence around the head and neck region, identification of deceased individual using teeth and other oral tissues.

3.2. Bite marks, Rugae patterns and lip prints.

3.3. Saliva and its use in forensic identification.

3.4. The molecular biology of cancer

3.5. Carcinogenesis

3.6. Recent advances in oral oncology

3.7. Aetiology, epidemiology and prevention of cancer

PAPER III : Laboratory techniques and Diagnosis and Oncology

1. Principles and practice of microscopy and photo microscopy

2. Types of biopsies – principles and methods

3. Principles and techniques in routine laboratory procedures in the identification of various oral disease

4. Investigations and Lab Procedures in Forensic odontology

5. Fixation and fixatives

6. Tissue processing, microtomy and paraffin sections

7. Frozen and related sections

8. The theory of staining

9. The haematoxylin and eosin

10. Connective tissues and stains

11. Proteins and nucleic acids

12. Amyloid

13. Carbohydrates

14. Lipids

15. Pigments and minerals

16. Micro-organisms

17. Bone

18. Cytoplasmic granules, organelles and special tissues

19. Enzyme histochemistry and Immunohistochemistry

20. In-situ hybridization

21. Diagnostic cytopathology

22. Resin embedding media
23. Electron microscopy
24. Quantification in histopathology
25. Safety in histopathology lab
26. Audit in histopathology

PAPER IV – GENERAL ESSAY

Three hour Essay pertaining to any of the speciality topics.

2.7 Total number of hours

As per the instruction given by the DCI

2.8 Branches if any with definition

Oral Pathology and Microbiology

2.9 Teaching learning methods

Method of Training

The training of a postgraduate student shall be full time but 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, case demonstrations, clinics, journal review meetings, and clinical meetings. Every candidate shall be required to participate in the teaching and training programme of undergraduate students and interns. Training should include involvement in laboratory and experimental work, and research studies. Every Institution undertaking Post Graduate training programme shall set up an Academic cell or a Curriculum Committee, under the chairmanship of a Senior faculty member, which shall work out the details of the training programme in each speciality in consultation with other Department faculty staff and also coordinate and monitor the implementation of these training Programmes.

Based on the above guidelines for a structured training programme for postgraduate courses, the basic tenets of a successful postgraduate teaching programme, are detailed under the following heads.

- **Formal Lectures** by the faculty on varied subjects including general areas and systems. Both senior and junior faculty can do this. However, the number of these classes should be maintained of low levels to encourage self-learning.
- **Symposia / Seminars** form an integral part of PG learning. A monthly symposium will generate approximate 30-35 symposia / course. These symposia can include department faculty and HODs as chairpersons and maximum involvement of both students and faculty should be ensured.
- **Clinical Discussions** form the core of PG training and can be assigned to various clinical units on rotating basis. However other faculty could also actively participate in the discussion. The discussions must be 3-4/week. One suggestion is to score the performance of the candidate by a small panel of faculty and convey the scores to the

- candidate / PG at the end of the session.
- **Journal Club /Clinical Club** should be conducted at least once in a week in each postgraduate department. Journal clubs not only imparts new information but also trains the candidate to objectively assess and criticize various articles which come out and should be useful in ensuring evidence based dentistry.
 - **Guest Lectures** can be integrated into the PG program at least once in a month. Even the retired faculty can be invited for delivering the lectures and will ensure importing of greater wisdom to the candidates.
 - **Orientation Classes** for newcomers should also be incorporated. These classes can even be assigned to junior faculty/senior PGs.
 - **Clinical posting.** Each PG student should work in the clinics on regular basis to acquire adequate professional skills and competency in managing various cases to be treated by a specialist.
 - **Clinico Pathological Conferences** should be held once a year involving the faculties of Oral Medicine and Radiology, Oral Pathology and concerned clinical department. The student should be encouraged to present the clinical details, radiological and histo-pathological interpretations and participation in the discussions.
 - **Rotation postings in other departments** should be worked out by each department in order to bring in more integration between the speciality and allied fields.
 - **Periodical Quiz** can be both informative and entertaining and should be encouraged and planned.
 - **Computer Training and Internet Applications** are now becoming a must for both faculty and students. These areas should be strengthened as a next step. There can be a sort of internet information club in the departments.
 - **Conferences/CDEs** – All postgraduate students should be encouraged to attend conferences and CDEs. They should also be asked to present papers wherever appropriate and should be rewarded by assigning scores for them.
 - **Publication of scientific papers** – It is desirable and advisable to have at least two publications in the State/National/International indexed dental journals.
 - **Involvement in Teaching Activity** – PG students can be assigned the job of teaching the undergraduate students and these will definitely improve the teaching skills in the postgraduate students.

Examinations

Evaluation is a continuous process, which is based upon criteria developed by the concerned authorities with certain objectives to assess the performance of the learner. This also indirectly helps in the measurement of effectiveness and quality of the concerned MDS programme. Evaluation is achieved by two processes

- 1) Formative or internal assessment
- 2) Summative or university examinations.

Formative evaluation is done through a series of tests and examinations conducted periodically by the institution. Summative evaluation is done by the university through examination conducted at the end of the specified course.

A candidate registered for MDS course must clear the final examination within six years of the date of admission. The examinations should be so organized that this shall be used as the mechanism to confirm that the candidate has acquired appropriate knowledge, skill and competence at the end of the training that he/she can act as a specialist and/or

a medical teacher as per expectation. University examination will be held regularly by KUHS in April-May/October-November every year.

A candidate who wishes to study for MDS in a second specialty should have to take the full course of 3 years in that specialty and appear for examinations.

2.10 Content of each subject in each year

Present in clause 2.6

2.11 No: of hours per subject

As per the DCI guidelines

2.12 Practical training

Present in clause 2.6

2.13 Records

Present in clause 2.20

2.14 Dissertation: As per Dissertations Regulations of KUHS

Every candidate pursuing MDS degree course is required to carry out work on a selected research project under the guidance of a recognized postgraduate 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, and comparison of results and drawing conclusions.

Every candidate shall submit to the University in the prescribed format a synopsis containing particulars of proposed dissertation work after obtaining ethical clearance from the Institutional Ethical Committee **within six months from the date of commencement of the course or before the dates notified by the University**. The synopsis shall be sent only through the Principal of the institution.

Such synopsis will be reviewed and the dissertation topic will be registered by the university. No change in the dissertation topic or guide/coguide shall be made without prior approval of the University. The dissertation should not be just a repetition of a previously undertaken study but it should try to explore some new aspects. The dissertation should be written under the following headings:

- i. Introduction
- ii. Aims and Objectives of the study
- iii. Review of Literature
- iv. Methodology
- v. Results
- vi. Discussion
- vii. Conclusion

- viii. Summary
- ix. References
- x. Annexures

The written text of dissertation shall be not less than 50 pages and shall not exceed 150 pages excluding references, tables, questionnaires, and other annexures. It should be neatly typed (font size 13-Times New Roman or font size 13-Cambria) in 1.5 line spacing on one side of the paper (A4 size, 8.27" x 11.69") and bound properly. Spiral binding should be avoided. (Refer KUHS website). The guide, co-guide if any, Head of the Department and the Head of the Institution shall certify the dissertation.

For uniformity, it was suggested that the colour of the hard bind of the dissertation for all branches of MDS course in the purview of KUHS shall be dark brown with letters of gold colour. The title, author, and year of study should also be imprinted or embossed on the spine of the book. **Three hard copies and one properly labeled soft copy in a CD (refer KUHS website) of the dissertation thus prepared shall be submitted to KUHS on the 29th month of commencement of the course / 31st Oct. of the 3rd Academic year, whichever falls first.** Dissertation should preferably be sent to a minimum of three reviewers / examiners / assessors, of which two shall be from outside the state and one from the affiliated colleges of KUHS. If modifications are to be made as specified, three hard copies and one soft copy of the dissertation after corrections made by the candidate should be submitted within a minimum of 30 days to the University. Consent for acceptance for evaluation of dissertation should be obtained from the reviewer/examiner/assessor before the dissertation are despatched. Proforma for evaluation of dissertation should be sent along with the copies of the dissertation to the reviewers appointed by the university. The proforma should contain all the assessment criteria with the clause – **Accepted/Accepted with modifications/Rejected** and reasons for rejection by the examiner. This proforma should be sent back to the University within two weeks / within the date specified after receipt of dissertation. The dissertation may be declared accepted if more than 50% of the reviewers (2 in the case of 3 reviewers) have accepted it. If modifications are to be made as specified, 3 hard copies and one soft copy of the dissertation after corrections made by the candidate should be submitted within 30 days to the University which may be sent back to the same examiner/s by the University for Acceptance after a fee has been levied from the candidate. If the dissertation has been rejected by more than 50% of the reviewers (2 in the case of 3 reviewers), the dissertation may be reviewed by an Expert Reviewing Committee comprising of not less than two subject experts, Dean (Research) of KUHS and Guide of the candidate provided the Guide requests for a review, after a fee has been levied from the candidate. If rejected by the Reviewing Committee, the candidate should take up a new topic and undergo all the procedures of submitting the synopsis, fees, IEC clearance, etc as prescribed by the University. The candidate who takes up the new topic can appear only for the subsequent examination.

Approval of dissertation work is an essential precondition for a candidate to appear in the University examination. Hall tickets for the university examination should be issued to the candidate only if the dissertation has been accepted.

A candidate whose dissertation has been accepted by the examiners and approved by the University, but who is declared to have failed at the final examination will be permitted

to reappear at the subsequent MDS examination without having to prepare a dissertation.
Guide – The academic qualification and teaching experience required for recognition by the University as a guide for dissertation work is as laid down by the Dental Council of India / KUHS.

Co-guide – A co-guide may be included provided the work requires substantial contribution from the same department or a sister department or from another institution recognized for teaching/training by KUHS/DCI. The co-guide should fulfill the academic qualification and teaching experience required for recognition by the University as a co-guide for dissertation work.

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.

2.15 Speciality training if any

Present in clause 2.6

2.16 Project work to be done if any

Present in clause 2.6

2.17 Any other requirements [CME, Paper Publishing etc.]

Present in clause 2.6

2.18 Prescribed/recommended textbooks for each subject

Applied Basic Sciences

SUBJECT	NAME OF AUTHOR	NAME OF BOOK
Anatomy	BD Chaurasia	BD Chaurasia's Human Anatomy
	William, Peter L	Grays Anatomy
Oral Anatomy	Ash, Major M	Wheeler's Dental Anatomy, Physiology and Occlusion
	Sicher, Harry, Du Brull, Lloyd	Oral Anatomy
Oral Histology	Bhaskar B.N. Ed	Orban's Oral Histology and Embryology
	Avery, James K	Essentials of Oral Histology and Embryology
Embryology	Sadler	Langman's Medical Embryology
	Inderbeer Singh	Human Embryology
Physiology	Guyton Arthur and John L Hall	Text Book of Medical Physiology
	Ganong, William F	Review of Medical Physiology
	KD Tripathi	Essentials of Medical Pharmacology

Pharmacology	Hardman, Joel G	Goodman and Gillmans pharmacological basis of
Nutrition	Nizel	Nutrition in Preventive Dentistry:
		Science and Practice
General Pathology	Cotran, Ramzi S and Others	Robbins Pathologic Basis of Disease
	Harsh Mohan	Textbook of Pathology
Oral Pathology	Shaffer, William and Others	Textbook of Oral Pathology
	Neville, Brad W and Others	Oral and Maxillofacial Pathology
Microbiology	Ananthanarayan and Panicker	Textbook of Microbiology
	Lakshman S	Essential Microbiology for Dentistry
Biostatistics	Dr. Symalan	Statistics in Medicine
	Soben Peter	Essentials of Preventive and Community Dentistry
	Sunder Rao and Richard J.	Introduction to Biostatistics and Research Methods

Oral Pathology and Microbiology

1. Maxillofacial Pathology

- | | |
|--|------------------------|
| 1.1. Oral and maxillofacial pathology –2 nd edition: | Neville, Bouquot,Damn |
| 1.2. Oral medicine –10 th edition | Burket |
| 1.3. Basic pathology –6 th edition | Kumar Cotran Robbins |
| 1.4. Basic pathology –4 th edition | Harshamohan |
| 1.5. Oral pathology –4 th edition | Regezi/Scuibba |
| 1.6. Differential diagnosis of oral lesion — 4 th edition | Wood/GAuz |
| 1.7. Cysts of oral region —3 rd edition | Mervyn Shear |
| 1.8. Oral pathology —4 th edition | Shafer |
| 1.9. Oral diseases– | Cawson, Binnie, Wright |
| 1.10. Colour atlas of oral pathology – | Cawson,Odell |
| 1.11. Syndromes of the head and neck – | Gorlin |
| 1.12. Colour atlas of oral pathology – | Lee |
| 1.13. Colour atlas of oral pathology – | Eveson & Scully |
| 1.14. Histopathology of Tumours- | Enzinger & Weiss |
| 1.15. Colour atlas of oral pathology – | Ishikawa/Waldrome |
| 1.16. Basic histopathology – | Wheater |

- 1.17. Ham's histology
- 1.18. Surgical pathology of salivary glands— Ellis
- 1.19. Oxford textbook of pathology
- 1.20. Orofacial diseases— Scully –Porter
- 1.21. Histopathology of skin— Lever
- 1.22. Surgical pathology of mouth and jaws— Cawson/eveson
- 2. Oral Microbiology**
- 2.1. Essential oral microbiology—2nd edition Samaranayake
- 2.2. Oral Microbiology —3rd edition Marsh Martin
- 2.3. Medical Microbiology – Murray/Rosenthal
- 2.4. Microbiology— Anathanarayanan
- 3. Immunology**
- 3.1. Basic Immunology- Ivan Roitt
- 3.2. Essential Immunology- Ivan Roitt
- 4. Oncology**
- 4.1. Pathology of tumours of the oral tissue—5th edition Lucas
- 4.2. Cancer – Principles and practice— deVita
- 4.3. Cancer biology – Ruddon
- 4.4. Oral cancer— Neville /Johnson
- 4.5. Oxford textbook of oncology
- 4.6. Evans histological appearance of tumours
- 5. Staining**
- 5.1. Theory and practice of histological technique Bancroft
- 5.2. Cellular pathology technique— C.F. A.culling
- 5.3. Histopathologic technique— Lillie
- 5.4. Histological methods Kieman
- 5.5. Histological methods – Disbre/Rack
- 6. Oral Histology & Embryology**
- 6.1. Oral Histology —5th edition Tencate
- 6.2. Oral Histology— Orben
- 6.3. Oral histology— James Avery

- 6.4. Oral Histology – Inheritance and development– Vincent Provenza
- 6.5. Wheelers dental anatomy physiology and occlusion
- 6.6. Human embryology– Langman
- 6.7. Human embryology– Larsen
- 6.8. General Histology – Inderbirsingh
- 6.9. Gray’s anatomy – 42nd edition
- 6.10. Scientific foundations of Dentistry– Kramer/Irvin
- 7. Dermatology**
- 7.1.Rook’s Textbook of Dermatology (Volume I–IV) Tony Burns
- 7.2.Lever’s histopathology of the skin David E.Elder

2.19 Reference books

As suggested by HOD

2.20 Journals

- Journal of Oral & Maxillofacial Pathology (JOMP)
- Oral & Maxillofacial Pathology Journal (OMPJ)
- Triple ‘O’ (journal of Oral pathology, Oral medicine, Oral surgery and Endodontics)
- Journal of Oral Pathology and Medicine
- Lancet Oncology
- Oral Disease
- Oral Oncology
- Journal Of The National Comprehensive Cancer Network (JNCCN)
- Head & Neck Oncology
- Indian Journal of Cancer
- Indian Journal of Pathology and Microbiology
- Human Pathology
- Indian Journal Of Dermatology, Venereology And Leprology
- International Journal of Dermatology
- American Journal of Dermatology
- Histopathology

Histochemistry

Staining Technology

Journal of Oral Biosciences

Indian Journal of Orofacial Genetics

International Journal of Oral Medical Science

Journal of Dental Research

Cell

2.21 Logbook

▫ Work Diary / Log Book

Logbooks serve as a document of the trainee's work. The trainee shall maintain this Logbook of the special procedures/operations observed/assisted/performed by him/her during the training period right from the point of entry and its authenticity shall be assessed weekly by the concerned Post Graduate Teacher / Head of the Department. This shall be made available to the Board of Examiners for their perusal at the time of his / her appearing at the Final examination. The logbook should record clinical cases seen and presented, procedures and tests performed, seminars, journal club and other presentations. Logbook entries must be qualitative and not merely quantitative, focusing on learning points and recent advances in the area and must include short review of recent literature relevant to the entry. A work diary containing all the various treatment done by the candidate in the course of the study should also be maintained. The work diary shall be scrutinized and certified by both the guide/co guide and Head of the Department and presented in the University practical/clinical examination

3 EXAMINATIONS

3.1 Eligibility to appear for exams

Every candidate to become eligible to appear for the **MDS examination** shall fulfill the following requirements.

Attendance

Every candidate shall have fulfilled the attendance prescribed by the University during **each academic year** of the Postgraduate course. A candidate becomes eligible for writing the University examination only after the completion of 36 months from the date of commencement of the course. The candidates should have completed the training period before the commencement of examination.

Dissertation

Approval of the dissertation is a mandatory requirement for a candidate to appear for the university examination.

Library Dissertation

Submission of the library dissertation as per the regulations of DCI / KUHS is mandatory

for a candidate to appear for the university examination.

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.

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.

The certification of satisfactory progress by the Head of the Department and Head of the Institution shall be based on checklist given in 5.1 to 5.8.

- **Students should note that in case they do not complete the exercises and work allotted to them within the period prescribed, their course requirements will be considered unfulfilled.**
- **Clinical Records, Work Diaries and Logbooks should be maintained regularly and approved by the guide, duly certified by the Head of the Department.**

3.2 Schedule of Regular/Supplementary exams

The MDS examination shall be held at the end of the third academic year. The university shall conduct two examinations in a year at an interval of four to six months between two examinations. **Not more than two examinations shall be conducted in an academic year.**

3.3 Scheme of examination showing maximum marks and minimum marks

- MDS examination will consist of Written (Theory), Viva Voce, and Practical/ Clinical examination.

Written Examination (Theory) : 300 Marks

Written examination shall consist of **four question papers**, each of three hours duration. Each paper shall carry 75 marks. The type of questions in the first three papers will be two long essay questions carrying 20 marks each and five short essay questions each carrying seven marks. **There will be no options in the questions in the first 3 papers. Fourth paper will be a single essay question paper which will carry an option and the candidate is to answer only one of the essays.** Questions on recent advances may be asked in any or all the papers. **The syllabus for the theory papers of the concerned specialty should cover the entire field of the subject. Though the topics assigned to the different papers are generally evaluated under designated papers, a strict division of the subject may not be possible and some overlapping of topics is inevitable. Students should be prepared to answer overlapping topics.** The theory examinations shall be held sufficiently earlier than the practical/clinical examinations so that the answer books can be assessed and evaluated before the start of the practical/clinical examination. The total marks for the theory examination shall be 300.

Practical Examination : 200 Marks

In case of practical examination, it should aim 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 mark for practical/clinical examinations shall be 200.

Viva voce : 100 Marks

Viva voce examination shall aim at assessing depth of knowledge, logical reasoning, confidence and oral communication skills. The candidate may be given a topic for the pedagogy in the beginning of the clinical examination and asked to make a presentation on the topic for 8-10 minutes. The total marks shall be 100 of which 80 would be for the viva voce (20 marks/examiner) and 20 marks for the pedagogy.

