

**UNMRP**

**UNIVERSITY NATIONAL MEDICAL RESIDENCY PROGRAM  
PAKISTAN**

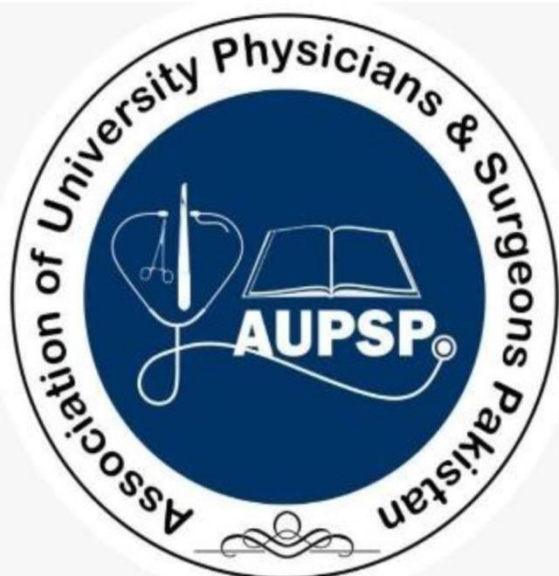
**UNIFIED CURRICULA REGISTRY  
MEDICAL UNIVERSITIES OF  
PAKISTAN**

**CURRICULUM**

**MASTER IN DENTAL  
SURGERY**

**OPERATIVE DENTISTRY  
(MDS)**

**4 Years, Residential, Clinical, Stipend Based, Full Time**



# University National Medical Residency program Pakistan

## Table of Contents

PROGRAM MISSION: .....	3
The Department of Operative Dentistry includes the specialties of Endodontics, Fixed Prosthodontics, Paedodontics and Periodontics. The Department aims at integrating all the disciplines of operative dentistry in addition to advanced patient care, clinical experience and basic dental sciences. The ultimate goal is to produce exceptional dental professionals who can translate their knowledge into clinical practice that will promote the oral health of the community .....	3
PROGRAM OUTCOMES.....	3
PROGRAM OUTLINE .....	4
COURSE OF STUDY.....	5
A. AIMS.....	5
B. MODULES.....	6
B. CORE COMPETENCIES: .....	17
C. RESEARCH THESIS .....	22
ASSESSMENTS.....	22
B. UNIVERSITY EXAMINATION .....	22
LEARNING RESOURCES .....	37

## **University National Medical Residency program Pakistan**

### **PROGRAM MISSION:**

The Department of Operative Dentistry includes the specialties of Endodontics, Fixed Prosthodontics, Paedodontics and Periodontics. The Department aims at integrating all the disciplines of operative dentistry in addition to advanced patient care, clinical experience and basic dental sciences. The ultimate goal is to produce exceptional dental professionals who can translate their knowledge into clinical practice that will promote the oral health of the community

### **PROGRAM OUTCOMES**

By the end of the training program of Operative Dentistry (MDS), the Resident must be able to provide the following treatment modalities in a professional manner:

- Comprehensive diagnosis and treatment planning to address the restorative needs of the patient
- Direct and indirect restorations of the patients.
- Root canal treatment, retreatment and surgical endodontic followed by restoration.
- Crown lengthening of teeth for direct and indirect restorations
- Restoration and pulp therapies of primary and permanent teeth of pediatric patients
- Restoration of patients with dental implants.
- Diagnosis and management of the patients with disorders of the temporomandibular joints
- Management of endoperio lesions.
- Restoration of patients requiring complete mouth rehabilitation

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### PROGRAM OUTLINE

The scheme of studies is as follows:

YEAR	ACTIVITIES	
First Year	Specialty Training Mandatory Workshops Synopsis Submission At the end of 12 months <ul style="list-style-type: none"> <li>• Intermediate Examination(IME)</li> </ul>	<ul style="list-style-type: none"> <li>• Continuous Internal Assessment /Workplace Based Assessment</li> <li>• Portfolio</li> </ul>
Second Year	Specialty training Eight Months Rotation (2 months) <ul style="list-style-type: none"> <li>• Prosthodontics</li> <li>• Oral &amp; Maxillofacial Surgery</li> <li>• Periodontics</li> <li>• Orthodontics</li> </ul>	
Third Year	Specialty Training	
Fourth Year	Specialty Training Thesis Submission At the end of year <ul style="list-style-type: none"> <li>• Final Examination</li> </ul>	

**COURSE OF STUDY**

**A. AIMS**

MDS Course aims to train the graduate to:

- ❖ Be capable of assessing a patient's general dental health, have knowledge of relevant disease process and to be able to formulate a comprehensive treatment plan, including preventive care for adult patients with compromised dentition.
- ❖ Have a sound knowledge of the scientific basis for various treatment options and to be able to integrate theoretical and practical knowledge in respect of management of adult patients.
- ❖ Undertake completely on the basis of experience gained during the course, clinical procedures of operative dentistry, including use of new restorative materials for direct and indirect restorative materials, surgical and non-surgical root canal treatment and to understand the relevant inter-relationship of allied dental specialties .
- ❖ The research project and thesis will be prepared the candidate in scientific method.
- ❖ It will prepare a candidate for a career in operative dentistry research ,teaching and clinical.
- ❖ Prepare students to grow professionally and become emissaries for the specialty of Operative Dentistry.

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### B. MODULES

MODULE NO.	MODULE TITLE
Module 1	Operative dentistry
Module 2	Endodontics
Module 3	Fixed Prosthodontics
Module 4	Paedodontics
Module 5	Periodontics
Module 6	Occlusion & Temporomandibular Joint Disorders
Module 7	Implantology
Module 8	Restorative Management of special needs

### MODULE 1:

#### OPERATIVE DENTISTRY

##### OBJECTIVES:

The trainees at the end of the module should be able to

- ❖ Interpret etiology, pathogenesis and management of dental problems and their effect on systemic diseases.
- ❖ Take through history of a patient presenting with clinical problems related to Operative Dentistry.
- ❖ Perform intra and extra oral examination in a sequential manner and interpret the findings.
- ❖ Interpret the relevant investigations required for the management of oral problems.
- ❖ Consider relevant differential diagnosis and can formulate a definite diagnosis based on investigations.
- ❖ Apply the basic principles of Operative Dentistry and advancements in the management of the patients for direct and indirect restorations.