3.4 Papers in each year

Paper- I- Applied Anatomy, Physiology, Pathology and Research Methodology
Paper-II- Oral pathology, Microbiology and Oncology
Paper-III- Laboratory Techniques and Diagnosis
Paper-IV- Essay

3.5 Details of theory exams

Distribution of topics for each paper will be as follows

PAPER-I : Applied Basic Sciences: Applied anatomy, Physiology (General and oral), Cell Biology, General Histology, Biochemistry, General Pathology, General and systemic Microbiology, Virology, Mycology, Basic Immunology, Oral Biology (oral and dental histology), Biostatistics and Research Methodology

PAPER-II: Oral pathology, Oral Microbiology & Immunology and Forensic Odontology

PAPER-III: Laboratory techniques and Diagnosis and Oncology

PAPER-IV:Essay

3.6 Model Question Papers

MDS Degree Examination – Oral Pathology

Paper I – Applied Anatomy, Physiology, Pathology and Research Methodology

(Answer all questions)

Time: 3 hrs

MaxMarks: 75

Long essays

(2 x 20 = 40 marks)

1. Describe the muscles of the tongue including its blood supply, lymph drainage and nerve supply (5+5+5+5=20)
2. Describe the pathway for pain. Explain the physiological basis of pain. Add a note on referred pain with suitable examples. (10+6+2+2=20)

Shor essays

(5x7=35marks)

3. Theories on the evolutionary origin of teeth
4. Thrombosis
5. Professional ethics
6. Metabolism and role of Streptococcus mutans in dental caries

7. Retrospective research

Paper II – Oral Pathology, Microbiology and Oncology

(Answer all questions)

Time: 3 hrs

Max Marks: 75

Long Essays

(2x20=40marks)

1. Discuss the various grading systems of oral squamous cell carcinoma
2. Discuss odontogenic tumors of mesenchymal origin

Short Essays

(5x7=35marks)

3. Apoptosis
4. Focal infection and focus of infection
5. Oncogenes
6. Oral candidiasis
7. Amelogenesis imperfecta



Paper III – - Laboratory Techniques in Oral pathology, Microbiology and Diagnosis

(Answer all questions)

Long Essays

(2x20=40marks)

Time: 3 hrs

Max Marks: 75

1. Discuss fixatives in detail
2. Discuss the different types of hematoxylin and its uses

Short Essays

(5x7=35marks)

3. Acid fast stain
4. Lab diagnosis of anemia
5. Confocal microscope
6. Lectins
7. Indirect immunohistochemistry

PaperIV – RECENT ADVANCES IN ORAL PATHOLOGY AND MICROBIOLOGY

(Answer any one question)

Time: 3 hrs

Max Marks: 75

1. Discuss the giant cell lesions of the oral cavity

OR

2. Autoimmunity and autoimmune oral lesions

3.7 Internal assessment component

Not applicable.

3.8 Details of practical/clinical exams

Practical Examination – 2 Days – Total 200 marks

1. Case presentation - One long Case(20marks)
One short case (10marks)
Any Ulcero proliferative growth
Any white lesions
Any erythematous lesions
Skin lesion with oral manifestation
2. Haematology - Any 2 investigations & discussion (20marks)
Hemoglobin Estimation
Total Count (RBC and WBC),
Differential Count
ESR
3. Cytology - (20marks)
Smear – Gingival / tongue, Giemsa/PAP
Staining and its discussion
4. Histopathology Techniques - (30marks)
Staining – H & E and / special staining
Reporting of the stained slide
Viva voce on Laboratory techniques
5. Slide Discussion (100 marks) Histopathology Report Writing and Discussion of 8 slides
Viva Voce: 100Marks
 - i. Viva voce 80 marks
All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach, expression, interpretation of data and communication skills on the subject.
 - ii. Pedagogy Exercise: 20marks
A topic will be given at the beginning of the clinical examination and will have to be presented for 8-10 minutes.

3.9 Number of examiners needed (Internal & External) and their qualifications

There shall be at least four examiners in each branch of study. Out of four, two (50%) should 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 DCI. The external examiners shall ordinarily be invited from another recognized University from outside the state. An external examiner may ordinarily be appointed for the same institute for not more than two years consecutively. Thereafter he may be reappointed after an interval of one year. The same set of examiners shall ordinarily be responsible for the practical and oral part of the examination.

The Head of the Department shall ordinarily be one of the examiners and the chairperson of the Board of Examinations; second internal examiner shall rotate after every two consecutive examinations if there are more than two postgraduate teachers in the department other than the Head of the department. No person who is not an active Postgraduate teacher in that subject can be appointed as Examiner. However in case of retired personnel, a teacher who satisfies the above conditions could be appointed as examiner up to one year after retirement.

For the MDS examination, if there are no two qualified internal examiners in an institute the second internal examiner can be from a neighbouring DCI and KUHS approved / recognized Dental College having PG course in the specific speciality. This examiner should be an active PG teacher in the same speciality with the qualifications and experience recommended for a teacher for postgraduate degree programme. The examination can also be conducted by one qualified internal examiner and three qualified external examiners if there is no qualified second internal examiner.

Reciprocal arrangement of Examiners should be discouraged, in that, the internal examiner in a subject should not accept external examinership of a college from which the external examiner is appointed in his subject in the same academic year.

3.10 Details of viva

Viva Voce :100Marks

i. Viva-Voce examination :80marks

All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach, expression, interpretation of data and communication skills. It includes all components of course contents. It includes presentation and discussion on dissertation also.

ii. Pedagogy and thesis presentation : 10 +10 =20marks

4.INTERNSHIP

Not applicable for PG courses

5.ANNEXURES

5.Check Lists for Monitoring: Log Book, Seminar Assessment etc.

CHECKLISTS and LOGBOOK

5.1 Checklist 1

Model Checklist for Evaluation of Preclinical Exercises

Name of Student:

Date:

Name of the Faculty-in-charge:

Name of Exercise

Sl. No:	Items for observation during evaluation	Score
1	Quality of Exercise	
2	Ability to answer to questions	
3	Punctuality in submission of exercise	
4	TOTAL SCORE	

Performance	Score
Poor	0
Below Average	1
Average	2
Good	3
Very good	4

Signature of Faculty-in-charge

5.2:Checklist2

Model Checklist for Evaluation of Journal Review / Seminar Presentation

Name of Student:

Date:

Name of the Faculty/Observer:

Name of Journal / Seminar:

Sl. No:	Items for observation during evaluation	Score
1	Relevance of Topic	
2	Appropriate Cross references	
3	Completeness of Preparation	
4	Ability to respond to questions	
5	Effectiveness of Audio-visual aids used	
6	Time Scheduling	
7	Clarity of Presentation	
8	Overall performance	
9	TOTAL SCORE	

Performance	Score
Poor	0
Below Average	1
Average	2
Good	3
Very good	4

Signature of Faculty/Observer

5.3:Checklist3

Model Checklist for Evaluation of Clinical Case and Clinical Work

Name of Student:

Date:

Sl. No.	Items for observation during	Score
1	History	
	Elicitation	
	Completeness	
2	Examination	
	General Examination	
	Extra oral examination	
	Intraoral examination	
3	Provisional Diagnosis	
4	Investigation	
	Complete and Relevant	
	Interpretation	
5	Diagnosis	
	Ability to defend diagnosis	
6	Differential Diagnosis	
	Ability to justify differential diagnosis	
7	Treatment Plan	
	Accuracy	
	Priority order	
8	Management	
9	Overall Observation	
	Chair side manners	
	Rapport with patient	
	Maintenance of Case Record	
	Quality of Clinical Work	
	Presentation of Completed Case	
10	TOTAL SCORE	

Performance	Score
Poor	0
Below Average	1
Average	2
Good	3
Very good	4

Name of the Faculty/Observer:

5.4 :Checklist 4

Model Checklist for Evaluation of Library Dissertation Work

Name of Student:

Date:

Name of the Faculty/Guide:

Sl. No:	Items for observation during evaluation	Score
1	Interest shown in selecting topic	
2	Relevance of Topic	
3	Preparation of Proforma	
4	Appropriate review	
5	Appropriate Cross references	
6	Periodic consultation with guide	
7	Completeness of Preparation	
8	Ability to respond to questions	
9	Quality of final output	
9	TOTAL SCORE	

Performance	Score
Poor	0
Below Average	1
Average	2
Good	3
Very good	4

सर्वे भयन्तु सर्वान् :

Signature of Faculty/Guide

5.5 :Checklist 5

Model Checklist for Evaluation of Dissertation Work

Name of Student:

Date:

Name of the Faculty/Guide/Co-guide:

Sl. No:	Items for observation during evaluation	Score	Performance	Score
1	Interest shown in selecting topic		Poor	0
2	Relevance of Topic		Below Average	1
3	Preparation of Proforma		Average	2
4	Appropriate review		Good	3
5	Appropriate Cross references		Very good	4
6	Periodic consultation with guide/co- guide			
7	Depth of Analysis / Discuss			
8	Ability to respond to questions			
9	Department Presentation of findings			
10	Quality of final output			
	TOTAL SCORE			

Signature of Faculty/Guide/Co-guide

5.6 :CHECKLIST-6

CONTINUOUS EVALUATION OF DISSERTATION WORK BY GUIDE/CO-GUIDE

Name of the Trainee:

Date

Name of the Faculty/Observer:

Sl.No	Items for observation during presentation	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Periodic consultation with guide / co- guide					
2.	Regular collection of case material					
3.	Depth of Analysis / Discussion					
4.	Department presentation of findings					
5.	Quality of final output					
6.	Others					
	Total score					

सर्वे भयन्तु सर्वान्

Signature of the guide / co-guide

5.7 :CHECKLIST -7

OVERALL ASSESSMENT SHEET

Name of the College:

Date:

Name of Department:

Check List No	PARTICULARS	Name of trainee		
		First Year	Second Year	Third Year
1	Preclinical Exercises			
2.	Journal Review Presentation			
3.	Seminars			
4	Library dissertation			
5.	Clinical work			
6-	Clinical presentation			
7.	Teaching skill practice			
8.	Dissertation			
	TOTAL			

Signature of HOD

Signature of Principal

The above overall assessment sheet used along with the logbook should form the basis for certifying satisfactory completion of course of study, in addition to the attendance requirement.

Key:

Mean score: Is the sum of all the scores of checklists 1 to 6

5.8 ;LOGBOOK

DEPARTMENT OF

MDS Programme

LOG BOOK OF

NAME.....

BIODATA OF THE CANDIDATE

EXPERIENCE BEFORE JOINING P.G. COURSE

DETAILS OF POSTING :

- **FIRST YEAR**
- **SECOND YEAR**
- **THIRD YEAR**

DETAILS OF LEAVEA VAILED

PRECLINICAL EXERCISES

LIBRARY DISSERTATION

RESEARCH WORK

PARTICIPATION IN CONFERENCES – CDE PROGRAMMES

DETAILS OF PARTICIPATION IN ACADEMIC PROGRAMME

SEMINARS /SYMPOSIA PRESENTED

JOURNAL CLUBS

TEACHING ASSIGNMENTS – UNDERGRADUATES / PARAMEDICAL.

SPECIAL DUTIES (IF ANY)

INTERNAL ASSESSMENT

DAILY ACTIVITIES RECORD (BLANK PAGES)

ONE PAGE FOR EACH MONTH X 36 PAGES

MISCELLANEOUS

SUMMARY

5.8.1 :LOGBOOK-1

ACADEMIC ACTIVITIES ATTENDED

Name:

Admission Year: College:

Date	Type of activity - Specify Seminar, Journal club, Presentation, UG teaching	Particulars

सर्वे भयन्तु मुग्धानः



5.8.2 :LOG BOOK -2

ACADEMIC PRESENTATIONS MADE BY THE TRAINEE

Name :

Admission Year:

College:

Date	Topic	Type of activity - Specify Seminar, Journal club, Presentation, UG teaching

5.8.3 :LOGBOOK-3

DIAGNOSTIC AND OPERATIVE PROCEDURES PERFORMED

Name

Admission Year:

College:

Date	Name	OP No.	Procedure	Category O, A, PA, PI

Key:

O- WASHED UP AND OBSERVED - INITIAL 6 MONTHS OF ADMISSION

A- ASSISTED A MORE SENIOR SURGEON - 1 YEAR MDS

PA - PERFORMED PROCEDURE UNDER THE DIRECT SUPERVISION OF A SENIOR SURGEON - II YEAR MDS

PI- PERFORMED INDEPENDENTLY - III YEAR MDS

SYLLABUS

for Courses affiliated to the
Kerala University of Health Sciences
Thrissur 680596



Master of Dental Surgery (MDS)
Pedodontics and Preventive Dentistry
Course Code:247

(2016-17 Academic year onwards)

2016

2. COURSE CONTENT

2.1 Title of course:

MDS Pedodontics and Preventive Dentistry

2.2 Objectives of course

1. Goals

The goals of postgraduate training in various specialities are to train the BDS graduate who will:

- Practice respective specialty efficiently and effectively, backed by scientific knowledge and skill.
- Exercise empathy and a caring attitude and maintain high ethical standards.
- Continue to evince keen interest in continuing professional education in the specialty and allied specialties irrespective of whether in teaching or practice.
- Willing to share the knowledge and skills with any learner, junior or a colleague.
- To develop the faculty for critical analysis and evaluation of various concepts and views, to adopt the most rational approach.

2. Objectives

The objective is to train a candidate so as to ensure higher competence in both general and special area of interest and prepare him for a career in teaching, research and specialty practice. A candidate must achieve a high degree of clinical proficiency in the subject matter and develop competence in research and its methodology as related to the field concerned.

The above objectives are to be achieved by the time the candidate completes the course. The objectives may be considered as under –

1. Knowledge (Cognitive Domain)
2. Skills (Psychomotor Domain)
3. Human values, ethical practice and communication abilities.

2.1. Knowledge

- Demonstrate understanding of basic sciences relevant to the specialty.
- Describe etiology, pathophysiology, principles of diagnosis and management of common problem within the specialty in adults and children.
- Identify social, economic, environmental and emotional determinants in a given case and take them into account for planning treatment.
- Recognize conditions that may be outside the area of specialty/competence and to refer them to an appropriate specialist.

- Update knowledge by self-study and by attending courses, conferences and seminars relevant to specialty.
- Undertake audit; use information technology and carryout research both basic and clinical with the aim of publishing or presenting the work at various scientific gatherings.

2.2. Skills

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

2.3. Human values, ethical practice and communication abilities

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

2.3 Medium of instruction:

The medium of instruction for the course shall be English.

2.4 Course outline

Pedodontics, also known as Pediatric Dentistry, is an age-defined specialty that provides both primary and comprehensive preventive and therapeutic oral health care for infants and children through adolescence, including those with special health care needs.

2.5 Duration

The course shall be of **three 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 KUHS, observing the norms put forward by the DCI.

- i. There will be no reduction for the course duration for any of the students including service candidates, diploma holders and those who have done senior house surgery or equivalent research experience.
- ii. No student shall be permitted to complete the course by attending more than 6 continuous years.
- iii. A candidate selected for admission in a Dental College is obliged to follow the curriculum, rules and regulations as approved by the Dental Council of India and the University. Curriculum, rules or regulations are subject to changes from time to time.

2.6 Syllabus

The syllabus for the theory of the specialty of Pedodontics should cover the entire field of the subject and the following topics may be used as guidelines.

The concept of health care counseling shall be incorporated in all relevant areas.

1. **Growth and Development:** Prenatal and Postnatal development of cranium, face, jaws, teeth and supporting structures. Chronology of dental development and development of occlusion. Dimensional changes in dental arches. Cephalometric evaluation of growth. Eruption and Exfoliation of teeth.
2. **Child Psychology:** Development and classification of behaviour, personality, intelligence in children, theories of child psychology, stages of psychological child development, fear anxiety, apprehension and its management.
3. **Behaviour Management:** Non-pharmacological and Pharmacological methods.
Conscious Sedation, Deep Sedation and General Anaesthesia in Pediatric Dentistry. Including other drugs, Synergistic and Antagonistic actions of various drugs used in children.
4. Child Abuse and Neglect.
5. **Preventive Pedodontics:** Concepts, chairside preventive measures for dental diseases, high-risk caries including rampant and extensive caries – Recognition, features and Preventive Management, Pit and Fissure Sealants, Oral Hygiene measures, correlation of brushing with dental caries and periodontal diseases. Diet and Nutrition as related to dental caries. Diet Counseling.
6. **Dental Plaque:** Definition, Initiation, Pathogenesis, Biochemistry, Morphology and Metabolism.

- 7. Microbiology and Immunology as related to oral diseases in children:** Basic concepts, Immune system in human body, Autoimmune diseases, Histopathology, Pathogenesis, Immunology of Dental caries, Periodontal diseases, Tumours, Oral mucosal lesions, etc.
- 8. Gingival and Periodontal Diseases in children:**
- 8.1. Normal Gingiva and Periodontium in children.
 - 8.2. Gingival and Periodontal Diseases – Etiology, Pathogenesis, Prevention and Management.
- 9. Pediatric Conservative Dentistry:**
- 9.1. Principles of Pediatric Operative Dentistry along with modifications of materials – past, current and advances including tooth coloured materials.
 - 9.2. Modifications required for cavity preparation in primary and young permanent teeth.
 - 9.3. Various isolation techniques.
 - 9.4. Restorations of decayed primary, young permanent and permanent teeth in children using various restorative materials like Glass Ionomer, Composites, Compomers, Silver amalgam and latest restorative materials.
 - 9.5. Basic and advanced knowledge about dentin bonding system and bonded restorations.
 - 9.6. Stainless steel, polycarbonate and Resin crowns/veneers and full metal crowns.
- 10. Pediatric Endodontics:**
- 10.1. Primary dentition – Diagnosis of Pulpal Diseases and their management – Pulp capping, Pulpotomy, Pulpectomy, Controversies and recent concepts.
 - 10.2. Young Permanent Teeth and Permanent Teeth – Pulp Capping, Pulpotomy, Apexogenesis, Apexification, Concepts, Techniques and Materials used for different procedures.
 - 10.3. Recent advances in Pediatric Endodontics.
- 11. Prosthodontic considerations in Pediatric Dentistry.**
- 12. Traumatic Injuries in Children:**
- 12.1. Classifications and Importance.
 - 12.2. Sequelae and reaction of teeth to trauma.
 - 12.3. Management of Traumatized teeth with latest concepts.
- 13. Preventive and Interceptive Orthodontics:**
- 13.1. Concepts of occlusion and esthetics: Structure and Function of all anatomic components of occlusion, mechanics of articulations, recording of masticatory functions, diagnosis of occlusal dysfunction, relationship of TMJ anatomy and pathology and related neuromuscular physiology.

- 13.2. A comprehensive review of the local and systemic factors in the causation of malocclusion.
- 13.3. Recognition and management of normal and abnormal developmental occlusions in primary, mixed and permanent dentitions in children (Occlusal Guidance).
- 13.4. Space Management – Etiology, Diagnosis of space problems, Analysis, Biomechanics, Space Maintenance and maintainers, Serial Extraction.
- 13.5. Biology of Tooth Movement, Physiologic Tooth resorption and exfoliation, Eruption – A comprehensive review of the principles of teeth movements, exfoliation, eruption of teeth. Review of contemporary literature. Histopathology of bone and periodontal ligament, molecular and ultra cellular consideration in tooth movement, physiologic tooth resorption and eruption.
- 13.6. Myofunctional appliances – Basic principles, Contemporary appliances; Design and Fabrication.
- 13.7. Removable Appliances - Basic principles, Contemporary appliances; Design and Fabrication.
- 13.8. Case selection and diagnosis in interceptive orthodontics – Cephalometrics, Image processing, Tracing, Radiation hygiene, Video Imaging and advanced cephalometric techniques.

14. Oral Habits in Children:

- 14.1. Definition, etiology and classification.
- 14.2. Diagnosis, clinical features and dentoalveolar effects of Digit Sucking, Tongue Thrusting, Mouth Breathing and various other oral habits.
- 14.3. Management of oral habits in children.

15. Dental Care of Children with Special Needs: Definition, Behavioural, Clinical Features and Management of Children with

- 15.1. Physically Handicapping Conditions.
- 15.2. Mentally Compromising Conditions.
- 15.3. Medically Compromising Conditions.
- 15.4. Genetic Disorders.

16. Oral Manifestations of Systemic Conditions in Children and their management.

17. Cross infection control in dental clinic/laboratory.

18. Methods of sterilization and asepsis in clinics.

19. Management of Minor Oral Surgical Procedures in Children.

20. Dental Radiology as related to Pediatric Dentistry.

21. Cariology:

- 21.1. Historical Background
- 21.2. Definition, Etiology and Pathogenesis.
- 21.3. Caries pattern in Primary, Young Permanent and Permanent teeth in Children.
- 21.4. Rampant Caries, Early Childhood Caries and Extensive Caries – Definition, etiology, pathogenesis, Clinical features, Complications and Management.
- 21.5. Role of Diet and Nutrition in Dental Caries.
- 21.6. Cariogenicity of various foods.
- 21.7. Dietary modifications and Diet Counseling.
- 21.8. Caries Activity Tests, Caries Prediction, Caries Susceptibility Tests and their clinical applications.

22. Pediatric Oral Medicine and Clinical Pathology: Recognition and Management of Developmental Dental Anomalies, Teething Disorders, Stomatological conditions, Mucosal Lesions, Oral Infections, etc.