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### **TOPICS:**

- ❖ Clinical Significance of Dental Anatomy
- ❖ Histology, Physiology, and Occlusion,
- ❖ Dental Caries: Etiology, Clinical Characteristics,
- ❖ Applied Dental materials
- ❖ Preliminary Considerations for Operative Dentistry
- ❖ Risk Assessment, and Management,
- ❖ Patient Assessment, Examination, Diagnosis, and Treatment Planning
- ❖ Instruments and Equipment for Tooth Preparation,
- ❖ Fundamentals of Tooth Preparation,
- ❖ Fundamental Concepts of Enamel and Dentin Adhesion
- ❖ Light Curing of Restorative Materials
- ❖ Color and Shade Matching in Operative Dentistry
- ❖ Facial analysis and Smile design
- ❖ Clinical Technique for Direct Composite Resin and Glass Ionomer Restorations
- ❖ Additional Conservative Esthetic Procedures
- ❖ Clinical Technique for Amalgam Restorations
- ❖ Periodontology Applied to Operative Dentistry
- ❖ Digital Dentistry in Operative Dentistry
- ❖ Resin-Bonded Splints and Bridges
- ❖ Direct Gold Restorations
- ❖ Class II Cast-Metal Restorations

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### **MODULE 2:**

#### **ENDODONTICS**

#### **Objectives:**

The trainees at the end of the module should be able to

- ❖ Make a diagnosis, formulate a comprehensive treatment plan and manage the patients for root canal treatment.
- ❖ differentiate between the urgent from non urgent needs of the patient
- ❖ Undertake clinical procedures of non-surgical and surgical endodontics to a more advanced level.
- ❖ treat patients requiring emergency and remedial dental care related to failed endodontic procedures
- ❖ Integrate theoretical and practical knowledge of endodontics in the management of Patients.
- ❖ Perform endodontics with advanced gadgets in the field of endodontics.
- ❖ Be proficient in providing clinical treatment under the surgical operating microscope and other magnifiers
- ❖ Completely perform surgical per articular procedures
- ❖ Have a multi disciplinary approach for the overall management of patients

#### **TOPICS**

##### **Pulpodental physiology**

- ❖ Diagnosis and management of pulpal and periapical disease
- ❖ Diagnosis and management of orofacial pain, psychogenic pain and TMD
- ❖ Diagnosis and management of dento-alveolar infections and sequelae
- ❖ Rationale for endodontic procedures
- ❖ Tooth preparation, isolation, access and instrumentation
- ❖ Preparation, disinfection and obturation of root canal system
- ❖ Management of traumatic injuries to the teeth
- ❖ Endodontics in children (primary teeth and immature permanent teeth)
- ❖ Apexogenesis/Apexification/Pulpal Revascularization
- ❖ Drugs and chemicals used in Endodontics



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- ❖ Endo emergencies and management
- ❖ Assessment and management of teeth which have previously undergone endodontics treatment.
- ❖ Review and maintenance procedures
- ❖ Evaluation of the success of treatment
- ❖ Restoration of endodontically treated teeth, recent advances.
- ❖ Geriatric Endodontics
- ❖ Surgical Endodontics

### **MODULE 3: FIXED PROSTHOSONTICS**

#### **OBJECTIVES**

The trainees at the end of the module should be able to:

- ❖ Take history and examine the oral cavity, formulate the treatment plan and mouth preparation including principals of occlusion and periodontal considerations
- ❖ Identify the patient's desires, expectations and needs. Systemic and emotional health.
- ❖ Examine head and neck, oral - teeth, occlusal and periodontal clinically
- ❖ Design preparation of diagnostic cast, interpret radiographic, aesthetics, endo- dontics considerations.
- ❖ Examine crown morphology, TMJ and muscles of mastication and formulate comprehensive planning and prognosis.
- ❖ Select the abutment for fixed prosthesis- bone support, root proximities and
- ❖ inclinations, selection of abutments, for cantilever, pier abutments, splinting.
- ❖ Identify principles of tooth preparations, tissue management, impression making and instrumentation
- ❖ Design fixed prosthesis and identify material selection, and biological and mechanical considerations
- ❖ Design the retainer and precision attachments -custom made and ready made
- ❖ Design preparation of crowns, cast metal, metal ceramic crowns, all

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ceramic crowns, partial veneer crowns, three quarter crowns, inlays and on lay preparation.

- ❖ Restore endo-dontically treated teeth
- ❖ Design interim fixed restorations.
- ❖ Record inter occlusal relationship.
  
- ❖ Evaluate, characterization and glazing of restoration.
- ❖ Identify types of luting agents and cementation procedure.
- ❖ Identify post-insertion complaints.
- ❖ History taking, clinical examination, diagnosis, treatment planning and mouth preparation including principals of occlusion and periodontal considerations.
- ❖ Patients desires, expectations and needs. Systemic and emotional health.
- ❖ Clinical examinations - head and neck, oral - teeth, occlusal and periodontal.
- ❖ Preparation of diagnostic cast, radiographic interpretation, aesthetics, endodontics considerations.
- ❖ Crown morphology, TMJ and muscles of mastication and comprehensive planning and prognosis.
- ❖ Abutment selection - bone support, root proximities and inclinations, selection of abutments, for cantilever, pier abutments, splinting.
- ❖ Principles of tooth preparations, tissue management, impression making and instrumentation.
- ❖ Design, material selection, and biological and mechanical considerations -retainer and precision attachments -custom made and ready made
- ❖ Preparation of crowns, cast metal, metal ceramic crowns, all ceramic crowns, partial veneer crowns, three quarter crowns, inlays and on lay preparation.
- ❖ Restoration of endodontically treated teeth.