23. Congenital Abnormalities in Children: Definition, Classification, Clinical features and management.

24. Dental Emergencies in Children and their Management.

25. Dental Materials used in Pediatric Dentistry.

26. Preventive Dentistry:

- 26.1. Definition
- 26.2. Levels of Prevention.
- 26.3. Different preventive measures used in Pediatric Dentistry including Pit and Fissure Sealants and Caries Vaccine.
- 26.4. Role of fluorides
- 26.5. Diet Counseling.

27. Dental Health Education and School Dental Health Programmes: Dental Health Concepts, Effects of Civilization and Environment, Dental Health Delivery System, Dental Health Surveys, Public Health measures related to children along with principles of children's Preventive Dentistry.

28. School Dental Health programmes – Incremental and Comprehensive Care.

29. National Oral health Policy.

30. Epidemiology of oral Diseases – Dental Caries, Gingival and periodontal diseases, malocclusion, dental fluorosis.

31. Oral Survey Procedures

- 31.1. Planning
- 31.2. Implementation
- 31.3. WHO Basic Oral health methods.
- 31.4. Indices for oral diseases.
- 32. Fluorides:**
 - 32.1. Historical background.
 - 32.2. Systemic and Topical Fluorides.
 - 32.3. Mechanism of Action.
 - 32.4. Toxicity and Management.
 - 32.5. Defluoridation techniques.
- 33. Medicolegal aspects in pediatric Dentistry with emphasis on informed consent.**
- 34. Case History Recording:** Outline of Principles of Examination, Diagnosis and Treatment Planning.
- 35. Epidemiology:**
 - 35.1. Concepts
 - 35.2. Methods of Recording and Evaluation of various oral diseases.
 - 35.3. Various National and Global trends of epidemiology of oral diseases.
- 36. Comprehensive Infant Oral Health Care.**
- 37. Comprehensive cleft lip and palate care management with emphasis on counseling, feeding remodeling, speech rehabilitation.**
- 38. Principles of Biostatistics, Research Methodology, Understanding of Computers and Photography.**
- 39. Setting up of Pedodontic and Preventive Dentistry Clinic.**
- 40. Emerging concepts in Pediatric Dentistry on scope of LASERS**
- 41. Minimal Invasive Dentistry**
- 42. Nanodentistry in Pediatric Dentistry.**
- 43. Evidence Based Dentistry.**
- 44. Genetics and Molecular Biology**
- 45. Biomimetics and Smart Materials.**
- 46. Tooth Banking**
- 47. Implantology – Basic Principles.**
- 48. Hospital based dentistry.**
- 49. Changing Trends in Oral Diseases in Children.**

TEACHING LEARNING ACTIVITIES

1. Seminars

During a 1 hour weekly seminar the student is required to review the assigned topic completely and present it in a compiled manner. Each seminar should be followed by an elaborate discussion to facilitate a complete learning. At the end of each seminar a detailed evaluation has to be carried out by each of the attending faculty and signed by the respective guide.

1.1. The topics for Basic Science seminars include

- 1.1.1. Evolution of jaws and teeth
- 1.1.2. Eruption and Shedding of Teeth,
- 1.1.3. Theories of Eruption
- 1.1.4. TM Joint
- 1.1.5. Haemostasis
- 1.1.6. Bleeding disorders
- 1.1.7. Regulation of Blood Calcium level.
- 1.1.8. Physiology of pain
- 1.1.9. Pain Pathway
- 1.1.10. Cranial Nerves
- 1.1.11. Pedologic Anatomy
- 1.1.12. Enamel, Dentine and Pulp.
- 1.1.13. Blood supply of head and neck.
- 1.1.14. Lymphatic drainage.
- 1.1.15. Oral Mucosa
- 1.1.16. Saliva.
- 1.1.17. Shock
- 1.1.18. Fear and its management.
- 1.1.19. Caries susceptibility and Caries Activity.
- 1.1.20. Syncope and its management.
- 1.1.21. Complications of LA.
- 1.1.22. Drug related emergencies.
- 1.1.23. Infection Control.
- 1.1.24. Prenatal growth and Development.

- 
- 1.1.25. Postnatal growth and development.
 - 1.1.26. Muscles of facial expression.
 - 1.1.27. Biostatistics.
 - 1.1.28. Aesthetic Restorations.
 - 1.1.29. Amalgam and Amalgam controversies.
 - 1.1.30. Theories of Child Psychology.
 - 1.1.31. Anxiety rating scales.
 - 1.1.32. Balanced diet.
 - 1.1.33. Ethics In research.
 - 1.1.34. Dental Health Survey.
 - 1.1.35. Drug dosing.
 - 1.1.36. Inferential Statistics.
 - 1.1.37. Intraoral Radiographs.
 - 1.1.38. Radiographic hazards.
 - 1.1.39. Normal radiographic anatomy of the jaws and its structures.
 - 1.1.40. Digital imaging.
 - 1.1.41. CBCT in pediatric dentistry.
 - 1.1.42. Bleeding disorders.
 - 1.1.43. Pediatric Oral Pathology.
 - 1.1.44. Developmental anomalies of the face.
 - 1.1.45. Developmental anomalies of the jaws.
 - 1.1.46. Biomedical waste management.
 - 1.1.47. Healing and Repair.
 - 1.1.48. Pulp and Pulpal Diseases.
 - 1.1.49. Antibiotics in Pediatric Dentistry.
 - 1.1.50. Analgesics in Pediatric Dentistry.
- 1.2. Basic and Advanced Speciality Seminars.

The topics for Basic Speciality and Advanced Speciality seminars include

1.2.1. Growth and Development

1.2.1.1. Basic concepts of growth and development of face (pattern variability, timing of growth influenced by various hereditary and environmental factors).

1.2.1.2. Principles and theories.

- 1.2.1.3. Cephalometric growth evaluation.
- 1.2.1.4. Human dentition, its development and changing patterns.
- 1.2.1.5. Normal occlusion and factors influencing functional development of occlusion.
- 1.2.1.6. Principles and practice of diagnosis of incipient malocclusion.

1.2.2. Child Psychology

- 1.2.2.1. Emotional development of the child and its scope in Pediatric Dentistry.
- 1.2.2.2. Concept of different theories of child psychology.
- 1.2.2.3. The origin and characteristics of fear, anxiety and phobia.
- 1.2.2.4. Psychometric measures of dental fear, anxiety and phobia.
- 1.2.2.5. Behavioural Sciences and its application in Pediatric dentistry.
- 1.2.2.6. Epebodontics.

1.2.3. Oro dental diseases in Children

- 1.2.3.1. Indian and global prevalence of dental diseases and its changing trends.
- 1.2.3.2. Recent concepts of dental plaque.
- 1.2.3.3. Dental Caries and its recent concepts.
- 1.2.3.4. Principles and diagnosis of dental caries.
- 1.2.3.5. Management of high risk dental caries child.
- 1.2.3.6. Common periodontal diseases in children and their management.
- 1.2.3.7. Strategies for prevention of dental caries and periodontal diseases in children.
- 1.2.3.8. Caries vaccine.

1.2.4. Pediatric Operative Dentistry

- 1.2.4.1. Basis for pediatric restorative dentistry – how it differs from adult dentistry.
- 1.2.4.2. New era in conservative dentistry
 - 1.2.4.2.1. Recent concept.
 - 1.2.4.2.2. Aesthetic Dentistry
 - 1.2.4.2.3. Recent trends in restorative materials for children.
 - 1.2.4.2.4. Enamel hypoplasia and its management.
- 1.2.4.3. Rubber dam – facilitation for excellence.
- 1.2.4.4. Traumatized teeth and its management in children.

1.2.5. Pediatric Endodontics

- 1.2.5.1. Pulp and its pathophysiology.

- 1.2.5.2. Biological approach to pulp therapy.
- 1.2.5.3. Diagnosis and differential diagnosis including latest diagnostic aids.
- 1.2.5.4. Management using various recent materials.

1.2.6. Radiology in Pediatric Dentistry

- 1.2.6.1. Its scope in pediatric dentistry.
- 1.2.6.2. Digital radiography.
- 1.2.6.3. Lasers in dentistry.

1.2.7. Preventive and Interceptive Orthodontics

- 1.2.7.1. Preventive and Interceptive Orthodontics: Diagnosis and Significance in Pediatric Dentistry.
- 1.2.7.2. Pernicious oral habits, their prevention and management in children.
- 1.2.7.3. Interceptive procedures for the integrity of arch perimeter.
- 1.2.7.4. Functional jaw orthopedics in Pediatric Dentistry.

1.2.8. Preventive Dentistry

- 1.2.8.1. Principles of Epidemiology.
- 1.2.8.2. Various indices used for recording the dental and oral diseases in children.
- 1.2.8.3. Measures used for prevention and maintenance of oral and dental diseases in children.
- 1.2.8.4. Fluorides in dentistry.
- 1.2.8.5. Present Scenario of fluorides in various countries throughout the world.
- 1.2.8.6. Diet and its implication on oro-dental health.
- 1.2.8.7. Occlusal Sealants.

1.2.9. Special care Children

- 1.2.9.1. Differently abled Children – The concept of Attitude.
- 1.2.9.2. Hospital Dentistry for Medically compromised children.
- 1.2.9.3. Child with cleft lip and Palate.
- 1.2.9.4. Comprehensive preventive oral health care for differently abled children.

1.2.10. Pediatric Prosthodontics

- 1.2.10.1. Edentulous child and implications on the stomatognathic system.
- 1.2.10.2. Semi permanent restorations.
- 1.2.10.3. Prosthodontic rehabilitation of the child with cleft palate.

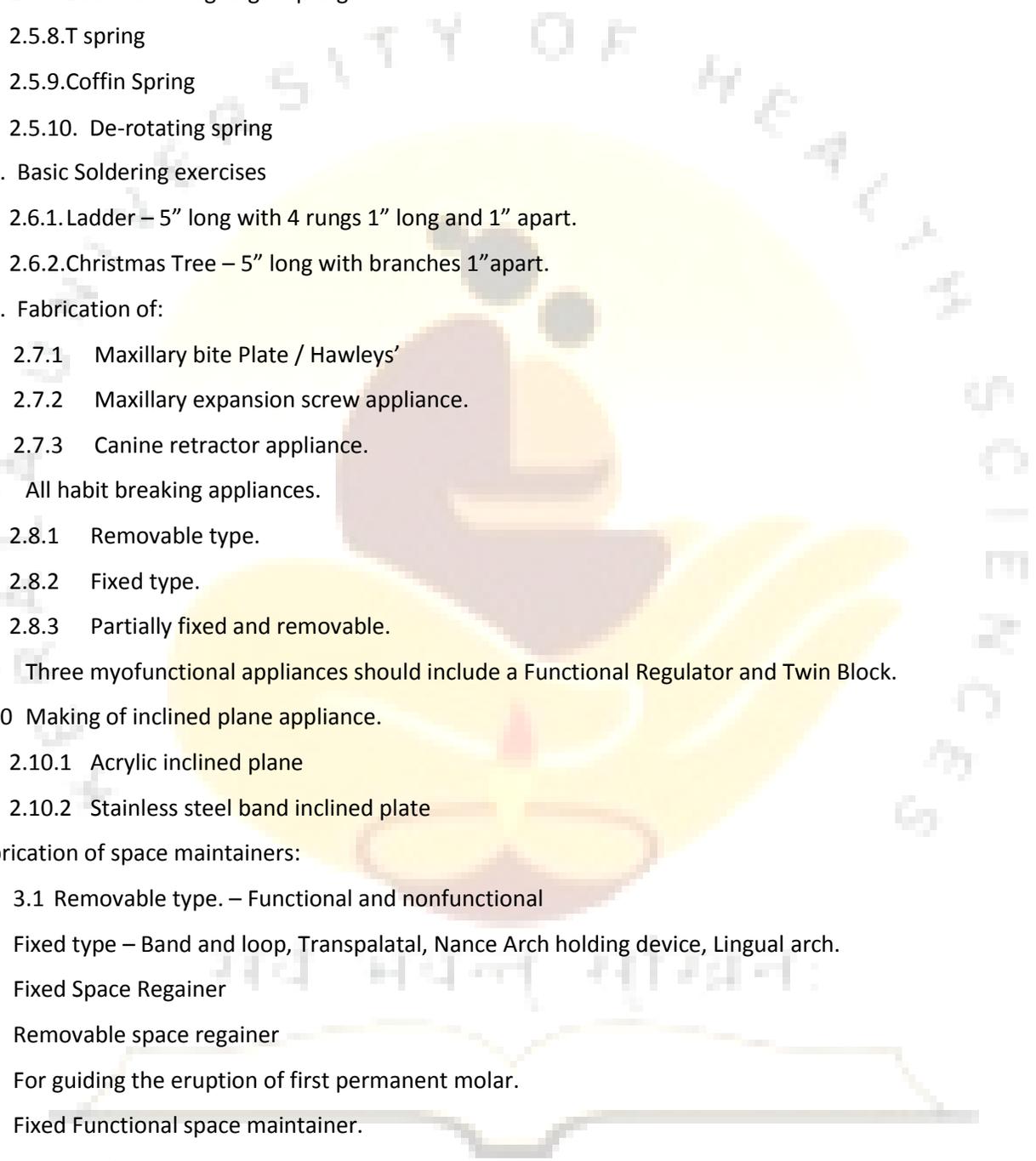
1.2.11. Pediatric Consideration in Oral Surgery.

First Year

PRECLINICAL EXERCISES

Apart from the didactic components, the following is the minimum preclinical exercises required to be completed in the first six months of commencement of the course.

1. Carving of all deciduous and permanent teeth.
2. Basic wire bending exercises.
 - 2.1. Straightening of 6" long 19G SS wire.
 - 2.2. Square of 1" side, Triangle of 1" side, Circle of 2" diameter.
 - 2.3. Clasps – 1 pair each
 - 2.3.1. $\frac{3}{4}$ clasp
 - 2.3.2. Full Clasp
 - 2.3.3. Triangular clasp
 - 2.3.4. Adam's clasp
 - 2.3.5. Modified Adam's clasp
 - 2.3.6. Duyzing's clasp
 - 2.3.7. Ball clasp
 - 2.4. Labial bows
 - 2.4.1. Short
 - 2.4.2. Long
 - 2.4.3. Robert's Retractor
 - 2.4.4. Fitted
 - 2.4.5. With reverse loop
 - 2.4.6. High with apron springs
 - 2.4.7. Mills retractor
 - 2.4.8. Split
 - 2.5. Springs
 - 2.5.1. Single cantilever
 - 2.5.2. Double cantilever
 - 2.5.3. Palatal canine retractor
 - 2.5.4. U-loop canine retractor
 - 2.5.5. Self-supporting canine retractor

- 
- 2.5.6. Helical canine retractor
 - 2.5.7. Bilateral acting finger spring
 - 2.5.8. T spring
 - 2.5.9. Coffin Spring
 - 2.5.10. De-rotating spring
 - 2.6. Basic Soldering exercises
 - 2.6.1. Ladder – 5” long with 4 rungs 1” long and 1” apart.
 - 2.6.2. Christmas Tree – 5” long with branches 1” apart.
 - 2.7. Fabrication of:
 - 2.7.1 Maxillary bite Plate / Hawleys’
 - 2.7.2 Maxillary expansion screw appliance.
 - 2.7.3 Canine retractor appliance.
 - 2.8 All habit breaking appliances.
 - 2.8.1 Removable type.
 - 2.8.2 Fixed type.
 - 2.8.3 Partially fixed and removable.
 - 2.9 Three myofunctional appliances should include a Functional Regulator and Twin Block.
 - 2.10 Making of inclined plane appliance.
 - 2.10.1 Acrylic inclined plane
 - 2.10.2 Stainless steel band inclined plate
 - 3 Fabrication of space maintainers:
 - 3.1 Removable type. – Functional and nonfunctional
 - 3.2 Fixed type – Band and loop, Transpalatal, Nance Arch holding device, Lingual arch.
 - 3.3 Fixed Space Regainer
 - 3.4 Removable space regainer
 - 3.5 For guiding the eruption of first permanent molar.
 - 3.6 Fixed Functional space maintainer.
 - 4 Basic spot welding exercises.
 - 5 Collection of extracted deciduous and permanent teeth.
 - 5.1 Sectioning of teeth at various levels and planes.
 - 5.2 Drawing of sections and shapes of pulp.

- 5.3 Performing ideal cavity preparation for various restorative materials for both deciduous and permanent teeth.
- 5.4 Fabrication of various temporary and permanent restorations on fractured anterior teeth.
- 5.5 Performing Pulpotomy, Pulpectomy, root canal treatment and Apexification procedures.
- 5.6 Preparation of teeth for stainless steel crowns and full crowns.
- 5.7 Preparation of teeth for various types of crowns
- 5.8 Laminates/veneers
- 5.9 Bonding & banding exercise
- 6 Performing of behavioral rating and I.Q. tests for children.
- 7 Computation of:
 - 7.1 Caries index and performing various caries activity tests.
 - 7.2 Oral Hygiene Index.
 - 7.3 Periodontal Index.
 - 7.4 Fluorosis Index
- 8 Radiographs
 - 8.1 Taking of periapical, occlusal, bitewing radiographs of children.
 - 8.2 Developing and processing of films thus obtained.
 - 8.3 Cephalometric Radiographs – Tracing of soft tissues, dental and skeletal landmarks as observed on these radiographs, drawing of various planes and angles and profile studies at 3, 7, 11 and 14 years.
- 9 Performing Mixed Dentition Analysis and other prediction methods.
- 10 Setting of Teeth – Deciduous, Mixed and Permanent Dentition.
- 11 Fabrication of Special Trays, Feeding Plate, Screw Gag.
- 12 Models of ideal occlusion - Deciduous and Mixed dentition.
- 13 Library Dissertation– Topic for the library dissertation should be finalized and approved at the end of the first six months and two copies to be submitted to the Head of the Department at the end of the first year.
- 14 Drawing Album – To be submitted to the Head of the Department at the end of the first year.
 - 14.1 Table showing chronology of eruption of teeth.
 - 14.2 Table showing tooth dimensions.
 - 14.3 Table showing differences between primary, young permanent and permanent teeth.
 - 14.4 Diagrams of Tooth Morphology – Deciduous and Permanent teeth.

- 14.5 Diagrams of Pulp morphology– Deciduous and Permanent teeth.
- 14.6 Diagrams of Development of Dentition at different ages.
- 14.7 Diagrams of Development of Occlusion at different ages.
- 14.8 Isolation of teeth – Rubber Dam – Armamentarium and techniques.
- 14.9 Modification of cavity preparation in deciduous teeth.
- 14.10 Mixed Dentition Analysis – Principles and measurements.
- 14.11 Principles of Brazing, soldering and Welding.
- 14.12 Diagram showing cephalometric points, planes and angles.
- 14.13 Behaviour Rating Scales
- 14.14 Dental Anxiety rating scales.
- 14.15 Caries Index – DMF index and its variants.
- 15 Records of the Preclinical exercises to be approved by the guide and duly certified by the Head of the Department. Preclinical exercises to be displayed for the MDS final examination.
- 16 Start of dissertation.**
- 17 Applied Professional Experience**
- 17.1 Pediatrics – 1week
- 17.2 Child Development Centre – 1week
- The student should participate in Hospital pediatric rounds, clinics and seminars. They should also learn to perform the routine physical examination on a child, as well as gain knowledge about normal developmental milestones, reflexes, immunization schedule, infant health care, differentiate between normal and abnormally developed child and discuss the general principles of medical care for acutely and chronically sick children as well as children with chromosomal syndromes.
- 17.3 Dental Radiology – 1week
- 17.4 Oral Pathology – 1week
- 18 Special Assignments**
- 18.1 School Dental Health Programme –1
- 18.2 Dental Camp-1
- 18.3 Practical application of Preventive dentistry concepts in a class of 35-50 children and Dental Health Education and Motivation. -2

- 19 **Mini Project** – In the form of an epidemiological survey – Recording of any dental diseases on at least 100 children, computation of results and submission of report or a KAP study on any topic relevant to pediatric dentistry.

Second Year

1. This part of the programme focuses on providing the candidate with a further broad outline of theoretical, clinical and practical courses in Basic Pediatric and Preventive Dentistry.

2. Applied Professional Experience(APEX)

2.1. Anesthesia and Pediatric Surgery – 2weeks

Training in general anesthesia, training in i.v., i.m., s.c. injections, learn to intubate a patient and monitor the patient's vital signs during GA., participate in seminars, pre and postoperative rounds.

2.2. Plastic Surgery – 2weeks.

Training in basic principles and their application especially in comprehensive management of cleft lip and palate and other oral and maxillofacial anomalies with special emphasis on the role of Pediatric Dentist in the multidisciplinary team.

2.3. Trauma Centre Posting / Oral and Maxillofacial Surgery – 2weeks

Learn to attend emergency calls with the principles of primary management.

3. Special Assignments

3.1. School Dental Health Programme –1

3.2. Dental Camp-1

3.3. Practical application of Preventive dentistry concepts in a class of 35-50 children & Dental Health Education & Motivation -4

Third Year

1. This part of the programme focuses on providing the candidate with a further broad outline of theoretical, clinical and practical courses in Advanced Clinical Pediatric and Preventive Dentistry.

CLINICAL REQUIREMENTS

The following is the minimum required quota to be completed before the candidate can be considered eligible to appear in the MDS Examination.

1. Behaviour management of different age group children with complete records. -17

2. Detailed case evaluation with complete records, treatment planning and presentation of cases with chairside discussion. -17
3. Step by step chairside preventive dentistry scheduled for high risk children with gingival and periodontal diseases and Dental Caries. -11
4. Practical Application of Preventive Dentistry concepts in a class of 35-50 children and Dental health Education and Motivation. -7
5. Pediatric Conservative Dentistry with application of recent concepts.
 - 5.1. Management of Dental Caries
 - 5.1.1. Occlusal Caries - 50
 - 5.1.2. Proximal Caries - 100
 - 5.1.3. Other Surfaces - 100
 - 5.2. Management of Traumatized Anterior teeth - 15
 - 5.3. Aesthetic Anterior Restorations - 25
6. Pediatric Endodontic Procedures
 - 6.1. Deciduous Teeth
 - 6.1.1. Pulpotomy - 50
 - 6.1.2. Pulpectomy - 100
 - 6.2. Permanent Teeth
 - 6.2.1. Posterior RCT - 20
 - 6.2.2. Anterior RCT - 15
 - 6.2.3. Apexification and Apexogenesis - 20
7. Stainless Steel Crowns - 50
8. Other Crowns - 20
9. **Orthodontic Appliances**
 - 9.1. Fixed Space Maintainers - 20
 - 9.2. Fixed Habit Breakers - 10
 - 9.3. Removable Space Maintainers - 15
 - 9.4. Removable Habit Breakers - 15
 - 9.5. Removable appliance for correction of minor orthodontic problems - 15
 - 9.6. Semi Fixed - 5
 - 9.7. Myofunctional Appliances, including

- | | | |
|-------------------------------------|---|---|
| Twin Block and Functional Regulator | - | 5 |
|-------------------------------------|---|---|
- 9.8. Fixed Appliance Therapy in selected cases in Children - 2
- 10. Management of Cleft lip/palate patients**
- Prosthetic Rehabilitation
- | | | |
|------------------------|---|----|
| 10.1. Partial Dentures | - | 10 |
| 10.2. Feeding Plates | - | 10 |
| 10.3. Obturators | - | 10 |
- 11. Surgical Management** of Cysts of Dental Origin, Supernumerary teeth and Odontomes.
- 12. Other Minor Surgical Procedures** like Apicoectomy, Frenotomy, Frenectomy, Gingivectomy, Surgical Exposure of Teeth
- 13. Management of Fracture of the Jaws.**
- 14. Comprehensive dental management** of the physically impaired, mentally compromised and medically compromised children.
- 15. Preventive measures** like Fluoride Applications, Pit and Fissure sealant applications with complete follow up and diet counseling.
- 16. Rotation Postings in other Departments:** It is mandatory that the students are posted on rotation in the following departments.
- | | | |
|---|--|--|
| 16.1. Pediatrics – 1week | | |
| 16.2. Child Development Centre – 1week | | |
| 16.3. Dental Radiology – 1week | | |
| 16.4. Oral Pathology – 1week | | |
| 16.5. Anesthesia and Pediatric Surgery – 2weeks | | |
| 16.6. Plastic Surgery – 2weeks. | | |
| 16.7. Trauma Centre Posting / Oral and Maxillofacial Surgery – 2weeks | | |
- 17. Special Assignments**
- | | | |
|---------------------------------------|---|---|
| 17.1. School Dental Health Programmes | - | 3 |
| 17.2. Dental Camps | - | 2 |
- 18. Library Dissertation:** Topic for the library dissertation should be finalized and approved by the end of the first six months and the same to be submitted at the end of the first year. It should be approved by the guide and certified by the Head of the Department.

19. Conferences and Publication of Scientific Paper: During the MDS course the student should **attend two National Conferences** and attempts should be made to **present at least two scientific papers** and **publish at least two scientific articles** in an indexed journal relevant to the specialty.

20. Clinical work Requirements from 7to36months

The following is the minimum clinical requirement to be completed before the candidate can be considered eligible to appear in the final M.D.S Examinations: -

No.	Clinical Work	Total	7 to 12 Months	13 to 24 Months	25 to 34 Months
1.	Behavior Management of different age groups children with complete records.	17	2	10	5
2.	Detailed Case evaluation with complete records, treatment planning and presentation of cases with chair side and discussion	17	2	10	5
3.	Step-by-step chair side preventive dentistry scheduled for high risk children with gingival and periodontal diseases & Dental Caries	11	1	5	5
4.	Practical application of Preventive dentistry concepts in a class of 35-50 children & Dental Health Education & Motivation.	7	1	4	2
5.	Pediatric Operative Dentistry with application of recent concepts				
	(a). Management of Dental Caries				
	(I) Class I	50	30	10	10
	(II) ClassII	100	40	50	10
	(III) Other Restorations	100	20	50	30
6.	(b). Management of traumatized anterior teeth	15	04	06	05
7.	(c) Aesthetic Restorations	25	05	10	10
8.	(d). Pediatric Endodontic Procedures-				
	Deciduous teeth				

	Pulpotomy	50	10	15	25
	Pulpectomy	100	20	30	50
	Permanent Molars-	20	03	07	10
	Permanent Incisor-	15	2	3	10
	Apexification & Apexogenesis	20	02	08	10
9.	Stainless Steel Crowns	50	10	20	20
10	Other Crowns	20	05	05	10
11	Fixed Space Maintainers Habit Breaking appliance	30	08	12	10
12	Removable Space Maintainers Habit Breaking Appliance	30	08	12	10
13	Functional Appliances	05	01	02	02
14	Preventive measures like fluoride application, Pit and fissure sealants applications with complete follow up and diet counseling	20	08	08	04
15	Special Assignments School Dental Health Programmes	03	01	01	01
16	Camps	02	01	01	

Structured Training Schedule

First Year

- Preclinical Exercises within the first six months
- 3 seminars in basic sciences
- 2 seminars in the Specialty
- 10 Journal Clubs
- Basic training in Computers and Photography
- Library Dissertation Work
- Commencement of Dissertation Work.
- Attending CDE/Workshops/Advanced Courses
- Attending a State/National Conference and presentation of a Scientific Paper.
- Publication of a scientific paper

- Case Discussions –2
- Clinical Teaching of Undergraduate students
- APEX Posting
 - Pediatrics – 1week
 - Child Development Centre – 1week
 - Dental Radiology – 1week
 - Oral Pathology – 1week

Second Year

- 5 seminars in Specialty.
- Assisting and guiding Third year BDS students during their clinical posting.
- Taking lectures for Third BDS students on selected topics.
- 10 Journal Clubs.
- 2CPC
- Attending CDE/Workshops/Advanced Courses
- Attending a National Conference and presentation of a Scientific Paper.
- Completion of Dissertation.
- Publication of a scientific paper
- APEX Posting
 - Anesthesia and Pediatric Surgery – 2weeks
 - Plastic Surgery – 2weeks.
 - Trauma Centre Posting / Oral and Maxillofacial Surgery – 2weeks

Third Year

- 5 Seminars on Recent Advances in Pedodontics and Preventive Dentistry.
- 2CPC
- Attending CDE/Workshops/Advanced Courses
- Attending a National Conference and presentation of a Scientific Paper.
- Submission of Dissertation.

1. Scheme of Examination

a. Written Examination

- i. Number of papers -4
- ii. Duration -3 hours each
- iii. Maximum marks per paper -75
- iv. Distribution of marks per paper - The type of questions in the three papers will be two long essay questions carrying 20 marks each and five short essay questions each carrying seven marks. There will be no options in the first three papers. The fourth is an essay paper with option and the candidate needs to answer only one.

Title of the papers-

Paper I – Applied Anatomy, Physiology, Microbiology, Nutrition and Dietetics

Paper II – Clinical pediatric dentistry

Paper III – Preventive and community dentistry as applied to pediatric

dentistry Paper IV –ESSAY with emphasis on Recent advances in Pedodontics

b. Practical/Clinical Examination

- i. Duration - Two days
- ii. Time - 9am to4pm.
- iii. Marks - 200

Day I

1. Exercise I - Case Discussion, Pulp Therapy i.e. Pulpectomy on a Primary Molar.
2. Exercise 2 - Case Discussion, Crown preparation on a Primary Molar for Stainless steel crown and cementation of the same.
3. Exercise 3 - Case discussion, band adaptation for fixed type of space maintainer and-impression making.

Day II - Evaluation of Fixed Space Maintainer and Cementation.

Distribution of Marks for the Practicals

1. Case Discussion, Pulp Therapy i.e. Pulpectomy on a Primary Molar. – 75marks

- 1.1. Case Discussion 20marks
- 1.2. RubberDam application 10marks
- 1.3. Working length X-ray 20marks

1.4. Obturation : 25marks

2. Case Discussion, Crown preparation on a Primary Molar for Stainless steel crown and cementation of the same.– 50marks

2.1. Case discussion 10marks

2.2. Crown Preparation 20marks

2.3. Crown selection and Cementation 20marks

3. Case discussion, band adaptation for fixed type of space maintainer and-impression making.– 75 marks

3.1. Case discussion 15marks

3.2. Band adaptation 20marks

3.3. Impression 20marks

3.4. Evaluation of Fixed Space Maintainer and Cementation : 20marks

TOTAL 200marks

C. VivaVoce: 100Marks

i. Viva voce 80marks

All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach, expression, interpretation of data and communication skills.

ii. Pedagogy Exercise: 20marks

A topic will be given at the beginning of the clinical examination and will have to be presented for 8-10 minutes.

Practical/Clinical and Viva Voce Examination

Day	Time	Duration	Exercise
Day I	9am – 10am	1 hour	Detailed Case Examination
	10am – 11.30am	1 ½ hours	Pulpal Treatment
	11.30am – 1pm	1 ½ hours	Orthodontic Appliance (Band Adaptation & Impression)
	2pm – 3.30pm	1 ½ hours	Stainless Steel Crown
	3.30pm – 4.00pm	½ hour	Fabrication of Appliance
Day II	9am – 10am	1 hour	Delivery of Appliance

	10am onwards	Dissertation presentation/Pedagogy and Viva voce
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2.7 Total number of hours

As per the instruction given by the DCI.

2.8 Branches if any with definition

Pedodontics and Preventive Dentistry

2.9 Teaching learning methods

Method of Training

The training of a postgraduate student shall be full time but 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, case demonstrations, clinics, journal review meetings, and clinical meetings. Every candidate shall be required to participate in the teaching and training programme of undergraduate students and interns. Training should include involvement in laboratory and experimental work, and research studies. Every Institution undertaking Post Graduate training programme shall set up an Academic cell or a Curriculum Committee, under the chairmanship of a Senior faculty member, which shall work out the details of the training programme in each speciality in consultation with other Department faculty staff and also coordinate and monitor the implementation of these training Programmes.

Based on the above guidelines for a structured training programme for postgraduate courses, the basic tenets of a successful postgraduate teaching programme, are detailed under the following heads.

- **Formal Lectures** by the faculty on varied subjects including general areas and systems. Both senior and junior faculty can do this. However, the number of these classes should be maintained of low levels to encourage self-learning.
- **Symposia / Seminars** form an integral part of PG learning. A monthly symposium will generate approximate 30-35 symposia / course. These symposia can include department faculty and HODs as chairpersons and maximum involvement of both students and faculty should be ensured.
- **Clinical Discussions** form the core of PG training and can be assigned to various clinical units on rotating basis. However other faculty could also actively participate in the discussion. The discussions must be 3-4/week. One suggestion is to score the performance of the candidate by a small panel of faculty and convey the scores to the candidate / PG at the end of the session.
- **Journal Club /Clinical Club** should be conducted at least once in a week in each postgraduate department. Journal clubs not only imparts new information but also

trains the candidate to objectively assess and criticize various articles which come out and should be useful in ensuring evidence based dentistry.

- **Guest Lectures** can be integrated into the PG program at least once in a month. Even the retired faculty can be invited for delivering the lectures and will ensure importing of greater wisdom to the candidates.
- **Orientation Classes** for newcomers should also be incorporated. These classes can even be assigned to junior faculty/senior PGs.
- **Clinical posting.** Each PG student should work in the clinics on regular basis to acquire adequate professional skills and competency in managing various cases to be treated by a specialist.
- **Clinico Pathological Conferences** should be held once a year involving the faculties of Oral Medicine and Radiology, Oral Pathology and concerned clinical department. The student should be encouraged to present the clinical details, radiological and histo- pathological interpretations and participation in the discussions.
- **Rotation postings in other departments** should be worked out by each department in order to bring in more integration between the speciality and allied fields.
- **Periodical Quiz** can be both informative and entertaining and should be encouraged and planned.
- **Computer Training and Internet Applications** are now becoming a must for both faculty and students. These areas should be strengthened as a next step. There can be a sort of internet information club in the departments.
- **Conferences/CDEs** – All postgraduate students should be encouraged to attend conferences and CDEs. They should also be asked to present papers wherever appropriate and should be rewarded by assigning scores for them.
- **Publication of scientific papers** – It is desirable and advisable to have at least two publications in the State/National/International indexed dental journals.
- **Involvement in Teaching Activity** – PG students can be assigned the job of teaching the undergraduate students and these will definitely improve the teaching skills in the postgraduate students.

Examinations

Evaluation is a continuous process, which is based upon criteria developed by the concerned authorities with certain objectives to assess the performance of the learner. This also indirectly helps in the measurement of effectiveness and quality of the concerned MDS programme. Evaluation is achieved by two processes

- 1) Formative or internal assessment
- 2) Summative or university examinations.

Formative evaluation is done through a series of tests and examinations conducted periodically by the institution. Summative evaluation is done by the university through examination conducted at the end of the specified course.

A candidate registered for MDS course must clear the final examination within six years of the date of admission. The examinations should be so organized that this shall be used as the mechanism to confirm that the candidate has acquired appropriate knowledge, skill and competence at the end of the training that he/she canactasa

specialist and/or a medical teacher as per expectation. University examination will be held regularly by KUHS in April-May/October-November every year.

A candidate who wishes to study for MDS in a second specialty should have to take the full course of 3 years in that specialty and appear for examinations.

2.10 Content of each subject in each year

Present in clause 2.6

2.11 No: of hours per subject

Present in clause 2.6

2.12 Practical training

Present in clause 2.6

2.13 Records

Present in clause 2. 20

2.14 Dissertation: As per Dissertations Regulations of KUHS

Every candidate pursuing MDS degree course is required to carry out work on a selected research project under the guidance of a recognized postgraduate 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, and comparison of results and drawing conclusions.

Every candidate shall submit to the University in the prescribed format a synopsis containing particulars of proposed dissertation work after obtaining ethical clearance from the Institutional Ethical Committee **within six months from the date of commencement of the course or before the dates notified by the University**. The synopsis shall be sent only through the Principal of the institution.

Such synopsis will be reviewed and the dissertation topic will be registered by the university. No change in the dissertation topic or guide/coguide shall be made without prior approval of the University. The dissertation should not be just a repetition of a previously undertaken study but it should try to explore some new aspects. The dissertation should be written under the following headings:

- i. Introduction
- ii. Aims and Objectives of the study
- iii. Review of Literature
- iv. Methodology
- v. Results

- vi. Discussion
- vii. Conclusion
- viii. Summary
- ix. References
- x. Annexures

The written text of dissertation shall be not less than 50 pages and shall not exceed 150 pages excluding references, tables, questionnaires, and other annexures. It should be neatly typed (font size 13-Times New Roman or font size 13-Cambria) in 1.5 line spacing on one side of the paper (A4 size, 8.27" x 11.69") and bound properly. Spiral binding should be avoided. (Refer KUHS website). The guide, co-guide if any, Head of the Department and the Head of the Institution shall certify the dissertation.

For uniformity, it was suggested that the colour of the hard bind of the dissertation for all branches of MDS course in the purview of KUHS shall be dark brown with letters of gold colour. The title, author, and year of study should also be imprinted or embossed on the spine of the book. **Three hard copies and one properly labeled soft copy in a CD (refer KUHS website) of the dissertation thus prepared shall be submitted to KUHS on the 29th month of commencement of the course / 31st Oct. of the 3rd academic year, whichever falls first.** Dissertation should preferably be sent to a minimum of three reviewers / examiners / assessors, of which two shall be from outside the state and one from the affiliated colleges of KUHS. If modifications are to be made as specified, three hard copies and one soft copy of the dissertation after corrections made by the candidate should be submitted within a minimum of 30 days to the University. Consent for acceptance for evaluation of dissertation should be obtained from the reviewer/examiner/assessor before the dissertation are despatched. Proforma for evaluation of dissertation should be sent along with the copies of the dissertation to the reviewers appointed by the university. The proforma should contain all the assessment criteria with the clause – **Accepted/Accepted with modifications/Rejected** and reasons for rejection by the examiner. This proforma should be sent back to the University within two weeks / within the date specified after receipt of dissertation. The dissertation may be declared accepted if more than 50% of the reviewers (2 in the case of 3 reviewers) have accepted it. If modifications are to be made as specified, 3 hard copies and one soft copy of the dissertation after corrections made by the candidate should be submitted within 30 days to the University which may be sent back to the same examiner/s by the University for Acceptance after a fee has been levied from the candidate. If the dissertation has been rejected by more than 50% of the reviewers (2 in the case of 3 reviewers), the dissertation may be reviewed by an Expert Reviewing Committee comprising of not less than two subject experts, Dean (Research) of KUHS and Guide of the candidate provided the Guide requests for a review, after a fee has been levied from the candidate. If rejected by the Reviewing Committee, the candidate should take up a new topic and undergo all the procedures of submitting the synopsis, fees, IEC clearance, etc as prescribed by the University. The candidate who takes up the new topic can appear only for the subsequent examination.

Approval of dissertation work is an essential precondition for a candidate to appear in the University examination. Hall tickets for the university examination should be issued to the candidate only if the dissertation has been accepted.

A candidate whose dissertation has been accepted by the examiners and approved by the University, but who is declared to have failed at the final examination will be permitted to reappear at the subsequent MDS examination without having to prepare a dissertation.

Guide – The academic qualification and teaching experience required for recognition by the University as a guide for dissertation work is as laid down by the Dental Council of India / KUHS.

Co-guide – A co-guide may be included provided the work requires substantial contribution from the same department or a sister department or from another institution recognized for teaching/training by KUHS/DCI. The co-guide should fulfill the academic qualification and teaching experience required for recognition by the University as a co-guide for dissertation work.

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.