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- ❖ Interim fixed restorations.
- ❖ Interocclusal records, laboratory support for fixed prosthodontics, occlusal equilibration, articulators, recording and transferring of occlusal relations.
- ❖ Evaluation, characterization and glazing of restoration.
- ❖ Types of luting agents and cementation procedure.
- ❖ Post-operative care.

## **MODULE -IV PEDODONTICS**

### **OBJECTIVES**

It will enable the student to:

- ❖ Diagnose oral and perioral problems and can make treatment plan for podiatric patients.
- ❖ diagnose, make treatment plan and manage the dentoalveolar trauma of primary and permanent dentition ,
- ❖ Manage the child behavior non pharmacologically and pharmacologically
- ❖ provide preventive and operative management of carious and non carious lesions
- ❖ diagnose, make treatment plan and provide the vital and non vital pulp therapies of primary and permanent dentition .
- ❖ Identify and manage the early tooth loss with space maintenance.
- ❖ Identify and manage the oral habits leading to malocclusion.
- ❖ Manage medically compromised patients in an in-patient environment, treatment under conscious sedation and general anesthesia
- ❖ to perform research and practice teaching in pediatric dentistry

### **TOPICS**

- ❖ chronology of human dentition
- ❖ the changes that occur in mandible and maxilla during the growth process
- ❖ behavior and personality development and basic behavioral considerations governing the treatment plan of a child

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patient

- ❖ periodontal diseases in children
- ❖ Diagnostic aids -radiology
- ❖ dental caries, preventive and operative management
- ❖ pulpotomy and polypectomy of primary teeth
- ❖ classification and treatment of injuries to teeth
- ❖ hospitalization protocol of a child patient
- ❖ space management due to premature loss of a primary or permanent tooth
- ❖ common oral habits, their implications and treatment
- ❖ oral changes related to known systemic abnormalities
- ❖ assessment of handicapped patient and man management  
categories for mentally handicapped patients

### **MODULE 5: PERIODONTICS**

The trainees at the end of the module should be able to

#### **Objectives**

- ❖ Describe etiology, pathogenesis of the common periodontal diseases.
- ❖ Identify the rarities in periodontal diseases.
- ❖ Take a through clinical history, perform intra and extra oral examination, use and interpret the other relevant tests to make diagnosis and treatment plan about the periodontal diseases.
- ❖ Perform various procedures required to manage the common periodontal problems
- ❖ Perform crown lengthening, hemi section and root amputation etc, procedures independently.
- ❖ Recognize his limitations or conditions which are outside the domain of his specialty and refer them to the concerned Specialist.
- ❖ Teach the undergraduate in the field of Periodontology.

#### **Topics**

- ❖ Microbiology of dental plaque

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- ❖ Clinical features and diagnosis of gingival /periodontal diseases
- ❖ Pathogenesis of periodontal diseases
- ❖ Manifestation of Systemic conditions/Smoking/Pregnancy
- ❖ Comprehensive diagnosis and treatment planning
- ❖ The periodontal/endodontic interface
- ❖ Periodontal instrumentation
- ❖ Non-Surgical/Surgical Management of periodontitis.
- ❖ Management of Furcation Defects
- ❖ Management of Gingival Recession in esthetic zone
- ❖ Restorative Periodontal Interface
- ❖ Periodontal Antimicrobial therapy and Maintenance

## **MODULE 6: Occlusion &Temporomandibular Joint**

### **OBJECTIVES**

The trainees at the end of the module should be able to:

- ❖ Identify the criteria for optimum functional occlusion
- ❖ Identify etiology & sign / symptoms of functional disturbances in masticatory system
- ❖ Take history, examination & diagnosis for temporomandibular disorder
- ❖ Identify the general considerations in treatment of temporomandibular joint disorder
- ❖ Formulate the treatment of masticatory muscle & joint disorders
- ❖ Design occlusal appliances
- ❖ Identify the general consideration & treatment with occlusal therapy
- ❖ Identify occlusal problems and execute occlusal adjustments
- ❖ Identify restorative consideration in occlusal therapy

### **TOPICS**

- ❖ Criteria for optimum functional occlusion
- ❖ Etiology & Sign / Symptoms of functional disturbances in masticatory system
- ❖ History, Examination & Diagnosis for temporomandibular disorder
- ❖ General considerations in treatment of temporomandibular joint disorder
- ❖ Treatment of masticatory muscle & Joint disorders

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- ❖ Direct Occlusal appliances
- 1. General consideration & Treatment with Occlusal therapy
- 2. Selective grinding
- 3. Restorative considerations in occlusal therapy

## MODULE 7: DENTAL IMPLANTS

### OBJECTIVES

The trainees at the end of the module should be able to:

- ❖ Identify biomaterials & biomechanics for dental implants.
- ❖ Identify radiographic imaging in implant dentistry.
- ❖ Formulate treatment plans on the basis of diagnostic records, related to key implant positions and implant number.
- ❖ Examine natural teeth adjacent to an implant site: joining implants to teeth.
- ❖ Examine diagnostic casts, surgical templates, and identify the need for provisionalization.
- ❖ Design single-tooth implant restorations: maxillary / mandibular anterior and posterior region.
- ❖ Design multiple implant restorations: maxillary / mandibular anterior and posterior region.
- ❖ Formulate the treatment plan for edentulous mandible and maxilla overdentures / fixed prosthesis.
- ❖ Identify principles of fixed implant prosthodontics: cement retained / screw retained restorations.
- ❖ Understand digital technology in implant dentistry.
- ❖ Identify occlusal consideration for implant-supported prostheses: implant- protective occlusion.
- ❖ Identify the need for progressive bone loading: increasing the density of bone with a prosthetic protocol.

### TOPICS

- ❖ Biomaterials & Biomechanics for dental implants
- ❖ Radiographic imaging in implant dentistry

## **University National Medical Residency program Pakistan**

- ❖ Treatment plans on the basis of diagnostic records, related to key implant positions and implant number
- ❖ Natural teeth adjacent to an implant site: joining implants to teeth
- ❖ Diagnostic casts, surgical templates, and Provisionalization
- ❖ Single-tooth implant restorations: maxillary / mandibular anterior and posterior region
- ❖ Multiple implant restorations: maxillary / mandibular anterior and posterior region
- ❖ The edentulous mandible and maxilla: planning for overdentures / fixed prosthesis
- ❖ Principles of fixed implant prosthodontics: cement retained / screw retained restorations
- ❖ Digital technology in implant dentistry
- ❖ Occlusal consideration for implant-supported prostheses: implant-protective occlusion
- ❖ Progressive bone loading: increasing the density of bone with a prosthetic protocol

## **MODULE 8: Restorative Management of the Handicapped Patients**

### **OBJECTIVES**

The trainees at the end of the module should be able to:

- ❖ Promote oral health care in patients with special needs (paediatric and adult) e.g. Physically-cerebral palsy, Mental retardation/intellectual impairment, Metabolic and systemic disorders, Hep B, C, HIV, DM, HTN etc.
- ❖ Diagnose, formulate treatment plan and restorative management of Patients with special needs.

Manage cross infection control in clinic setting and laboratory for such patients.

### **TOPICS**

- ❖ Promoting preventive and operative oral health care in Patients with

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special needs.

- ❖ Cross infection control in the operatory and Laboratory
- ❖ Physically-cerebral palsy
- ❖ Mental retardation/intellectual impairment
- ❖ Metabolic and systemic disorder: Renal and liver disease, Diabetes mellitus, Hypo/ hyperpituitarism, Hypo/hyper parathyroidism, Hypo/hyperthyroidism, Respiratory disorders, Immunological disorders
- ❖ Convulsive disorders
- ❖ Pervasive developmental disorder e.g. Childhood autism, childhood schizophrenia
- ❖ Sensory impairment -Blindness and deafness
- ❖ Hematological/bleeding disorders
- ❖ Neoplasia
- ❖ Congenital defects: cardiac disease , cleft lip and palate , down's syndrome



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### B. CORE COMPETENCIES:

The level of competence to be achieved each academic year is as follow:

1. Observed status
2. Assistant status
3. Performs under supervision
4. Performs independently
5. Supervise other

TASK	SUBTASK	1 <sup>st</sup> year		2 <sup>nd</sup> year		3 <sup>rd</sup> year		4 <sup>th</sup> year	
		Level	Case	Level	Case	Level	Case	Level	Case
Diagnosis & Treatment plan	Detailed history examination, investigation, differential/ definite diagnosis, caries risk assessment ,treatment plan	2	10	3	10	4	10	4	5
Preventive management	Diagnosis & Management of non cavitated lesions (fluoride varnish, resininfiltration, pit & fissure sealants etc.)	3	5	4	5	-	-	-	-
Direct Restorations	a) Amalgam	-	-	-	-	-	-	-	-
	Simple restorations	4	20	-	-	-	-	-	-
	complex restorations	-	-	-	-	-	-	-	-
	b) Composites	-	-	-	-	-	-	-	-
	Anterior	-	-	-	-	-	-	-	-
	Posterior	4	20	-	-	-	-	-	-
	c) GIC Filling /Composers/ RMGIC	5	20	4	2	-	-	-	-
Conservative Aesthetic procedures:	Restoration of Endodontically Treated Teeth	3	2	3	10	3	10	4	4
	Micro/macro abrasion	-	-	3	5	4	2	-	-
	Bleaching (external /internal)	-	-	3	5	4	2	-	-

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Root canal treatment - surgical and non surgical	Root canal treatment( RCT)	-	-	-	-	-	-	-	-
	- Anterior Teeth	4	36	4	10	4	20	-	-
	- Posterior teeth			4	20	4	20	-	-
	-Non surgical Endodontic Retreatment	3	4	4	10	4	10	-	-
	- Revascularization/ Regeneration			3	2	4	2	-	-
	-Apexification			3	2	4	2	-	-
-Surgical Endodontics			3	2	4	2	-	-	
Direct/indirect restorations of pediatric patients:	-Amalgam /GIC/composite	4	20	4	20	4	20	-	-
	Stainless steel crown			3	5				
Pulp therapy of Primary teeth	Direct /indirect pulp capping	4	10	-	-	-	-	-	-
	Pulpotomy			3	10	3	10	-	-
	Pulpectomy (RCT)			3	10	3	10	-	-
Trauma (primary and permanent dentition)	Trauma (dent alveolar):	3	2	3	5	4	5	-	-
	Uncomplicated Crown #			4	2	-	-	-	-
	Complicated crown #			3	2	3	2	-	-
	Root fractures/luxation/Avulsion etc.			3	2	3	2	-	-
Indirect restorations	a. Inlays - Aesthetic	-	-	3	2	-	-	-	-
	- Cast metal	-	-	-	-	-	-	-	-
	b. Onlays	-	-	3	2	-	-	-	-
	- Aesthetic restorative material	-	-	-	-	-	-	-	-
	- Cast metal	-	-	-	-	-	-	-	-
	c. Veneers	-	-	3	2	3	3	-	-
	d. Crown	-	-	3	10	3	10	4	4
e. Bridges	3	4	3	4	3	4	4	4	
Basic periodontal examination(BPE)	2	10	3	10	3	10	4	10	

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Perio-restorative Inter- relationship	Detail periodontal examination (DCP) of patient with BPE Score	2	2	3	5	3	5	4	5
	Crown lengthening	2	2	3	2	3	2	4	2
	Endoperio lesions(RCT with hemi section, root emputation etc )	-	-	3	2	3	2	4	2
Full mouth rehabilitation	Cases requiring multidisciplinary approach	-	-	2	2	3	2	3	1
Cases of research work	Topic and complete record of the patient or subject	-	-	<b>Minimum 05</b>					

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### MANDATORY ROTATIONS IN THE ALLIED DENTAL CLINICAL DISCIPLINES:

There will be 2 months mandatory rotation of the post graduates trainees to bring in more integration among the different dental specialties given below.