2.15 Speciality training if any

Present in clause 2.6

2.16 Project work to be done if any

Present in clause 2.6

2.17 Any other requirements [CME, Paper Publishing etc.]

Present in clause 2.6

2.18 Prescribed/recommended textbooks for each subject

Applied Basic Sciences

SUBJECT	NAME OF AUTHOR	NAME OF BOOK
Anatomy	BD Chaurasia	BD Chaurasia's Human Anatomy
	William, Peter L	Grays Anatomy
Oral Anatomy	Ash, Major M	Wheeler's Dental Anatomy, Physiology and Occlusion
	Sicher, Harry, Du Brull, Llyod	Oral Anatomy
Oral Histology	Bhaskar B.N. Ed	Orban's Oral Histology and Embryology
	Avery, James K	Essentials of Oral Histology and Embryology

Embryology	Sadler	Langmans Medical Embryology
	Inderbeer Singh	Human Embryology
Physiology	Guyton Arthur and John L Hall	Text Book of Medical Physiology
	Ganong, William F	Review of Medical Pysiology
Pharmacology	KD Tripathi	Essentials of Medical Pharmacology
	Hardman, Joel G	Goodman and Gillmans pharmacological basis of Therapeutics
Nutrition	Nizel	Nutrition in Preventive Dentistry: Science and Practice
General Pathology	Cotran, Ramzi S and Others	Robbins Pathologic Basis of Disease
	Harsh Mohan	Textbook of Pathology
Oral Pathology	Shaffer, William and Others	Textbook of Oral Pathology
	Neville, Brad W and Others	Oral and Maxillofacial Pathology
Microbiology	Ananthanarayan and Panicker	Textbook of Microbiology
	Lakshman S	Essential Microbiology for Dentistry
Biostatistics	Dr. Symalan	Statistics in Medicine
	Soben Peter	Essentials of Preventive and Community Dentistry
	Sunder Rao and Richard J.	Introduction to Biostatistics and Research Methods

Pedodontics and Preventive Dentistry

List of Essential and Recommended Reference Books

1. Dentistry for the Handicapped Child Kenneth E. Wessels
2. Dental Management of the Child Patient Hannelore T. Loevy
3. Development of Dentition Van der Linden
4. Dentistry of the Child & Adolescent Mac Donald & Avery
5. Dentistry for the Adolescent Castaldy & Brass
6. Essentials of Dental Caries – The Disease and its management Kidd-Joysten
7. Endodontics Nicholls
8. Endodontology – Biologic considerations Samuel Seltzer
9. Fluoride in Preventive Dentistry Melberg, Louis Ripa
10. Fundamentals of Pediatric Dentistry Mathewson

- | | |
|---|-------------------|
| 11. Manual of Pedodontics | Andlow& Rock |
| 12. Minor tooth movement in children | Joseph M. Sim |
| 13. Nutrition in Preventive Dentistry | Nizel |
| 14. Principles & Practice of Orthodontics | Graber |
| 15. Pediatric Dentistry – Scientific foundations | Stewart & Wei |
| 16. Pediatric Dentistry – Infancy through Adolescence | Pinkham |
| 17. Pediatric Dentistry – Total Patient Care | Wei |
| 18. Treatment of Traumatized incisor in the child patient | Ronald Johnson |
| 19. Cariology Today | Guggenheim |
| 20. Orthodontics – Current Principles & Techniques | Graber & Swain |
| 21. Cariology | Ernest Newbrun |
| 22. Pediatric Operative Dentistry | Kennedy |
| 23. Synopsis of Orthodontics | Rani |
| 24. Handbook of Local Anaesthesia | Malamed |
| 25. Community Dental Health | Jong |
| 26. Handbook of Clinical Pedodontics | Snawder |
| 27. Growing up Cavity Free | Moss |
| 28. Dentistry for the Preschool Child | Davies |
| 29. Dentistry for Children | Brauer&Hisley |
| 30. Practical Treatment Planning for the Pedodontic Patient | Blinkhein |
| 31. Nutrition in Clinical Practice | Nizel |
| 32. The Human Dentition Before Birth | Kraus & Jordan |
| 33. Appropriate Uses of Fluorides for Human Health | J.J.Murray (WHO) |
| 34. Fluoride in Preventive Dentistry – Theory & Clinical Practice | Mellberg&Ripa |
| 35. Trace Elements & Dental Diseases | Curzon |
| 36. Fluorides in Caries Prevention | Murray, Rugg-Gunn |
| 37. A Symposium on Preventive Dentistry | Muhler |
| 38. Antibiotic – Antimicrobial Use in Dental Practice | Newmann |
| 39. Applied Dental Materials | McCabe |

40. Cross Infection Control in General Practice	Croser& Davies
41. Congenital Deformities	Gordon, Gause
42. Caries Resistant Teeth	Wolstenholm
43. Dental Materials - Properties & Manipulation	Craig
44. Dental Caries	Silverstone
45. Dentistry for the Special Patient	Davidoff
46. Fixed Orthodontic Appliances	Williams
47. Hand Book of Facial Growth	Enlow
48. Human Embryology	Inderbir Singh
49. Orthodontic Cephalometry	Athanasiou
50. Preventive Dentistry	Forrest
51. Study of Tooth Shapes- A systematic Approach	Grundler
52. Radiographic Cephalometry	Jacobson
53. Comprehensive textbook of Psychiatry	Kaplan
54. Science of Dental Materials	Skinner
55. Rubber Dam in Clinical Practice	Reid
56. Diagnosis of the Orthodontic Patient	McDonald & Ireland
57. Fixed Orthodontic Appliances – Principles & Practice	Issacson& Thom
58. Decision making in Dental Treatment Planning	Hall & Roberts
59. Plaque & Calculus Removal	Cochran, Brunsvold
60. Community Oral Health	Pine
61. Primary & Emergency Dental Care	Figures & Lamb
62. Principles of Dental Treatment Planning	Morris
63. A practical Guide to Technology in Dentistry	Jedynakiewicz
64. The Art & Science Of Operative Dentistry	Sturdevant
65. Endodontic Therapy	Weine
66. Endodontics	Ingle
67. Endodontics in Clinical Practice	Harty
68. Pathways of the Pulp	Cohen

- | | |
|--|------------------|
| 69. Esthetic Composite Bonding | Jordan |
| 70. Esthetic Restorations | Mula |
| 71. Modern Concepts in the Diagnosis & Treatment of Fissure Caries | Paterson & Watts |
| 72. Dentin & Pulp in Restorative Dentistry | Brannstrom |
| 73. Oral Development & Histology | Tencate |
| 74. Textbook of Oral Pathology | Shafer |
| 75. Oral Pathology | Ash |
| 76. An Introduction to Fixed Appliances | Isaccson |
| 77. Dental Care for Handicapped Patients | Hunter |
| 78. Clinical Pedodontics | Finn |

2.19 Reference books

As instructed by HOD

2.20 Journals

ASDC Journal of Dentistry for Children
 Pediatric Dentistry
 International Journal of Pediatric Dentistry
 Journal of Clinical Pediatric Dentistry
 International Journal of Clinical Pediatric Dentistry
 Journal of Dentistry for Children
 Journal of the Indian Society of Pedodontics and Preventive Dentistry.
 Australian Dental Journal
 British Dental Journal
 Dental Clinics of North America
 Endodontics& Dental Traumatology
 International Dental Journal
 International Endodontic Journal
 JADA

Journal of Dental Research
Journal of Dentistry
Journal of Endodontics
Journal of Indian Dental Association
Advanced Dental Research

2.21 Logbook

▫ Work Diary / Log Book

Logbooks serve as a document of the trainee's work. The trainee shall maintain this Logbook of the special procedures/operations observed/assisted/performed by him/her during the training period right from the point of entry and its authenticity shall be assessed weekly by the concerned Post Graduate Teacher / Head of the Department. This shall be made available to the Board of Examiners for their perusal at the time of his / her appearing at the Final examination. The logbook should record clinical cases seen and presented, procedures and tests performed, seminars, journal club and other presentations. Logbook entries must be qualitative and not merely quantitative, focusing on learning points and recent advances in the area and must include short review of recent literature relevant to the entry. A work diary containing all the various treatment done by the candidate in the course of the study should also be maintained. The work diary shall be scrutinized and certified by both the guide/co guide and Head of the Department and presented in the University practical/clinical examination.

3 EXAMINATIONS

3.1 Eligibility to appear for exams

Every candidate to become eligible to appear for the **MDS examination** shall fulfill the following requirements.

Attendance

Every candidate shall have fulfilled the attendance prescribed by the University during **each academic year** of the Postgraduate course. A candidate becomes eligible for writing the University examination only after the completion of 36 months from the date of commencement of the course.

The candidates should have completed the training period before the commencement of examination.

Dissertation

Approval of the dissertation is a mandatory requirement for the candidate to appear for the university examination.

Library Dissertation

Submission of the library dissertation as per the regulations of the DCI / KUHS is mandatory for the candidate to appear for the examination.

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.

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.

The certification of satisfactory progress by the Head of the Department and Head of the Institution shall be based on checklist given in 5.1 to 5.8.

- **Students should note that in case they do not complete the exercises and work allotted to them within the period prescribed, their course requirements will be considered unfulfilled.**
- **Clinical Records, Work Diaries and Logbooks should be maintained regularly and approved by the guide, duly certified by the Head of the Department.**

3.2 Schedule of Regular/Supplementary exams

The MDS examination shall be held at the end of the third academic year. The university shall conduct two examinations in a year at an interval of four to six months between two examinations. **Not more than two examinations shall be conducted in an academic year.**

3.3 Scheme of examination showing maximum marks and minimum marks

- MDS examination will consist of Written (Theory), Viva Voce, and Practical / Clinical examination

Written Examination (Theory) : 300 Marks

Written examination shall consist of **four question papers**, each of three hours duration . Each paper shall carry 75 marks. The type of questions in the first three papers will be two long essay questions carrying 20 marks each and five short essay questions each carrying seven marks. **There will be no options in the questions in the first 3 papers. Fourth paper will be a single essay question paper which will carry an option and the candidate is to**

answer only one of the essays. Questions on recent advances may be asked in any or all the papers. **The syllabus for the theory papers of the concerned specialty should cover the entire field of the subject. Though the topics assigned to the different papers are generally evaluated under designated papers, a strict division of the subject may not be possible and some overlapping of topics is inevitable. Students should be prepared to answer overlapping topics.** The theory examinations shall be held sufficiently earlier than the practical/clinical examinations so that the answer books can be assessed and evaluated before the start of the practical/clinical examination. The total marks for the theory examination shall be 300.

Practical Examination: 200 Marks

In case of practical examination, it should aim 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 mark for practical/clinical examinations shall be 200.

Viva voce; 100 Marks

Viva voce examination shall aim at assessing depth of knowledge, logical reasoning, confidence and oral communication skills. The candidate may be given a topic for the pedagogy in the beginning of the clinical examination and asked to make a presentation on the topic for 8-10 minutes. The total marks shall be 100 of which 80 would be for the viva voce (20 marks/examiner) and 20 marks for the pedagogy.

3.4 Papers in each year

Paper-I-Applied Anatomy, Physiology, Pathology, Microbiology, Nutrition and Dietics
Paper-II - Clinical pediatric dentistry
Paper-III -Preventive and community dentistry as applied to pediatric dentistry
Paper-IV -Essay

3.5 Details of theory exams

Distribution of topics for each paper will be as follows:

PAPER-I : Applied Basic Sciences : Applied Anatomy, Physiology, Pathology, Microbiology, Nutrition & Dietics, Growth & Development and Dental plaque, Genetics.

PAPER-II : Clinical Paedodontics

1. Conscious sedation, Deep Sedation & General Anesthesia in Pediatric Dentistry
2. Gingival & Periodontal Diseases in Children
3. Pediatric Operative Dentistry
4. Pediatric Endodontics
5. Traumatic Injuries in Children Interceptive Orthodontics
6. Oral Habits in children
7. Dental Care of Children with special needs

8. Oral Manifestations of Systemic Conditions in Children & their Management
9. Management of Minor Oral Surgical Procedures in Children
10. Dental Radiology as Related to Pediatric Dentistry
11. Pediatric Oral Medicine & Clinical Pathology
12. Congenital Abnormalities in Children
13. Dental Emergencies in Children & Their Management
14. Dental Materials Used in Pediatric Dentistry
15. Case History Recording
16. Setting up of Pedodontic & Preventive Dentistry Clinic

PAPER III: Preventive and Community Dentistry as applied to Pediatric Dentistry

1. Child Psychology
2. Behavior Management
3. Child Abuse & Dental Neglect
4. Preventive Pedodontics
5. Cariology
6. Preventive Dentistry
7. Dental Health Education & School Dental Health Programmes
8. Fluorides
9. Epidemiology
10. Comprehensive Infant Oral Health Care/Comprehensive cleft care
11. Principles of Bio-Statistics & Research Methodology & Understanding of Computers and Photography

PAPER-IV: Essay

3.6 Model Question Papers

M.D.S. – Pedodontics and Preventive Dentistry

Paper I – Applied Anatomy, Physiology, Pathology, Microbiology, Nutrition and Dietics

Time 3 Hrs.

Maximum Marks 75

(Answer all questions.)

Long Essays

(2x 20 = 40marks)

1. Discuss the stages of Amelogenesis along with its applied aspects.
2. How and why is the reaction of the pulpal connective tissue to injury different from that of the connective tissue elsewhere in the body? Discuss in detail the pathophysiology of the pulp?

Short essays

(5 x 7 =35marks)

3. Muscles of Mastication
4. Growth spurts

5. Facial artery
6. Development of palate
7. Recombinant DNA technology

Paper – II – Clinical Pedodontics

Time 3 hrs

Marks 75

Long Essays (2x 20= 20marks)

1. Discuss at length regarding inhalation conscious sedation in pedodontics. Add a note on dissociative anaesthesia.
2. Discuss in detail the management of digit sucking habit in a nine year old female child.

Short essays

(5 x 7 = 35marks)

3. Regional Odontodysplasia
4. Tunnel cavity preparation
5. Apexification
6. Titanium trauma splints
7. Localized aggressive periodontitis

Paper – III – Preventive and Public Health Dentistry in Children

(Answer all questions)

Time 3 hrs

Maximum marks 75

Long Essays

(2x 20= 20marks)

1. Discuss the psychological development of a child from birth to adolescence in the light of various theories of personality development.
2. Elaborate on the variables influencing a space management program. Add a note on palatal arch appliance.

Short essays

(5 x 7 = 35marks)

3. Conservative adhesive resin restorations.
4. Transmission of S. mutans.
5. Mouth guards.
6. Case control study.
7. Dental home.

Paper IV –Essay -Recent advances in Pedodontics.

(Answer any one question)

Time 3 Hrs.

Maximum Marks 75

Critically evaluate the recent endodontic filling materials used in primary teeth.

OR

Concept of Dental Home

3.7 Internal assessment component

Not applicable.

3.8 Details of practical/clinical exams

c. Practical/Clinical Examination

- | | | |
|-------------|---|------------|
| i. Duration | - | Two days |
| ii. Time | - | 9am to4pm. |
| iii. Marks | - | 200 |

Day I

4. Exercise I - Case Discussion, Pulp Therapy i.e. Pulpectomy on a Primary Molar.
5. Exercise 2 - Case Discussion, Crown preparation on a Primary Molar for Stainless steel crown and cementation of the same.
6. Exercise 3 - Case discussion, band adaptation for fixed type of space maintainer and-impression making.

Day II - Evaluation of Fixed Space Maintainer and Cementation.

Distribution of Marks for the Practicals

4. Case Discussion, Pulp Therapy i.e. Pulpectomy on a Primary Molar. – 75marks

- | | |
|-----------------------------|---------|
| 4.1. Case Discussion | 10marks |
| 4.2. Rubber Dam application | 20marks |
| 4.3. Working length X-ray | 20marks |
| 4.4. Obturation | 25marks |

5. Case Discussion, Crown preparation on a Primary Molar for Stainless steel crown and cementation of the same.– 50marks

- | | |
|--------------------------------------|---------|
| 5.1. Case discussion | 10marks |
| 5.2. Crown Preparation | 20marks |
| 5.3. Crown selection and Cementation | 20marks |

6. Case discussion, band adaptation for fixed type of space maintainer and-impression making.– 75marks

- 6.1. Case discussion 15marks
- 6.2. Band adaptation 20marks
- 6.3. Impression 20marks
- 6.4. Evaluation of Fixed Space Maintainer and Cementation : 20marks

TOTAL _____200marks

C. Viva Voce: _____ 100Marks

- iii. Viva voce 80marks

All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach, expression, interpretation of data and communication skills.

- iv. Pedagogy Exercise: 20marks

A topic will be given at the beginning of the clinical examination and will have to be presented for 8-10 minutes.

Practical/Clinical and Viva Voce Examination

Day	Time	Duration	Exercise
Day I	9am – 10am	1 hour	Detailed Case Examination
	10am – 11.30am	1 ½ hours	Pulpal Treatment
	11.30am – 1pm	1 ½ hours	Orthodontic Appliance (Band Adaptation & Impression)
	2pm – 3.30pm	1 ½ hours	Stainless Steel Crown
	3.30pm – 4.00pm	½ hour	Fabrication of Appliance
Day II	9am – 10am	1 hour	Delivery of Appliance
	10am onwards		Dissertation presentation/Pedagogy and Viva voce

3.9 Number of examiners needed (Internal & External) and their qualifications

There shall be at least four examiners in each branch of study. Out of four, two (50%) should 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 DCI. The external examiners shall ordinarily be invited from another recognized University from outside the state. An external examiner may ordinarily be appointed for the same institute for not more than two years consecutively. Thereafter he may be reappointed after an interval of one year. The same set of examiners shall ordinarily be responsible for the practical and oral part of the examination.

The Head of the Department shall ordinarily be one of the examiners and the chairperson of the Board of Examinations; second internal examiner shall rotate after every two consecutive examinations if there are more than two postgraduate teachers in the department other than the Head of the department. No person who is not an active Postgraduate teacher in that subject can be appointed as Examiner. However in case of retired personnel, a teacher who satisfies the above conditions could be appointed as examiner up to one year after retirement.

For the MDS examination, if there are no two qualified internal examiners in an institute the second internal examiner can be from a neighbouring DCI and KUHS approved / recognized Dental College having PG course in the specific speciality. This examiner should be an active PG teacher in the same speciality with the qualifications and experience recommended for a teacher for postgraduate degree programme. The examination can also be conducted by one qualified internal examiner and three qualified external examiners if there is no qualified second internal examiner.

Reciprocal arrangement of Examiners should be discouraged, in that, the internal examiner in a subject should not accept external examinership of a college from which the external examiner is appointed in his subject in the same academic year.

3.10 Details of viva

Viva Voce :100Marks

i. Viva-Voce examination :80 marks

All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach, expression, interpretation of data and communication skills. It includes all components of course contents. It includes presentation and discussion on dissertation also.

v. Pedagogy and thesis presentation : 10 +10 = 20marks

4.INTERNSHIP

Not Applicable for PG Courses

5 ANNEXURES

5.Check Lists for Monitoring: Log Book, Seminar Assessment etc.

CHECKLISTS and LOGBOOK

5.1 Checklist 1

Model Checklist for Evaluation of Preclinical Exercises

Name of Student:

Date:

Name of the Faculty-in-charge:

Name of Exercise

Sl. No:	Items for observation during evaluation	Score
1	Quality of Exercise	
2	Ability to answer to questions	
3	Punctuality in submission of exercise	
4	TOTAL SCORE	

Performance	Score
Poor	0
Below Average	1
Average	2
Good	3
Very good	4

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Signature of Faculty-in-charge

5.2: Checklist 2

Model Checklist for Evaluation of Journal Review / Seminar Presentation

Name of Student:

Date:

Name of the Faculty/Observer:

Name of Journal / Seminar:

Sl. No:	Items for observation during evaluation	Score
1	Relevance of Topic	
2	Appropriate Cross references	
3	Completeness of Preparation	
4	Ability to respond to questions	
5	Effectiveness of Audio-visual aids used	
6	Time Scheduling	
7	Clarity of Presentation	
8	Overall performance	
9	TOTAL SCORE	

Performance	Score
Poor	0
Below Average	1
Average	2
Good	3
Very good	4

Signature of Faculty/Observer

5.3 :Checklist 3

Model Checklist for Evaluation of Clinical Case and Clinical Work

Name of Student:

Date:

Name of the Faculty/Observer:

Sl. No:	Items for observation during evaluation	Score
1	History	
	Elicitation	
	Completeness	
2	Examination	
	General Examination	
	Extra oral examination	
	Intraoral examination	
3	Provisional Diagnosis	
4	Investigation	
	Complete and Relevant	
	Interpretation	
5	Diagnosis	
	Ability to defend diagnosis	
6	Differential Diagnosis	
	Ability to justify differential diagnosis	
7	Treatment Plan	
	Accuracy	
	Priority order	
8	Management	
9	Overall Observation	
	Chair side manners	
	Rapport with patient	
	Maintenance of Case Record	
	Quality of Clinical Work	
	Presentation of Completed Case	
10	TOTAL SCORE	

Performance	Score
Poor	0
Below Average	1
Average	2
Good	3
Very good	4

Signature of Faculty/Observer

5.4: Checklist 4

Model Checklist for Evaluation of Library Dissertation Work

Name of Student:

Date:

Name of the Faculty/Guide:

Sl. No:	Items for observation during evaluation	Score
1	Interest shown in selecting topic	
2	Relevance of Topic	
3	Preparation of Proforma	
4	Appropriate review	
5	Appropriate Cross references	
6	Periodic consultation with guide	
7	Completeness of Preparation	
8	Ability to respond to questions	
9	Quality of final output	
9	TOTAL SCORE	

Performance	Score
Poor	0
Below Average	1
Average	2
Good	3
Very good	4

Signature of Faculty/Guide

5.5: Checklist 5

Model Checklist for Evaluation of Dissertation Work

Name of Student:

Date:

Name of the Faculty/Guide/Co-guide:

Sl. No:	Items for observation during evaluation	Score	Performance	Score
1	Interest shown in selecting topic		Poor	0
2	Relevance of Topic		Below Average	1
3	Preparation of Proforma		Average	2
4	Appropriate review		Good	3
5	Appropriate Cross references		Very good	4
6	Periodic consultation with guide/co- guide			
7	Depth of Analysis / Discuss			
8	Ability to respond to questions			
9	Department Presentation of findings			
10	Quality of final output			
	TOTAL SCORE			

Signature of Faculty/Guide/Co-guide

5.6:CHECKLIST-6

CONTINUOUS EVALUATION OF DISSERTATION WORK BY GUIDE/CO-GUIDE

Name of the Trainee:

Date

Name of the Faculty/Observer:

Sl.No	Items for observation during presentation	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Periodic consultation with guide / co- guide					
2.	Regular collection of case material					
3.	Depth of Analysis / Discussion					
4.	Department presentation of findings					
5.	Quality of final output					
6.	Others					
	Total score					

Signature of the guide / co-guide

5.7;CHECKLIST -7

OVERALL ASSESSMENT SHEET

Name of the College:

Date:

Name of Department:

Check List No	PARTICULARS	Name of trainee		
		First Year	Second Year	Third Year
1	Preclinical Exercises			
2.	Journal Review Presentation			
3.	Seminars			
4	Library dissertation			
5.	Clinical work			
6-	Clinical presentation			
7.	Teaching skill practice			
8.	Dissertation			
	TOTAL			

Signature of HOD

Signature of Principal

The above overall assessment sheet used along with the logbook should form the basis for certifying satisfactory completion of course of study, in addition to the attendance requirement.