- ❖ Maxillofacial surgery
- ❖ Prosthodontics
- ❖ Periodontology
- ❖ Orthodontics

	Tasks	Level	Cases/ 2 <sup>nd</sup> year
Prosthodontics	Diagnosis, and treatment plan of cases requiring removable /fixed partial dentures intervention	2	05
	Recording of vertical dimension and face bow record transfer to articulator	2	02
	Fabrication of occlusal splints for TMJ dysfunction	2	02
	Fabrication of occlusal splints/dahl appliance for the management of tooth surface loss	2	02
	Diagnosis, evaluation of malocclusion, treatment plan of cases requiring ortho intervention	2	05
	Evaluation and treatment planning of cases requiring space closure /gaining for crown and bridge management	2	02
	Evaluation and treatment planning of cases requiring uprighting of teeth for crown and bridge management	2	02
	Evaluation and treatment planning of cases requiring Space maintenance	2	02
Oral & Maxillofacial Surgery	Evaluation , treatment planning for cases Requiring pre prosthodontic surgery(e.g.ridgeaugmentation,osteoplas ty)	2	05
	Evaluation , treatment planning and management for cases requiring surgical endodontics)	3	02
	Simple extraction of teeth and broken dental roots(BDRs)	3	10

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	Evaluation, treatment planning of the patient for implant.	2	02
D O C T	Diagnosis, evaluation ,treatment plan of cases requiring restorative/ periodontal therapy(basic periodontal examination /BPE, detail periodontal charting/DPC)	3	05
	Diagnosis, evaluation ,treatment plan and management of cases requiring restorative/ periodontal therapy (scaling &root planning /SRP, Curratageetc)	3	05
	Evaluation and management of teeth crown lengthening/gingivectomy	3	05
	Evaluation and fabrication of splints for Gingivectomy	3	05
	Diagnosis, evaluation ,treatment plan and management of cases requiring implant	5	02
	Orthodontics	Diagnosis, evaluation of malocclusion,treatment plan of cases requiring ortho intervention	2
Evaluation and treatment planning of cases requiring space closure /gaining for crown and bridge management		2	02
Evaluation and treatment planning of cases requiring uprighting of teeth for crown and bridge management		2	02
Evaluation and treatment planning of cases requiring Space maintenance		2	05

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### **C. RESEARCH THESIS**

Thesis must be submitted before the end of training. Research can be done as one block or stretched over all years of training in the form of regular periodic rotations during the course as long as total research time is equivalent to one calendar year.

#### **Clinical Research**

Each resident will participate in at least one clinical research study to become familiar with:

- ❖ Literature Reviews
- ❖ Research design
- ❖ Research involving human subjects including informed consent and operations of the Institutional Review Board and ethics of human experimentation
- ❖ Data collection and data analysis
- ❖ Peer review process

### **ASSESSMENTS**

#### **A. WORKPLACE-BASED ASSESSMENTS**

Workplace-based assessments (WPBAs) are used to evaluate progress of the student during the training program to link teaching, learning and assessment in a structured way. It is the responsibility of the trainee to complete all assessment forms and organize the WPBAs after discussion with the supervisor.

There are three types of WPBA in clinical training programs of MDS .

1. Direct Observation of Procedural Skills (DOPS)
2. Mini Clinical Evaluation Exercise (Mini-CEX)
3. Case-based Discussion (CbD)

#### **B. UNIVERSITY EXAMINATION**

There will be a total of two university examinations.

1. *Intermediate Examination IME: After completion of 15 months of training*
  - ❖ Theory Component

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❖ Practical Component/TOACS

### 2. *Final Examination: At the end of the Program*

❖ Theory Component(200 marks)

The written examination will comprise of two papers, each of three (03) hours duration.

**Paper 1-** 10 Short Answer Questions (10 marks each) 100 Marks

**Paper 2-** 10 Short Answer Questions (10 marks each) 100 Marks Candidate acquiring 75% marks in each paper will be declared successful.

❖ Practical Component

#### I. *Clinical Examination: (200 marks)*

Those candidates who have passed the written component will be allowed to appear in the clinical examination. The format for the clinical examination will be as follows

- |                                  |                          |
|----------------------------------|--------------------------|
| ❖ One long case (60 min)         | 60 Marks                 |
| ❖ Four short cases (10 min each) | 40 Marks (10 Marks each) |
| ❖ Viva voice (30 min)            | 60 Marks                 |
| ❖ Portfolio of 04 cases          | 40 Marks (10 Marks each) |

#### *Criteria for Final Examination:*

- ❖ For the long case, 30 minutes will be provided to the candidate for case preparation and 30 minutes will be specified for case presentation, discussion of findings, diagnosis and description of treatment plan with examiners.
- ❖ In the short cases, the candidate will be provided with an unseen clinical case and he/she will be directed towards a specific task. Five out of ten minutes will be allocated for the examination/performance of task and the rest of the five minutes will be allocated for discussion with the examiners.
- ❖ *During each section of the clinical exam, the candidate will be assessed by a set of two (02) examiners who will mark him/her separately.*

## **University National Medical Residency program Pakistan**

- ❖ *The candidate has to submit a portfolio, not exceeding 2000 words, comprising of 04 cases, with complete records, done by the candidate under direct supervision, during the course of training. The supervisor must verify that the cases were done under his/her direct supervision.*

**(Candidate acquiring at least 75% marks in each paper/component will be declared successful.)**

### **Thesis Defense**

The candidate has to submit his thesis to the University who will forward it to 02 independent examiners for evaluation. Once the thesis gets approved by the evaluators, the candidate will present the findings of his thesis in front of a panel of examiners. Total duration of thesis defense will be 30 minutes. Out of these 30 minutes, 10 min will be specified for presentation by the candidate and 20 min will be specified for discussion of findings/results with the examiners. A student acquiring 75% marks in the thesis defense will be declared successful.

#### ***THESIS SUBMISSION GUIDELINES:***

- ❖ The thesis must be bound in accordance with the specifications, as will be specified by the board.
- ❖ It must form a distinct contribution to knowledge with evidence of originality, shown either by the discovery of new facts or by the exercise of independent critical judgment.
- ❖ It must not include research work for which degree has been conferred in this or any other university.
- ❖ Any part of the thesis which has been published before submission of thesis should be appended at the end of thesis.
- ❖ The minimum duration between approval of synopsis of research and submission of thesis should be appended at the end of the thesis and it should not be less than one year.
- ❖ Four (4) copies of the thesis must be submitted.
- ❖ The thesis will be submitted along with bank challan form paid in account of university of health sciences.
- ❖ Application for thesis evaluation recommended by the supervisor.



## **University National Medical Residency program Pakistan**

### ***THE EVALUATION AND DEFENSE OF THE THESIS***

- ❖ The board of studies will suggest a panel of external examiners for evaluation of thesis. The thesis will be examined by two examiners.
- ❖ Each of the examiners will be provided a copy of the thesis.
- ❖ The controller of examination shall get the thesis evaluated within four months after submission/ re-submission of the thesis.
- ❖ The candidate will present his research before the panel of examiners in the presence of supervisor/ co-supervisor on a fixed date and will successfully defend his thesis to be eligible for certificate.
- ❖ No degree shall be awarded unless all examiners recommend the award of degree.
- ❖ If one of the external examiners approves the thesis, and others rejects, it shall be sent to a third examiner for evaluation. If the third examiner approves the thesis, the candidate shall be recommended for the reward of MDS degree, otherwise he shall be declared to have failed.
- ❖ In case of modifications/ revision of thesis, the candidate will re-submit a revised version with fresh fee.
- ❖ If the candidate fails to satisfy the examiners in the defense then he/ she will have to defend the thesis for a second and final time within a period of six months.

### ***AWARD OF MDS DEGREE***

After successful completion of the structured course, qualifying final examination and thesis approval/defense, MDS degree with title of the specialty in parenthesis will be awarded.

## University National Medical Residency program Pakistan

### 1. TABLE OF SPECIFICATIONS FOR INTERMEDIATE EXAMINATION

#### THEORY COMPONENT

<b>MODULE -I OPERATIVE DENTISTRY</b>	<b>MCQs</b>
Clinical Significance of Dental Anatomy	02
Histology, Physiology, and Occlusion,	02
Dental Caries: Etiology, Clinical Characteristics,	04
Applied Dental materials	04
Preliminary Considerations for Operative Dentistry	02
Risk Assessment, and Management,	02
Patient Assessment, Examination, Diagnosis, and Treatment Planning	03
Instruments and Equipment for Tooth Preparation,	02
Fundamentals of Tooth Preparation,	02
Fundamental Concepts of Enamel and Dentin Adhesion	03
Light Curing of Restorative Materials	02
Color and Shade Matching in Operative Dentistry	02
Facial analysis and Smile design	03
Clinical Technique for Direct Composite Resin and Glass Ionomer Restorations	02
Additional Conservative Esthetic Procedures	03
Clinical Technique for Amalgam Restorations	02
Periodontology Applied to Operative Dentistry	02
Digital Dentistry in Operative Dentistry	02
Resin-Bonded Splints and Bridges	02
Direct Gold Restorations	02
Class II Cast-Metal Restorations	02
<b>Total</b>	<b>50</b>
<b>MODULE -II ENDODONTICS</b>	
Pulpodental physiology	02
Diagnosis and management of pulpal and periapical disease	02
Diagnosis and management of orofacial pain, psychogenic pain and TMD	03
Diagnosis and management of dento-alveolar infections and sequelae	03
Rationale for endodontic procedures	03
Tooth preparation, isolation, access and instrumentation	03
Preparation, disinfection and obturation of root canal system	03
Management of traumatic injuries to the teeth	03
Endodontics in children (primary teeth and immature permanent teeth)	03

## University National Medical Residency program Pakistan

Apexogenesis/Apexification/Pulpal Revascularization	03
Drugs and chemicals used in Endodontics	03
Endo emergencies and management	03
Assessment and management of teeth which have previously undergone endodontics treatment.	03
Review and maintenance procedures	03
Evaluation of the success of treatment	02
Restoration of endodontically treated teeth, recent advances.	03
Geriatric Endodontics	03
Surgical Endodontics	02
<b>Total</b>	<b>50</b>
<b>Sum total</b>	<b>100</b>

## University National Medical Residency program Pakistan

### PRACTICAL /CLINICAL COMPONENT

Sr. No.	CLINICAL SKILLS	TOACS Stations
1	History taking	2
2	Extra Oral Evaluation	
3	Intra Oral Evaluation	
4	Basic Periodontal Examination( BPE)	
5	Rubber Dam Application for a Restoration	2
6	Sectional Matrix Application for Posterior Composite	
7	Use of electric pulp tester, apex locator etc)	
8	Occlusion Evaluation (Static & Dynamic)	2
9	Radiology Case (OPG, CBCT, Bisecting Angle Technique, Bitewing etc.)	
11	Communication with patients or Breaking Bad News: Instrument Separation in the Canal, Perforation of the chamber etc.	4
12	Rubber Base Impression for Indirect Restoration	
13	Clinical Case (,caries risk assessment ,Smile Design etc)	
15	Clinical Case( differential diagnosis, provisional diagnosis)	
16	Clinical Case (treatment planning)	10
	Total	