Key:

Mean score: Is the sum of all the scores of checklists 1 to 6

5.8:LOGBOOK

DEPARTMENT OF

MDS Programme

LOG BOOK OF

NAME.....

BIODATA OF THE CANDIDATE

EXPERIENCE BEFORE JOINING P.G. COURSE

DETAILS OF POSTING :

- **FIRST YEAR**
- **SECOND YEAR**
- **THIRD YEAR**

DETAILS OF LEAVE AVAILED

PRECLINICAL EXERCISES

LIBRARY DISSERTATION

RESEARCH WORK

PARTICIPATION IN CONFERENCES – CDE PROGRAMMES

DETAILS OF PARTICIPATION IN ACADEMIC PROGRAMME

SEMINARS /SYMPOSIA PRESENTED

JOURNAL CLUBS

TEACHING ASSIGNMENTS – UNDERGRADUATES / PARAMEDICAL.

SPECIAL DUTIES (IF ANY)

INTERNAL ASSESSMENT

DAILY ACTIVITIES RECORD (BLANK PAGES)

ONE PAGE FOR EACH MONTH X 36 PAGES

MISCELLANEOUS

SUMMARY

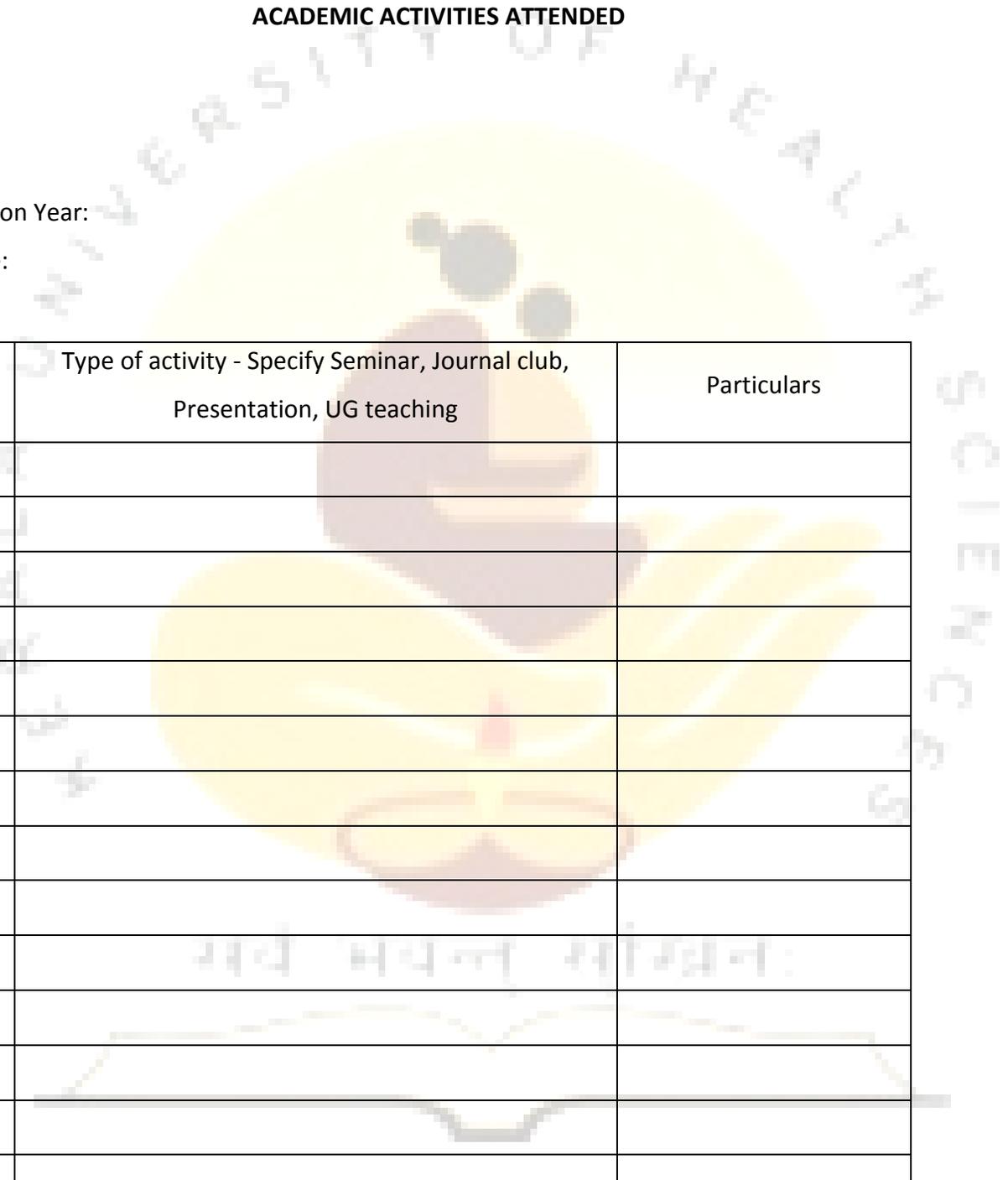
5.8.1 :LOGBOOK-1

ACADEMIC ACTIVITIES ATTENDED

Name:

Admission Year:

College:



Date	Type of activity - Specify Seminar, Journal club, Presentation, UG teaching	Particulars



5.8.2 :LOG BOOK -2

ACADEMIC PRESENTATIONS MADE BY THE TRAINEE

Name :

Admission Year:

College:

Date	Topic	Type of activity - Specify Seminar, Journal club, Presentation, UG teaching



5.8.3 :LOGBOOK-3

DIAGNOSTIC AND OPERATIVE PROCEDURES PERFORMED

Name

Admission Year:

College:

Date	Name	OP No.	Procedure	Category O, A, PA, PI

Key:

O- WASHED UP AND OBSERVED - INITIAL 6 MONTHS OF ADMISSION

A- ASSISTED A MORE SENIOR SURGEON - 1 YEAR MDS

PA - PERFORMED PROCEDURE UNDER THE DIRECT SUPERVISION OF A SENIOR SURGEON - II YEAR MDS

PI- PERFORMED INDEPENDENTLY - III YEAR MDS

SYLLABUS

**for Courses affiliated to the
Kerala University of Health Sciences**

Thrissur 680596



Master of Dental Surgery (MDS)

Oral Medicine and Radiology

Course Code: 248

(2016-17 Academic year onwards)

2016

2. COURSE CONTENT

2.1 Title of course:

MDS Oral Medicine and Radiology

2.2 Objectives of course

1. Goals

The goals of postgraduate training in various specialities are to train the BDS graduate who will:

- Practice respective specialty efficiently and effectively, backed by scientific knowledge and skill.
- Exercise empathy and a caring attitude and maintain high ethical standards.
- Continue to evince keen interest in continuing professional education in the specialty and allied specialties irrespective of whether in teaching or practice.
- Willing to share the knowledge and skills with any learner, junior or a colleague.
- To develop the faculty for critical analysis and evaluation of various concepts and views, to adopt the most rational approach.

2. Objectives

The objective is to train a candidate so as to ensure higher competence in both general and special area of interest and prepare him for a career in teaching, research and specialty practice. A candidate must achieve a high degree of clinical proficiency in the subject matter and develop competence in research and its methodology as related to the field concerned.

The above objectives are to be achieved by the time the candidate completes the course.

The objectives may be considered as under –

1. Knowledge (Cognitive Domain)
2. Skills (Psychomotor Domain)
3. Human values, ethical practice and communication abilities.

2.1. Knowledge

- Demonstrate understanding of basic sciences relevant to the specialty.
- Describe etiology, pathophysiology, principles of diagnosis and management of common problem within the specialty in adults and children.
- Identify social, economic, environmental and emotional determinants in a given case and take them into account for planning treatment.
- Recognize conditions that may be outside the area of specialty/competence and to refer them to an appropriate specialist.
- Update knowledge by self-study and by attending courses, conferences and seminars relevant to specialty.

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

2.2. Skills

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

2.3. Human values, ethical practice and communication abilities

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

2.3 Medium of instruction:

The medium of instruction for the course shall be English.

2.4 Course outline

Oral medicine is that specialty concerned with the basic diagnostic procedures and techniques useful in recognizing the diseases of the oral tissues of local and constitutional origin and their medical management. Radiology is a science dealing with x-rays and their uses in diagnosis and treatment of diseases in relation to orofacial diseases.

2.5 Duration

The course shall be of **three 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 KUHS, observing the norms put forward by the DCI.

- i. There will be no reduction for the course duration for any of the students including service candidates, diploma holders and those who have done senior house surgery or equivalent research experience.
- ii. No student shall be permitted to complete the course by attending more than 6 continuous years.
- iii. A candidate selected for admission in a Dental College is obliged to follow the curriculum, rules and regulations as approved by the Dental Council of India and the University. Curriculum, rules or regulations are subject to changes from time to time.

2.6 Syllabus

The syllabus for the theory of Oral Medicine and Radiology should cover the entire field of the subject and the following topics may be used as guidelines.

The concept of health care counseling shall be incorporated in all relevant areas.

Paper I: Applied anatomy, physiology, pathology and pharmacology

1. Applied Anatomy

- Gross anatomy of the face:
- Muscles of Facial Expression And Muscles Of Mastication
- Facial nerve
- Facial artery
- Facial vein
- Parotid gland and its relations

2. Neck region:

- Triangles of the neck with special reference to Carotid, Digastric triangles and midline structures
- Facial spaces
- Carotid system of arteries, Vertebral Artery, and Subclavian arteries
- Jugular system Internal jugular External jugular
- Lymphatic drainage
- Cervical plane
- Muscles derived from Pharyngeal arches
- Infratemporal fossa in detail and temporomandibular joint
- Endocrine glands

- Sympathetic chain
- Cranial nerves-V,VII,VIII,IX,X,XI,&XII
- Exocrine gland

3.Oral Cavity:

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

4.Nasal Cavity

- Nasal septum
- Lateral wall of nasal cavity
- Paranasal air sinuses

5.Pharynx:

6. Gross salient features of brain and spinal cord with references to attachment of cranial nerves to the brainstem. Detailed study of the cranial nerve nuclei of V, VII, VIII, IX, X, XI, XII

7. Osteology: Comparative study of fetal and adult skull Mandible:
Development, ossification, age changes and evaluation of mandible in detail

Embryology

1. Development of face, palate, nasal septum and nasal cavity, para nasal air sinuses
2. Pharyngeal apparatus in detail including the floor of the primitive pharynx
3. Development of tooth in detail and the age changes
4. Development of salivary glands
5. Congenital anomalies of face must be dealt in detail.

Histology:

1. Study of epithelium of oral cavity and the respiratory tract
2. Connective tissue
3. Muscular tissue
4. Nervous tissue
5. Blood vessels
6. Cartilage
7. Bone and tooth
8. Tongue
9. Salivary glands
10. Tonsil, thymus, lymph nodes

Physiology:

1. General Physiology:

- Cell
- Body Fluid Compartments
- Neuromuscular transmission
- Mechanism of muscle contraction

Blood:

- RBC and Hb
- WBC - Structure and functions
- Platelets - functions and applied aspects
- Plasma proteins
- Blood Coagulation with applied aspects
- Blood groups
- Lymph and applied aspects

Respiratory System:

- Air passages, composition of air, dead space, mechanics of respiration with pressure and volume changes
- Lung volumes and capacities and applied aspects
- Oxygen and carbon dioxide transport
- Neural regulation of respiration
- Chemical regulation of respiration
- Hypoxia, effects of increased barometric pressure and decreased barometric pressure
- Cardio-Vascular System:
- Cardiac Cycle
- Regulation of heart rate/Stroke volume/cardiac output/blood flow
- Regulation of blood pressure
- Shock, hypertension, cardiac failure

Excretory system

- Renal function tests

Gastro - intestinal tract:

- Composition, functions and regulation of:
- Saliva
- Gastric juice
- Pancreatic juice
- Bile and intestinal juice
- Mastication and deglutition

Endocrine system:

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

Central Nervous System:

- Ascending tract with special references to pain pathway

Special Senses:

- Gustation and Olfaction

Biochemistry

1. Carbohydrates

- Disaccharides specifically maltose, lactose, sucrose
- -Digestion of starch/absorption of glucose
- -Metabolism of glucose, specifically glycolysis, TCA cycle, gluconeogenesis
- -Blood sugar regulation
- -Glycogen storage regulation
- -Glycogen storage diseases
- -Galactosemia and fructosemia

2. Lipids

- Fatty acids- Essential/nonessential
- Metabolism of fatty acids-oxidation, ketone body formation, utilization ketosis
- Outline of cholesterol metabolism-synthesis and products formed from cholesterol

3. Protein

- -Amino acids- essential/nonessential, complete/ incomplete proteins
- Transamination/ Deamination (Definition with examples)
- -Urea cycle
- Tyrosine- Hormones synthesized from tyrosine
- -In born errors of amino acid metabolism
- Methionine and trans methylation

4. Nucleic Acids

- Purines/Pyrimidines Purine analogs in medicine
- DNA/RNA-Outline of structure
- -Transcription/translation
- Steps of protein synthesis Inhibitors of protein synthesis Regulation of gene function

5. Minerals

- Calcium/Phosphorus metabolism specifically regulation of serum calcium levels
- -Iron metabolism
- Iodine metabolism
- -Trace elements in nutrition

6. Energy Metabolism

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

7. Vitamins

-Mainly the vitamins and their metabolic role- specifically vitamin A, Vitamin C, Vitamin D, Thiamin, Riboflavin, Niacin, Pyridoxine

Pathology:

1. Inflammation:

- Repair and regeneration, necrosis and gangrene
- Role of complement system in acute inflammation
- Role of arachidonic acid and its metabolites in acute inflammation
- Growth factors in acute inflammation

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

- Role of Endothelium in thrombo -genesis
- Arterial and venous thrombi
- Disseminated Intravascular Coagulation

Shock

- Pathogenesis of hemorrhagic, neurogenic, septic, cardiogenic shock, circulatory disturbances, ischemic hyperemia, venous congestion, edema, infarction

Chromosomal Abnormalities:

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

Hypersensitivity:

- Anaphylaxis
- Type II Hypersensitivity
- Type III Hypersensitivity
- Cell mediated Reaction and its clinical importance
- Systemic Lupus Erythmatosus
- Infection and infective granulomas

Neoplasia:

- Classification of Tumors
- Carcinogenesis & Carcinogens - Chemical, Viral and Microbial
- Grading and Staging pf Cancer, tumor Angiogenesis, Paraneoplastic Syndrome
- Spread of tumors
- Characteristics of benign and malignant tumors Others:
- Sex linked agammaglobulinemic
- AIDS
- Management of Immune deficiency patients requiring surgical procedures
- De George's Syndrome
- Ghons complex, post primary pulmonary tuberculosis - pathology and pathogenesis

Phamacology:

1. Definition of terminologies used
2. Dosage and mode of administration of drugs
3. Action and fate of drugs in the body
4. Drugs acting on the CNS

5. Drug addiction, tolerance and hypersensitive reactions
6. General and local anesthetics, hypnotics, anaesthetics, and tranquilizers
7. Chemotherapeutics and antibiotics
8. Analgesics and anti-pyretics
9. Anti-tubercular and anti-syphilitic drugs
10. Antiseptics, sialogogues, and anti-sialogogues
11. Haematinics
12. Anti-diabetics
13. Vitamins - A B Complex, C, D, E & K
14. Steroids

ORAL MEDICINE

1. General principles of patient examination, systems review, procedures for diagnosis and examination of specific lesions.
2. Diagnostic laboratory investigations:
 - 2.1. Routine: Collection of samples, laboratory investigative procedures, normal values interpretation of results.
 - 2.2. Special Laboratory Investigations: Blood Chemistry, Sialochemistry, Serology.
3. Microbiology, Immunology, Histology, Cytology.
4. Culture techniques: Collection, presentation and transportation of specimens.
5. Biopsy - types and procedures
6. Chronic oral sensory disorders mainly orofacial pain, dysgeusia.
7. Diseases of pulp and periapical tissues, caries.
8. Diseases of periodontium
9. Developmental disturbances of oral and paraoral structures. Odontological diseases.
10. Disorders of temporomandibular joint
11. Disease of the tongue
12. Salivary gland disease
13. Pigmentary disturbances of oral and paraoral region
14. Benign and malignant tumors affecting the oral cavity
15. Cysts of odontogenic origin
16. Tumors of odontogenic origin

17. Acute and chronic infections of oral and paraoral structures. Bacterial, viral and Mycotic infection.

Spread of oral infection: oral sepsis and its implications.

18. Metabolic, endocrine and nutritional disorders

19. Immunological disease

20. Bleeding and clotting disorders; Hematological disease

21. Primary and secondary mucosal lesions

22. Premalignant and malignant mucosal lesions

23. Red and white lesions, ulcerative, vesiculobullous lesions

24. Dermatologic, sexually transmitted disease, oral manifestations and management

25. Systemic disease: Oral manifestations and management of

25.1. Diseases of the respiratory system

25.2. Dermatologic diseases

25.3. Hematological diseases

25.4. Immunologic diseases

25.5. Endocrine disease

25.6. Neurologic disease

25.7. Cardiovascular diseases

25.8. Hepatic disease

25.9. Renal disease

25.10. G.I.T diseases

25.11. Reproductive diseases

25.12. Muscular disease

25.13. Urogenital diseases

25.14. Psychological disease

25.15. Geriatric diseases

25.16. Nutritional diseases

25.17. Ophthalmologic disease

25.18. E.N.T.diseases

26. Psychosomatic oral lesions

27. Occupational Hazards

28. General principles of patient care in admitted cases and hospital dentistry

29. Therapeutics in oral medicine

- 29.1. Medical management of oral disease
- 29.2. Drugs commonly used in Dentistry – analgesics, anti-inflammatory drugs, antibiotic, steroids, vitamins, minerals, topically used drugs, mouth washes, dentifrices, and desensitizing agents
- 29.3. Drugs commonly used for medical problems
- 29.4. Drug interactions
- 29.5. Oral manifestations of drug reactions and their management
- 29.6. Medical emergencies in dentistry
- 30. Legal considerations in Dentistry
- 31. Forensic Odontology
 - 31.1. Medicolegal aspects of orofacial injuries
 - 31.2. Identification of bite marks.
 - 31.3. Determination of age and sex.
 - 31.4. Identification of cadavers by dental appliances, restorations and tissue remnants.