## University National Medical Residency program Pakistan

### 2. TABLE OF SPECIFICATIONS FOR EXIT EXAMINATION

#### *THEORY COMPONENT*

<b>MODULE -I OPERATIVE DENTISTRY</b>	<b>MCQs</b>	<b>SEQ</b>
Clinical Significance of Dental Anatomy	02	02
Histology, Physiology, and Occlusion,		
Dental Caries: Etiology, Clinical Characteristics,	02	
Applied Dental materials	04	
Preliminary Considerations for Operative Dentistry	01	
Risk Assessment, and Management,	01	
Patient Assessment, Examination, Diagnosis, and Treatment Planning		
Instruments and Equipment for Tooth Preparation,	01	
Fundamentals of Tooth Preparation,		
Fundamental Concepts of Enamel and Dentin Adhesion	01	
Light Curing of Restorative Materials		
Color and Shade Matching in Operative Dentistry	01	
Facial analysis and Smile design		
Clinical Technique for Direct Composite Resin and Glass Ionomer Restorations	02	
Additional Conservative Esthetic Procedures		
Clinical Technique for Amalgam Restorations	01	
Periodontology Applied to Operative Dentistry		
Digital Dentistry in Operative Dentistry	01	
Resin-Bonded Splints and Bridges	01	
Direct Gold Restorations	01	
Class II Cast-Metal Restorations	01	
<b>Total</b>	<b>20</b>	
<b>MODULE -II ENDODONTICS</b>		
Pulpodental physiology	01	02
Diagnosis and management of pulpal and periapical disease	01	
Diagnosis and management of orofacial pain, psychogenic pain and TMD	01	
Diagnosis and management of dento-alveolar infections and sequelae	01	
Rationale for endodontic procedures		
Tooth preparation, isolation, access and instrumentation	01	
Preparation, disinfection and obturation of root canal system	01	
Management of traumatic injuries to the teeth	01	

## University National Medical Residency program Pakistan

Endodontics in children (primary teeth and immature permanent teeth)	01	
Apexogenesis/Apexification/Pulpal Revascularization		
Drugs and chemicals used in Endodontics	01	
Endo emergencies and management	01	
Assessment and management of teeth which have previously undergone endodontics treatment.	01	
Review and maintenance procedures	01	
Evaluation of the success of treatment		
Restoration of endodontically treated teeth, recent advances.	01	
Geriatric Endodontics	01	
Surgical Endodontics	01	
Total	15	

<b>Module III-FIXED PROSTHODONTICS</b>	<b>15</b>	<u>01</u>
History taking, clinical examination, diagnosis, treatment planning and mouth preparation including principals of occlusion and periodontal considerations.	01	
Patients desires, expectations and needs. Systemic and emotional health.	01	
Clinical examinations - head and neck, oral - teeth, occlusal and periodontal.	01	
Preparation of diagnostic cast, radiographic interpretation, aesthetics, endodontics considerations.	01	
Crown morphology, TMJ and muscles of mastication and comprehensive planning and prognosis.	01	
Abutment selection - bone support, root proximities and inclinations, selection of abutments, for cantilever, pier abutments, splinting.	01	
Principles of tooth preparations, tissue management, impression making and instrumentation.	01	
Design, material selection, and biological and mechanical considerations - retainer and precision attachments -custom made and ready made	01	
Preparation of crowns, cast metal, metal ceramic crowns, all ceramic crowns, partial veneer crowns, three quarter crowns, inlays and on lay preparation.	01	
Restoration of endodontically treated teeth.	01	
Interim fixed restorations.	01	

## University National Medical Residency program Pakistan

Interocclusal records, laboratory support for fixed prosthodontics, occlusal equilibration, articulators, recording and transferring of occlusal relations.	01	
Evaluation, characterization and glazing of restoration.	01	
Types of luting agents and cementation procedure.	01	
Post-operative care.	01	
<b>MODULE IV-PAEDODONTICS:</b>	<b>10</b>	
chronology of human dentition	01	01
the changes that occur in mandible and maxilla during the growth process		
behavior and personality development and basic behavioral considerations governing the treatment plan of a child patient	01	
Diagnostic aids-Radiology	01	
Dental carries, preventive and operative management	01	
pulpotomy and pulpectomy of primary and permanent teeth	01	
classification and treatment of injuries to primary and permanent teeth	01	
periodontal diseases in children		
hospitalization protocol of a child patient	01	
space management due to premature loss of a primary or permanent tooth	01	
common oral habits, their implications and treatment		
oral changes related to known systemic abnormalities	01	
assessment of handicapped patient and management categories for mentally handicapped patients	01	
<b>MODULE -V PERIODONTICS</b>	<b>10</b>	
Microbiology of dental plaque	01	01
Clinical features and diagnosis of periodontal diseases	01	
Pathogenesis of periodontal diseases	01	
Manifestation of Systemic conditions/Smoking/Pregnancy	01	
Comprehensive diagnosis and treatment planning	01	
The periodontal/endodontic interface	01	
Non-Surgical/Surgical Management of periodontitis.	01	
Management of Furcation Defects	01	
Management of Gingival Recession in esthetic zone		
Restorative Periodontal Interface	01	
Periodontal Antimicrobial therapy and Maintenance	01	
<b>MODULE VI- Occlusion &amp;Temporomandibular Joint</b>	<b>08</b>	
Criteria for optimum functional occlusion		