RADIOLOGY

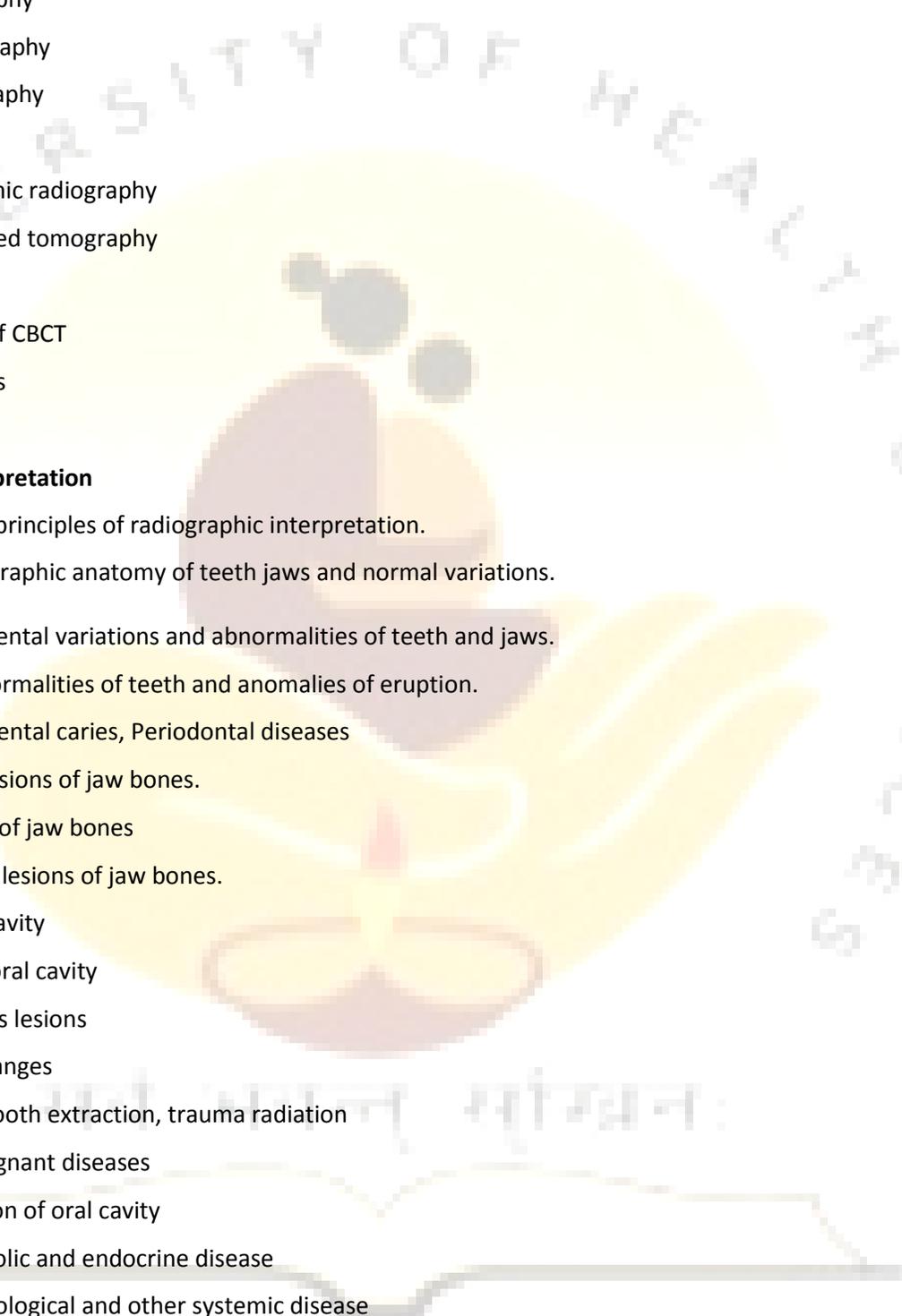
1. General Physics, Radiobiology, Radiotherapy

- 1.1. Fundamentals of Dental Radiology
 - 1.1.1. Origin of dental radiology, Historical aspect of radiology.
 - 1.1.2. Radiation physics, Electromagnetic spectrum. Production and properties of X-rays.
 - 1.1.3. Dental X-ray machine parts and factors affecting production of X-ray
 - 1.1.4. X-ray film (intra oral and extra oral)
 - 1.1.5. Film processing – Dark room procedures, Chemicals, processing errors & rectification.
 - 1.1.6. Radiation Biology.
- 1.2. General Physics
- 1.3. Radioactivity, radioactive materials, electromagnetic spectrum, production and properties of X-rays, gamma rays, interaction of x-rays with matter and its effects. Measures and units of measurement, elementary knowledge of electronics.
- 1.4. Radiobiology
- 1.5. General principles, biological effects of radiation, departmental protection, protection measures, filters and filtration, personnel monitoring, dosimetry.
- 1.6. Radiotherapy

- 1.7. Physical principles of radiotherapy, types of therapy source, patient dosage, beam modification, collimations and beam direction devices. Radioactive isotopes.
- 1.8. Diagnostic Radiology - Physical basis of diagnostic radiology geometric factors, x-ray absorption effects, control of scattered radiation image receptors, image processing, properties of image receptors, Conventional radiography normal landmarks.
 - 1.8.1. Contrast Radiography – Sialography, Arthrography
 - 1.8.2. Xeroradiography - Process of xeroradiography, Dental Application of xeroradiography
 - 1.8.3. Tomography - Principles of Tomography, Conventional Tomography, Curved surface tomography (pantomography) – Evolution, Principles, Interpretation, Panoramic variants, Computed tomography, systems components, interpretation, Dental application. CBCT, PET, SPECT - Dental application, Three dimensional computed tomography
 - 1.8.4. Cephalometric Radiography
 - 1.8.5. Teleradiography, Telemedicine
 - 1.8.6. Ultrasonography - Principles, Dental application
 - 1.8.7. Magnetic Resonance imaging in Dentistry, Basic concepts of analyzing magnetic resonance images.

2. Radiographic Principles and Techniques

- 2.1. Intra oral radiography
 - 2.1.1. Periapical
 - 2.1.2. Bite –wing
 - 2.1.3. Occlusal
 - 2.1.4. Tube shift technique
 - 2.1.5. In endodontics
 - 2.1.6. In pedodontics
 - 2.1.7. Ideal radiograph
 - 2.1.8. Defective radiographs
- 2.2. Extra oral radiography – All routine, modified and special views
 - 2.2.1. Of TMJ
 - 2.2.2. Of maxillary sinus
 - 2.2.3. In oral and maxillofacial injuries
 - 2.2.4. Localization techniques
- 2.3. Contrast radiography

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- 2.3.1. Sialography
- 2.3.2. Arthrography
- 2.3.3. Angiography
- 2.4. Tomography
- 2.4.1. Panoramic radiography
- 2.4.2. Computed tomography
- 3. CBCT**
- 3.1. Principles of CBCT
- 3.2. Applications
- 3.3. Artifacts
- 4. Radiographic interpretation**
- 4.1. Fundamental principles of radiographic interpretation.
- 4.2. Normal radiographic anatomy of teeth jaws and normal variations.
- 4.3.4.3. Developmental variations and abnormalities of teeth and jaws.
- 4.4. Acquired abnormalities of teeth and anomalies of eruption.
- 4.5. Radiology in dental caries, Periodontal diseases
- 4.6. Radiolucent lesions of jaw bones.
- 4.7. Mixed lesions of jaw bones
- 4.8. Radio-opaque lesions of jaw bones.
- 4.9. Cysts of oral cavity
- 4.10. Tumours of oral cavity
- 4.11. Fibro-osseous lesions
- 4.12. Jaw bone changes
- 4.12.1. After tooth extraction, trauma radiation
- 4.12.2. In malignant diseases
- 4.12.3. Infection of oral cavity
- 4.12.4. Metabolic and endocrine disease
- 4.12.5. Hematological and other systemic disease
- 5. Radiology in**
- 5.1. TMJ diseases
- 5.2. Maxillary sinus pathologies

5.3.Oral and Maxillofacial injuries

5.4.Salivary gland disease

6. Principles and technique of therapeutic radiation

7. Osteodystrophies

8. Recent advances in

8.1. Radiology

8.2. Digital radiology

8.3. Computed tomography

8.4. Radio-isotopes

8.5. PET.

PROCEDURAL AND OPERATIVE SKILLS:

(The numbers mentioned are minimum to be performed by each candidate)

1st Year

1. Examination of Patient - Case history recordings -100
2. FNAC -50
3. Biopsy -50
FNAC and Biopsy - Observe, Assist and Perform under supervision (for three years)
4. Intra - oral radiographs- Perform and interpret-100
5. Radiographic tracings of all Intra oral and Extra oral radiographs including TMJ- 2 each.
6. Age assessment by radiographic method :10cases
7. Seminars in basic sciences
8. Journal Clubs
9. Library Dissertation Work
10. Commencement of Dissertation Work.
11. Attending CDE/Workshops/Advanced Courses
12. Attending a State/National Conference and presentation of a Scientific Paper.
13. Publication of a scientific paper

2nd year

1. Dental treatment to medically compromised patient- 50
- Observe, assist, and perform under supervision
2. Extra - oral radiographs, digital radiography - 50
- Observe, assist and perform under supervision
3. Intra - oral radiograph-Perform and interpret- 100

Operative skills:

1. Giving intra - muscular and intravenous injections
2. Administration of oxygen and life saving drugs to the patients
3. Performing basic CPR.
4. Should have attended a minimum of 15 days posting in the following departments.
 - 4.1. Dermatology and Venereal disease
 - 4.2. General Radiology
 - 4.3. Radiation Oncology /Imageology
 - 4.4. General Medicine
5. 10 seminars in Specialty.
6. Guiding Third year BDS students during their clinical posting.
7. Taking lectures for BDS students on selected topics-10hours.
8. 10 Journal Clubs.
9. Attending CDE/Workshops/Advanced Courses
10. Attending a National Conference and presentation of a Scientific Paper.
11. Completion and Submission of Dissertation.
12. Publication of a scientific paper

3rd Year

1. Perform independently- Case history: Routine cases - 100
2. Documenting of Interesting Cases - 25
3. Intra – oral Radiographs - 100
4. Extra-oral radiographs of different views - 50
5. 10 Seminars on Recent Advances in Dentistry.
6. Attending CDE/Workshops/Advanced Courses
7. Attending a National Conference and presentation of a Scientific Paper.

Monitoring Learning Progress

It is essential to monitor the learning progress to each candidate through continuous appraisal and regular assessment. It not only helps teachers to evaluate students, but also the students to evaluate themselves. The monitoring to be done by the staff of the department based on participation of students in various teaching / learning activities. It may be structured and assessment be done using checklists that assess various aspects

Library Dissertation: Topic for the library dissertation should be finalized and approved by the end of the first six months and the same to be submitted at the end of the first year. It should be approved by the guide and certified by the Head of the Department.

Conferences and Publication of Scientific Paper: During the MDS course the student should attend two National Conferences and attempts should be made to present at least two scientific papers and publish at least two scientific articles in an indexed journal relevant to the specialty.

The student is expected to maintain a detailed log book of work done on each day of his/her MDS course and should produce it for evaluation on the day of Practical/Clinical Examination.

Requirements to be met by the candidate to appear for MDS examination

1. The candidate should have completed three years training course with a minimum of 80% attendance each year of the course at the time of appearing for the examination.
2. Selection of topic for dissertation should be done within 6 months of the first year and the completed dissertation should be submitted to KUHS six months before the proposed date of examination.
3. Should have attended 15 days posting in the following departments.
 - 3.1. Dermatology and Venereal disease
 - 3.2. General Radiology
 - 3.3. Radiation Oncology /Imageology
 - 3.4. General Medicine.
4. Produce a clinical record with photographs and investigation reports of 15 cases of interest.
5. Produce a record of radiographs of different radiographic techniques
6. Should have undertaken treatment and follow up study of 10 patients with chronic mucosal lesions.
7. Should have attended and presented a paper at state/national conference.
8. Should have at least two publications.
9. Should have 10 hours of undergraduate teaching experience.
10. Should present a compilation of a minimum of 15 seminars; the seminars presented over the course of three years.
11. All records and accounts of work performed by the candidate shall be assessed and approved by the guide for the postgraduate programme.

MDS theory examination shall consist of four papers:

Paper I: Applied anatomy, physiology, pathology and pharmacology.

Paper II: Diagnosis, diagnostic methods and imageology and Applied Oral Pathology

Paper III: Oral medicine, therapeutics and laboratory investigations

Paper IV: Essay on Oral Medicine and Radiology with Emphasis to recent trends.

Each paper will be based on the relevant aspect (diagnosis, management or imaging) of the topics outline in the syllabus.

*The topics assigned to the different papers are generally evaluated under those sections. However a strict division of the subject may not be possible and some overlapping of topics is inevitable. Students should be prepared to answer overlapping topics.

SCHEME OF EXAMINATION:

The candidate shall be assessed on the basis of the written examination and practical examination and viva voce.

Written examination shall comprise of the four above-mentioned papers, each of three hours duration and maximum marks of 75 each. There will be no options in the questions of the first three papers. The fourth paper will be a three hour essay in which a choice between two questions will be given. It will include all components of course content.

Practical examination (Total Marks 200) will be two days duration comprising of:

Day I: Detailed examination of a long case	-50marks
Case presentation of two short cases – 20 marks x 2	- 40marks
Two spotters – 10 marks x 2	- 20marks
Exercise in various radiographic techniques	
Two intraoral radiographs – 10 marks x 2	-20marks
One Occlusal and Bitewing Radiograph	
Two extra oral radiograph including technique and interpretation –10 marks x 2	- 20marks
Day II: Discussion of long case with all required relevant investigation reports.	- 25marks
Assessment of the various records presented by the candidate-	25 marks
Dissertation defense/ Pedagogy	-20 marks
Viva Voce(30minutes)	-80 marks

1.1 Total number of hours

As per the instruction given by the DCI

1.2 Branches if any with definition

Oral Medicine and Radiology

1.3 Teaching learning methods

Method of Training

The training of a postgraduate student shall be full time but 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, case demonstrations, clinics, journal review meetings, and clinical meetings. Every candidate shall be required to participate in the teaching and training programme of undergraduate students and interns. Training should include involvement in laboratory and experimental work, and research studies. Every Institution undertaking Post Graduate training programme shall set up an Academic cell or a Curriculum Committee, under the chairmanship of a Senior faculty member, which shall work out the details of the training programme in each speciality in consultation with other Department faculty staff and also coordinate and monitor the implementation of these training Programmes.

Based on the above guidelines for a structured training programme for postgraduate courses, the basic tenets of a successful postgraduate teaching programme, are detailed under the following heads.

- **Formal Lectures** by the faculty on varied subjects including general areas and systems. Both senior and junior faculty can do this. However, the number of these classes should be maintained of low levels to encourage self-learning.
- **Symposia / Seminars** form an integral part of PG learning. A monthly symposium will generate approximate 30-35 symposia / course. These symposia can include department faculty and HODs as chairpersons and maximum involvement of both students and faculty should be ensured.
- **Clinical Discussions** form the core of PG training and can be assigned to various clinical units on rotating basis. However other faculty could also actively participate in the discussion. The discussions must be 3-4/week. One suggestion is to score the performance of the candidate by a small panel of faculty and convey the scores to the candidate / PG at the end of the session.
- **Journal Club /Clinical Club** should be conducted at least once in a week in each postgraduate department. Journal clubs not only imparts new information but also trains the candidate to objectively assess and criticize various articles which come out and should be useful in ensuring evidence based dentistry.

- **Guest Lectures** can be integrated into the PG program at least once in a month. Even the retired faculty can be invited for delivering the lectures and will ensure importing of greater wisdom to the candidates.
- **Orientation Classes** for newcomers should also be incorporated. These classes can even be assigned to junior faculty/senior PGs.
- **Clinical posting.** Each PG student should work in the clinics on regular basis to acquire adequate professional skills and competency in managing various cases to be treated by a specialist.
- **Clinico Pathological Conferences** should be held once a year involving the faculties of Oral Medicine and Radiology, Oral Pathology and concerned clinical department. The student should be encouraged to present the clinical details, radiological and histo- pathological interpretations and participation in the discussions.
- **Rotation postings in other departments** should be worked out by each department in order to bring in more integration between the speciality and allied fields.
- **Periodical Quiz** can be both informative and entertaining and should be encouraged and planned.
- **Computer Training and Internet Applications** are now becoming a must for both faculty and students. These areas should be strengthened as a next step. There can be a sort of internet information club in the departments.
- **Conferences/CDEs** – All postgraduate students should be encouraged to attend conferences and CDEs. They should also be asked to present papers wherever appropriate and should be rewarded by assigning scores for them.
- **Publication of scientific papers** – It is desirable and advisable to have at least two publications in the State/National/International indexed dental journals.
- **Involvement in Teaching Activity** – PG students can be assigned the job of teaching the undergraduate students and these will definitely improve the teaching skills in the postgraduate students.

Examinations

Evaluation is a continuous process, which is based upon criteria developed by the concerned authorities with certain objectives to assess the performance of the learner. This also indirectly helps in the measurement of effectiveness and quality of the concerned MDS programme. Evaluation is achieved by two processes

- 1) Formative or internal assessment
- 2) Summative or university examinations.

Formative evaluation is done through a series of tests and examinations conducted periodically by the institution. Summative evaluation is done by the university through examination conducted at the end of the specified course.

A candidate registered for MDS course must clear the final examination within six years of the date of admission. The examinations should be so organized that this shall be used as the mechanism to confirm that the candidate has acquired appropriate knowledge, skill and competence at the end of the training that he/she can act as a specialist and/or a medical teacher as per expectation. University examination will be held regularly by KUHS in April-May/October-November every year.

A candidate who wishes to study for MDS in a second specialty should have to take the full course of 3 years in that specialty and appear for examinations.

1.4 Content of each subject in each year

Present in clause 2.6

1.5 No: of hours per subject

Present in clause 2.6

1.6 Practical training

Present in clause 2.6

1.7 Records

Present in clause 2.20

1.8 Dissertation: As per Dissertation Regulations of KUHS

Every candidate pursuing MDS degree course is required to carry out work on a selected research project under the guidance of a recognized postgraduate 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, and comparison of results and drawing conclusions.

Every candidate shall submit to the University in the prescribed format a synopsis containing particulars of proposed dissertation work after obtaining ethical clearance from the Institutional Ethical Committee **within six months from the date of commencement of the course or before the dates notified by the University**. The synopsis shall be sent only through the Principal of the institution.

Such synopsis will be reviewed and the dissertation topic will be registered by the university. No change in the dissertation topic or guide/co-guide shall be made without prior approval of the University. The dissertation should not be just a repetition of a previously undertaken study but it should try to explore some new aspects. The dissertation should be written under the following headings:

1.8.1 Introduction

1.8.2 Aims and Objectives of the study

1.8.3 Review of Literature

1.8.4 Methodology

1.8.5 Results

1.8.6 Discussion

1.8.7 Conclusion

1.8.8 Summary

1.8.9 References

1.8.10 Annexures

The written text of dissertation shall be not less than 50 pages and shall not exceed 150 pages excluding references, tables, questionnaires, and other annexures. It should be neatly typed (font size 13-Times New Roman or font size 13-Cambria) in 1.5 line spacing

on one side of the paper (A4 size, 8.27" x 11.69") and bound properly. Spiral binding should be avoided. (Refer KUHS website). The guide, co-guide if any, Head of the Department and the Head of the Institution shall certify the dissertation.

For uniformity, it was suggested that the colour of the hard bind of the dissertation for all branches of MDS course in the purview of KUHS shall be dark brown with letters of gold colour. The title, author, and year of study should also be imprinted or embossed on the spine of the book. **Three hard copies and one properly labeled soft copy in a CD (refer KUHS website) of the dissertation thus prepared shall be submitted to KUHS on the 29th month of commencement of the course / 31st Oct. of the 3rd academic year, whichever falls first.** Dissertation should preferably be sent to a minimum of three reviewers / examiners / assessors, of which two shall be from outside the state and one from the affiliated colleges of KUHS. If modifications are to be made as specified, three hard copies and one soft copy of the dissertation after corrections made by the candidate should be submitted within a minimum of 30 days to the University. Consent for acceptance for evaluation of dissertation should be obtained from the reviewer/examiner/assessor before the dissertation are dispatched. Proforma for evaluation of dissertation should be sent along with the copies of the dissertation to the reviewers appointed by the university. The proforma should contain all the assessment criteria with the clause – **Accepted/Accepted with modifications/Rejected** and reasons for rejection by the examiner. This proforma should be sent back to the University within two weeks / within the date specified after receipt of dissertation. The dissertation may be declared accepted if more than 50% of the reviewers (2 in the case of 3 reviewers) have accepted it. If modifications are to be made as specified, 3 hard copies and one soft copy of the dissertation after corrections made by the candidate should be submitted within 30 days to the University which may be sent back to the same examiner/s by the University for Acceptance after a fee has been levied from the candidate. If the dissertation has been rejected by more than 50% of the reviewers (2 in the case of 3 reviewers), the dissertation may be reviewed by an Expert Reviewing Committee comprising of not less than two subject experts, Dean (Research) of KUHS and Guide of the candidate provided the Guide requests for a review, after a fee has been levied from the candidate. If rejected by the Reviewing Committee, the candidate should take up a new topic and undergo all the procedures of submitting the synopsis, fees, IEC clearance, etc as prescribed by the University. The candidate who takes up the new topic can appear only for the subsequent examination.