## University National Medical Residency program Pakistan

	02	
Etiology & Sign / Symptoms of functional disturbances in masticatory system		01
History, Examination & Diagnosis for temporomandibular disorder	01	
General considerations in treatment of temporomandibular joint disorder	01	
Treatment of masticatory muscle & Joint disorders	01	
Occlusal appliances	01	
General consideration & Treatment with Occlusal therapy		
Selective grinding	02	
Restorative considerations in occlusal therapy		
MODULE VII- DENTAL IMPLANTS	12	
Biomaterials & Biomechanics for dental implants	01	01
Radiographic imaging in implant dentistry	01	
Treatment plans on the basis of diagnostic records, related to key implant positions and implant number	01	
Natural teeth adjacent to an implant site: joining implants to teeth	01	
Diagnostic casts, surgical templates, and Provisionalization	01	
Single-tooth implant restorations: maxillary / mandibular anterior and posterior region	01	
Multiple implant restorations: maxillary / mandibular anterior and posterior region	01	
The edentulous mandible and maxilla: planning for overdentures / fixed prosthesis	01	
Principles of fixed implant prosthodontics: cement retained / screw retained restorations	01	
Digital technology in implant dentistry	01	
Occlusal consideration for implant-supported prostheses: implant-protective occlusion	01	
Progressive bone loading: increasing the density of bone with a prosthetic protocol	01	
Restorative Management of the Handicapped Patients	10	
Promoting preventive and operative oral health care in Patients with special needs.	01	
Cross infection control in the operatory and Laboratory		
Physically-cerebral palsy	01	
Mental retardation/intellectual impairment	01	
Metabolic and systemic disorder: Renal and liver disease, Diabetes mellitus, Hypo/ hypopituitarism, Hypo/hyper parathyroidism, Hypo/hyperthyroidism, Respiratory disorders, Immunolo	01	



## University National Medical Residency program Pakistan

gical disorders		01
Convulsive disorders	01	
Pervasive developmental disorders e.g. Childhood autism, childhood schizophrenia	01	
Sensory impairment -Blindness and deafness	01	
Hematological/bleeding disorders	01	
Neoplasia	01	
Congenital defects: cardiac disease , cleft lip and palate , down, s syndrome	01	
<b>TOTAL</b>	<b>100</b>	<b>10</b>

## University National Medical Residency program Pakistan

### PRACTICAL/CLINICAL COMPONENT

Sr. No.	CLINICAL SKILLS	TOACS* Stations	Short case	Long case
1	History taking	1		
2	Extra Oral Evaluation			
3	Intra Oral Evaluation			
4	Basic Periodontal Examination( BPE)			
5	Rubber Dam Application for a Restoration	1		
6	Sectional Matrix Application for Posterior Composite			
7	Use of electric pulp tester ,apex locator etc)	02		
8	Occlusion Evaluation (Static & Dynamic)			
9	I Radiology Case (OPG,CBCT,Bisecting Angle Technique,Bitewing etc)			
11	Communication with patients or Breaking Bad News: Instrument Separation in the Canal, Perforation of the chamber etc.	02	11	
12	Rubber Base Impression for Indirect Restoration			
13	Clinical Case ( , caries risk assessment, Smile Design etc.)	02		
15	Clinical Case( differential diagnosis, provisional diagnosis)			
16	Clinical Case (treatment planning)	02		
	Treatment planning/treatment of patients with localized /generalised tooth surface loss with or without compensated OVD		02	01
	Treatment planning / treatment of patient requiring single implant in anterior maxilla & mandible			
	Treatment planning/treatment of patients requiring direct and indirect restorations (crowns and bridge)			
	Treatment planning / treatment of patient with aesthetic concerns.		02	
	Treatment planning /treatment of patients requiring			

## University National Medical Residency program Pakistan

	non-surgical/surgical root canal treatment.			
	Treatment planning / treatment of patient requiring management of endoperiolesions .			
	Treatment planning / treatment of patient requiring crown lengthening for direct and indirect restorations.			
	<b>Total</b>	<b>10</b>	<b>04</b>	<b>01</b>

### TOACS/OSCE Examination: (100 marks)

Candidates who have passed written component of the Intermediate Examination will appear in TOACS/OSCE examination which will comprise of 10 stations (10 marks each)

### Criteria for TOACS/OSCE Examination:

- ❖ Each Station will be of 06 minutes duration.
- ❖ All the stations will be observed by at least one examiner.
- ❖ Preferably all stations should be dynamic and interactive however a maximum of 02 stations can be static only.
- ❖ In order to be declared successful, a candidate has to acquire 75% marks.
- ❖ Two (02) or Three (03) rest stations can be included as per requirement however they will not be marked.

**3. THESIS EXAMINATION**

Submitted thesis is sent for evaluation to two local examiners and one foreign examiner. After evaluation and approval by Advanced Studies & Research Board (AS&RB) the defense of thesis is done in front of the two local examiners.

The students are expected to demonstrate a thorough understanding of the research topic, the research methodology and their contribution in the clinical field through their research. There should be a comprehensive understanding of the impact and benefit of research to the relevant patient population in the future.

## University National Medical Residency program Pakistan

### LEARNING RESOURCES

#### RECOMMENDED BOOKS:

- ❖ Art and science of Operative Dentistry (Sturdevant)
- ❖ Pickardards Manual of Operative Dentistry by EAM Kidd.
- ❖ Fundamentals of Operative Dentistry (James Summit)
- ❖ Ingle Endodontics
- ❖ Principles and Practice of Endodontics by Walton and Torbinejad
- ❖ Pathways of the pulp by Cohen
- ❖ Problem Solving in Endodonticd (Gutman)
- ❖ Pediatric Dentistry (Welburry)
- ❖ Textbook of Preventive and community Dentistry (Hiremath)
- ❖ Oral Radiology Principles and interpretation (White and Pharoah)
- ❖ Rossential ,contemporary fixed prosthodontics
- ❖ Fundamentals of fixed prosthodontics by Shillen berg.
- ❖ Dental Materials (Phillips)
- ❖ Carranaza's periodontology

#### RECOMMENDED JOURNALS:

- ❖ British Dental Journal (BDJ)
- ❖ Journal of Operative Dentistry
- ❖ Journal of Endodontics (JOE)
- ❖ Journal of Periodontics
- ❖ DCNA
- ❖ Journal of dental traumatology