Approval of dissertation work is an essential precondition for a candidate to appear in the University examination. Hall tickets for the university examination should be issued to the candidate only if the dissertation has been accepted.

A candidate whose dissertation has been accepted by the examiners and approved by the University, but who is declared to have failed at the final examination will be permitted to reappear at the subsequent MDS examination without having to prepare a dissertation.

Guide – The academic qualification and teaching experience required for recognition by the University as a guide for dissertation work is as laid down by the Dental Council of India / KUHS.

Co-guide – A co-guide may be included provided the work requires substantial contribution from the same department or a sister department or from another

institution recognized for teaching/training by KUHS/DCI. The co-guide should fulfill the academic qualification and teaching experience required for recognition by the University as a co-guide for dissertation work.

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.

1.9 Speciality training if any

Present in clause 2.6

1.10 Project work to be done if any

Present in clause 2.6

1.11 Any other requirements [CME, Paper Publishing etc.]

Present in clause 2.6

1.12 Prescribed/recommended textbooks for each subject

Applied Basic Sciences

SUBJECT	NAME OF AUTHOR	NAME OF BOOK
Anatomy	BD Chaurasia	BD Chaurasia's Human Anatomy
	William, Peter L	Grays Anatomy
Oral Anatomy	Ash, Major M	Wheeler's Dental Anatomy, Physiology and Occlusion
	Sicher, Harry, Du Brull, Llyod	Oral Anatomy
Oral Histology	Bhaskar B.N. Ed	Orban's Oral Histology and Embryology
	Avery, James K	Essentials of Oral Histology and Embryology
Embryology	Sadler	Langman's Medical Embryology
	Inderbeer Singh	Human Embryology
Physiology	Guyton Arthur and John L Hall	Text Book of Medical Physiology
	Ganong, William F	Review of Medical Physiology
Pharmacology	KD Tripathi	Essentials of Medical Pharmacology
	Hardman, Joel G	Goodman and Gilman's pharmacological basis of Therapeutics
Nutrition	Nizel	Nutrition in Preventive Dentistry: Science and Practice
General Pathology	Cotran, Ramzi S and Others	Robbins Pathologic Basis of Disease
	Harsh Mohan	Textbook of Pathology
Oral Pathology	Shaffer, William and Others	Textbook of Oral Pathology
	Neville, Brad W and Others	Oral and Maxillofacial Pathology
Microbiology	Ananthanarayan and Panicker	Textbook of Microbiology
	Lakshman S	Essential Microbiology for Dentistry
	Dr. Symalan	Statistics in Medicine

Biostatistics	Soben Peter	Essentials of Preventive and Community Dentistry
	Sunder Rao and Richard J.	Introduction to Biostatistics and Research Methods

Oral Medicine and Radiology

Oral Medicine

1. Burket's Oral Medicine – Diagnosis and Treatment –Matin S ,Greenberg 8,9&10,11 ed.
2. A Text book of Oral pathology -Shafer W G ,etal
3. Oral Diseases of the tropics – Prabhu & Wilson
4. Oral and maxillofacial pathology — Neveille B W et al
5. Internal Medicine for Dentistry – Louis F Rose & Donald Kaye
6. Differential Diagnosis of oral lesions – Wood N K & Goaz PW.
7. Oral Cancer –Jatin Shah
8. Medical Problems in Dentistry –Scully & Cawson

Radiology

1. Fundamental Physics of Radiology -Merdith W J& Massey JB
2. Clarks positioning in Radiography — R A Swallow
3. Text of Dental and Maxillofacial Radiology – Freny R Karjodkar
4. Panoramic Radiology-Langland O E et al
5. Text book of Oral radiology – White and Pharoah
6. Principles and practice in oral radiographic interpretation – Worth HM
7. Hand Book of signs in Dental and Maxillofacial Radiology- Wood RE
8. Principals and Interpretation ,In Oral Radiology -Goaz P W & White SC.
9. Maxillofacial Imaging –Angilo M Delbaso
10. Principles of Dental Imaging –Baltimore Williams &Wilkins
11. Fundamentals of Dental Radiography-Mason Hing LR

1.13 Reference books

As instructed by HOD

1.14 Journals

Journal of Oral Pathology, Oral Surgery, Oral medicine and Endodontics

Journal of Oral Pathology and Medicine

Journal of Indian Academy of Oral Medicine and Radiology

Journal of American Dental Association

British Dental Journal

Quintessence International

Journal of Canadian Dental Association

Dental Clinics of North America
Lancet Oncology
Journal of Dental Research
Journal of Cancer Research and Therapeutics
International Journal of cancer
Journal of Head Neck Pathology
American Journal of Roentgenology
Radiologic clinics of North America
Journal of Head and Neck imaging
Dento Maxillofacial Radiology.

1.15 Logbook

▫ Work Diary / Log Book

Logbooks serve as a document of the trainee's work. The trainee shall maintain this Logbook of the special procedures/operations observed/assisted/performed by him/her during the training period right from the point of entry and its authenticity shall be assessed weekly by the concerned Post Graduate Teacher / Head of the Department. This shall be made available to the Board of Examiners for their perusal at the time of his / her appearing at the Final examination. The logbook should record clinical cases seen and presented, procedures and tests performed, seminars, journal club and other presentations. Logbook entries must be qualitative and not merely quantitative, focusing on learning points and recent advances in the area and must include short review of recent literature relevant to the entry. A work diary containing all the various treatment done by the candidate in the course of the study should also be maintained. The work diary shall be scrutinized and certified by both the guide/co guide and Head of the Department and presented in the University practical/clinical examination.

2 EXAMINATIONS

3.1 Eligibility to appear for exams

Every candidate to become eligible to appear for the **MDS examination** shall fulfill the following requirements.

Attendance

Every candidate shall have fulfilled the attendance prescribed by the University during

each academic year of the Postgraduate course. A candidate becomes eligible for writing the University examination only after the completion of 36 months from the date of commencement of the course. The candidates should have completed the training period before the commencement of examination.

Dissertation

Approval of the dissertation is a mandatory requirement for the candidate to appear for the university examination

Library Dissertation

Submission of the library dissertation as per the DCI / KUHS regulations is mandatory for the candidate to appear for the university examination

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.

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.

The certification of satisfactory progress by the Head of the Department and Head of the Institution shall be based on checklist given in 5.1 to 5.8.

- **Students should note that in case they do not complete the exercises and work allotted to them within the period prescribed, their course requirements will be considered unfulfilled.**
- **Clinical Records, Work Diaries and Logbooks should be maintained regularly and approved by the guide, duly certified by the Head of the Department.**

3.2 Schedule of Regular/Supplementary exams

The MDS examination shall be held at the end of the third academic year. The university shall conduct two examinations in a year at an interval of four to six months between two examinations. **Not more than two examinations shall be conducted in an academic year.**

3.3 Scheme of examination showing maximum marks and minimum marks

- MDS examination will consist of Written(Theory), Viva Voce, and Practical / Clinical examination

Written Examination (Theory):300 Marks

Written examination shall consist of **four question papers**, each of three hours duration. Each paper shall carry 75 marks. The type of questions in the first three papers will be two long essay questions carrying 20 marks each and five short essay questions each carrying ten marks. **There will be no options in the questions in the first 3 papers. Fourth paper will be a single essay question paper which will carry an option and the candidate is to answer only one of the essays.** Questions on recent advances may be asked in any or all the papers. **The syllabus for the theory papers of the concerned specialty should cover the entire field of the subject. Though the topics assigned to the different papers are generally evaluated under designated papers, a strict division of the subject may not be possible**

and some overlapping of topics is inevitable. Students should be prepared to answer overlapping topics. The theory examinations shall be held sufficiently earlier than the practical/clinical examinations so that the answer books can be assessed and evaluated before the start of the practical/clinical examination. The total marks for the theory examination shall be 300.

Practical Examination: 200 Marks

In case of practical examination, it should aim 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 mark for practical/clinical examinations shall be 200.

Viva voce ; 100 Marks

Viva voce examination shall aim at assessing depth of knowledge, logical reasoning, confidence and oral communication skills. The candidate may be given a topic for the pedagogy in the beginning of the clinical examination and asked to make a presentation on the topic for 8-10 minutes. The total marks shall be 100 of which 80 would be for the viva voce (20 marks/examiner) and 20 marks for the pedagogy.

3.4 Papers in each year

- Paper-I- Applied anatomy, physiology, pathology and pharmacology.
- PaperII- Diagnosis, diagnostic methods and imageology and Applied OralPathology
- Paper-III- Oralmedicine, therapeutics and laboratory investigations
- Paper-IV- Essay

3.5 Details of theory exams

Distribution of topics for each paper will be as follows:

PAPER-I: Applied Anatomy, Physiology, Biochemistry, Pathology, and Pharmacology.

PAPER-II Oral and Maxillofacial Radiology

PAPER-III- Oral Medicine, therapeutics and laboratory investigations

PAPER-IV- Essay

3.6.Model Question Papers

MDS – Oral Medicine and Radiology

Paper 1 – Applied anatomy, physiology, pathology and pharmacology.

(Answer all questions)

Time: 3 hrs

Max marks:75

Long Essay**(2 x 20 = 40)**

1. Describe the muscles, nerve supply, blood supply and lymphatic drainage of Tongue. (5+5+5+5=20)
2. Define osteomyelitis. Discuss the etiology, pathogenesis, clinical features and radiographic appearance of chronic osteomyelitis of the mandible. (3+3+3+3+8 = 20)

Short Essays**(5 x 7 = 35)**

3. Hypersensitivity reactions
4. Principles of radiographic interpretation
5. TNM staging
6. Actinomycosis
7. Calcium metabolism

Paper II : : Diagnosis, diagnostic methods and imageology and Applied Oral Pathology.**(Answer all questions)**

Time: 3 hrs

Max marks : 75

Long Essay**(2 x 20 = 40 marks)**

1. Describe in detail radiographic appearances seen in primary and metastatic malignancies affecting the jaws. (15+5=20)
2. Describe conventional and advanced imaging techniques for Temporomandibular joints. (10+10=20)

Short essays**(5 x 7 = 35 marks)**

3. Filters used in diagnostic radiography
4. Radiovisiography
5. Radiographic appearance of sclerosing type of osteomyelitis affecting the jaws.
6. Drawbacks of panoramic radiographs
7. Safelight used in dark room.

Paper III – Oral medicine, therapeutics and laboratory investigations.**(Answer all questions)**

Time: 3 hrs

Max marks :75

Long Essay**(2 x 20 = 20 marks)**

1. Discuss radiotherapy for oral cancer in detail. Add a note on the complications of radiotherapy and its management. (10 10 = 20 marks)
2. Describe the etiology, clinical features and medical management of oral lichen planus. Discuss briefly on lichenoid reactions. (5+ 5+5+5= 20 marks)

Short Essays**(5 x 7 = 35 marks)**

3. Cyclic Neutropenia
4. Recurrent aphthous stomatitis.
5. Clinical features and treatment of Erythema multiforme.
6. Methods for personal identification in forensic odontology
7. Dental management of diabetic patient

☆

Paper IV – Essay on Oral Medicine and Radiology with Emphasis to recent trends.

(Answer any one question)

Time: 3 hrs

Max marks : 75

Ultrasonography in dentistry

OR

Diagnosis of Premalignant mucosal lesions

3.7 Internal assessment component

Not applicable.

3.8 Details of practical/clinical exams

Practical examination (Total Marks 200) will be two days duration comprising of:

Day I: Detailed examination of a long case – 50marks

Case presentation of two short cases – (15 marks x 2) - 30marks

Two spotters – (10 marks x2) - 20marks

Exercise in various radiographic techniques

Two intraoral radiographs – (10 marks x 2) – 20marks

One Occlusal and Bitewing Radiograph – 15 marks x 2 – 30 marks

Two extra oral radiograph including
technique and interpretation –15 marks x 2 - 30marks

Day II:

Discussion of long case with all required relevant investigation reports.
- 20 marks

Assessment of the various records presented by the candidate

Dissertation defense/Pedagogy -20marks

Viva Voce(30minutes) -80marks

3.9 Number of examiners needed (Internal & External) and their qualifications

There shall be at least four examiners in each branch of study. Out of four, two (50%) should 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 DCI. The external examiners shall ordinarily be invited from another recognized University from outside the state. An external examiner may ordinarily be appointed for the same institute for not more than two years consecutively. Thereafter he may be reappointed after an interval of one year. The same set of examiners shall ordinarily be responsible for the practical and oral part of the examination.

The Head of the Department shall ordinarily be one of the examiners and the chairperson of the Board of Examinations; second internal examiner shall rotate after every two consecutive examinations if there are more than two postgraduate teachers in the department other than the Head of the department. No person who is not an active Postgraduate teacher in that subject can be appointed as Examiner. However in case of retired personnel, a teacher who satisfies the above conditions could be appointed as examiner up to one year after retirement.

For the MDS examination, if there are no two qualified internal examiners in an institute the second internal examiner can be from a neighbouring DCI and KUHS approved / recognized Dental College having PG course in the specific speciality. This examiner should be an active PG teacher in the same speciality with the qualifications and experience recommended for a teacher for postgraduate degree programme. The examination can also be conducted by one qualified internal examiner and three qualified external examiners if there is no qualified second internal examiner.

Reciprocal arrangement of Examiners should be discouraged, in that, the internal examiner in a subject should not accept external examinership of a college from which the external examiner is appointed in his subject in the same academic year.

3.10 Details of viva

Viva Voce :100 Marks

i. Viva-Voce examination :80marks

All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach, expression, interpretation of data and communication skills. It includes all components of course contents. It includes presentation and discussion on dissertation also.

ii. Pedagogy and thesis presentation : 10 +10 = 20marks

4. INTERNSHIP Not applicable for PG courses

5. ANNEXURES

5.Check Lists for Monitoring: Log Book, Seminar Assessment etc.

CHECKLISTS and LOGBOOK

5.1 Checklist 1

Model Checklist for Evaluation of Preclinical Exercises

Name of Student:

Date:

Name of the Faculty-in-charge:

Name of Exercise

Sl. No:	Items for observation during evaluation	Score
1	Quality of Exercise	
2	Ability to answer to questions	
3	Punctuality in submission of exercise	
4	TOTAL SCORE	

Performance	Score
Poor	0
Below Average	1
Average	2
Good	3
Very good	4

Signature of Faculty-in-charge

मयि भवन्तु मांस्तनः

5.2:Checklist 2

Model Checklist for Evaluation of Journal Review / Seminar Presentation

Name of Student:

Date:

Name of the Faculty/Observer:

Name of Journal / Seminar:

Sl. No:	Items for observation during evaluation	Score
1	Relevance of Topic	
2	Appropriate Cross references	
3	Completeness of Preparation	
4	Ability to respond to questions	
5	Effectiveness of Audio-visual aids used	
6	Time Scheduling	
7	Clarity of Presentation	
8	Overall performance	
9	TOTAL SCORE	

Performance	Score
Poor	0
Below Average	1
Average	2
Good	3
Very good	4

Signature of Faculty/Observer

5.3: Checklist 3

Model Checklist for Evaluation of Clinical Case and Clinical Work

Name of Student:

Name of the Faculty/Observer:

Date:

Sl. No:	Items for observation during evaluation	Score
1	History	
	Elicitation	
	Completeness	
2	Examination	
	General Examination	
	Extra oral examination	
	Intraoral examination	
3	Provisional Diagnosis	
4	Investigation	
	Complete and Relevant	
	Interpretation	
5	Diagnosis	
	Ability to defend diagnosis	
6	Differential Diagnosis	
	Ability to justify differential diagnosis	
7	Treatment Plan	
	Accuracy	
	Priority order	
8	Management	
9	Overall Observation	
	Chair side manners	
	Rapport with patient	
	Maintenance of Case Record	
	Quality of Clinical Work	
	Presentation of Completed Case	
10	TOTAL SCORE	

Performance	Score
Poor	0
Below Average	1
Average	2
Good	3
Very good	4

Signature of Faculty/Observer

5.4: Checklist 4

Model Checklist for Evaluation of Library Dissertation Work

Name of Student:

Date:

Name of the Faculty/Guide:

Sl. No:	Items for observation during evaluation	Score
1	Interest shown in selecting topic	
2	Relevance of Topic	
3	Preparation of Proforma	
4	Appropriate review	
5	Appropriate Cross references	
6	Periodic consultation with guide	
7	Completeness of Preparation	
8	Ability to respond to questions	
9	Quality of final output	
9	TOTAL SCORE	

Performance	Score
Poor	0
Below Average	1
Average	2
Good	3
Very good	4

Signature of Faculty/Guide

5.5: Checklist 5

Model Checklist for Evaluation of Dissertation Work

Name of Student:

Date:

Name of the Faculty/Guide/Co-guide:

Sl. No:	Items for observation during evaluation	Score	Performance	Score
1	Interest shown in selecting topic		Poor	0
2	Relevance of Topic		Below Average	1
3	Preparation of Proforma		Average	2
4	Appropriate review		Good	3
5	Appropriate Cross references		Very good	4
6	Periodic consultation with guide/co- guide			
7	Depth of Analysis / Discuss			
8	Ability to respond to questions			
9	Department Presentation of findings			
10	Quality of final output			
	TOTAL SCORE			

Signature of Faculty/Guide/Co-guide

5.6:CHECKLIST-6

CONTINUOUS EVALUATION OF DISSERTATION WORK BY GUIDE/CO-GUIDE

Name of the Trainee:

Date

Name of the Faculty/Observer:

Sl.No	Items for observation during presentation	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Periodic consultation with guide / co- guide					
2.	Regular collection of case material					
3.	Depth of Analysis / Discussion					
4.	Department presentation of findings					
5.	Quality of final output					
6.	Others					
	Total score					

Signature of the guide / co-guide

5.7 CHECK LIST -7

OVERALL ASSESSMENT SHEET

Name of the College:

Date:

Name of Department:

Check List No	PARTICULARS	Name of trainee		
		First Year	Second Year	Third Year
1	Preclinical Exercises			
2.	Journal Review Presentation			
3.	Seminars			
4	Library dissertation			
5.	Clinical work			
6-	Clinical presentation			
7.	Teaching skill practice			
8.	Dissertation			
	TOTAL			

Signature of HOD

Signature of Principal

The above overall assessment sheet used along with the logbook should form the basis for certifying satisfactory completion of course of study, in addition to the attendance requirement.

Key:

Mean score: Is the sum of all the scores of checklists 1 to 6

5.8: LOGBOOK

DEPARTMENT OF

MDS Programme

LOG BOOK OF

NAME.....

BIODATA OF THE CANDIDATE

EXPERIENCE BEFORE JOINING P.G. COURSE

DETAILS OF POSTING :

- **FIRST YEAR**
- **SECOND YEAR**
- **THIRD YEAR**

DETAILS OF LEAVE AVAILED

PRECLINICAL EXERCISES

LIBRARY DISSERTATION

RESEARCH WORK

PARTICIPATION IN CONFERENCES – CDE PROGRAMMES

DETAILS OF PARTICIPATION IN ACADEMIC PROGRAMME

SEMINARS /SYMPOSIA PRESENTED

JOURNAL CLUBS

TEACHING ASSIGNMENTS – UNDERGRADUATES / PARAMEDICAL.

SPECIAL DUTIES (IF ANY)

INTERNAL ASSESSMENT

DAILY ACTIVITIES RECORD (BLANK PAGES)

ONE PAGE FOR EACH MONTH X 36 PAGES

MISCELLANEOUS

SUMMARY

5.8.1 :LOGBOOK-1

ACADEMIC ACTIVITIES ATTENDED

Name:

Admission Year: College:

Date	Type of activity - Specify Seminar, Journal club, Presentation, UG teaching	Particulars



DIAGNOSTIC AND OPERATIVE PROCEDURES PERFORMED

5.8.3 LOGBOOK-

Name

Admission Year:

College:

Date	Name	OP No.	Procedure	Category O, A, PA, PI

Key:

- O**- WASHED UP AND OBSERVED - INITIAL 6 MONTHS OF ADMISSION
- A**-ASSISTED A MORE SENIOR SURGEON -1 YEAR MDS
- PA** - PERFORMED PROCEDURE UNDER THE DIRECT SUPERVISION OF A SENIOR SURGEON - II YEAR MDS
- PI**-PERFORMED INDEPENDENTLY - III YEAR MDS