



NUMS

**NATIONAL UNIVERSITY
OF MEDICAL SCIENCES**

**CURRICULUM
FOR
PROSTHODONTICS
(2023)**

**National University of Medical Sciences
Pakistan**

1. **Context / Preamble**

Prosthodontics is a specialty within dentistry 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.

This undergraduate Prosthodontics curriculum is designed to train Bachelor of Dental Surgery (BDS) students to provide basic removable and fixed prosthodontic skills in the practice of general dentistry. This mainly involves management of partially and completely edentulous patients, fabrication of conventional removable and fixed prosthesis, implant-supported prostheses and defect prostheses as well as management of post-treatment complications.

Prosthodontics is a major subject of final professional BDS examination and carries a total of 300 marks.

2. **Mission**

The mission of this course is to equip dental undergraduate students with the basic knowledge, skills and attitudes for safe ethical practice of removable and fixed prosthodontics.

3. **Implementation of Curriculum**

Overview:

a. The Prosthodontics curriculum is divided into 11 courses or modules, taught sequentially as given below:

i. Complete Denture Prosthodontics I

- 1) Systemic Health Aspects and Nutritional Considerations
- 2) Sequelae of Wearing Complete Dentures
- 3) Management of Edentulous Patients

ii. Complete Denture Prosthodontics II

- 1) Denture's Polished Surfaces
- 2) Selection and Arrangement of Artificial Teeth
- 3) The Try-in Appointment
- 4) Prosthesis Insertion and Follow-up

iii. Complete Denture Prosthodontics III

- 1) Single Dentures
- 2) Lifespan of Dentures
- 3) Speech Considerations with Complete Dentures

iv. Removable Partial Prosthodontics I

- 1) Clasp Retained Partial Denture
 - 2) Partially Edentulous Arches
 - 3) Biomechanics of RPD
 - 4) Connectors
- v. Removable Partial Prosthodontics II**
- 1) Rests and Rest Seats
 - 2) Retainers
 - 3) Denture Base Considerations
- vi. Removable Partial Prosthodontics III**
- 1) RPD Design
 - 2) Surveying
 - 3) Management of Partially Dentate Patient
- vii. Fixed Prosthodontics I**
- 1) History and Examination
 - 2) Treatment Planning
 - 3) Principles of FPD
- viii. Fixed Prosthodontics II**
- 1) Crown Preparation
- ix. Fixed Prosthodontics III**
- 1) Tissue Management
 - 2) Pontic Design
- x. Implant Prosthodontics**
- 1) Introduction
 - 2) Osseointegration
 - 3) Management and Complications
- xi. Defect Prosthodontics**
- 1) Maxillofacial Prosthodontics
- b. The theory component is covered by three lectures per week in fourth (Final) year
- c. Implementation of curriculum is at the discretion of institute. Clerkships/ clinical rotations for 08 weeks' may be followed
- d. During their clinical rotation, students in small groups learn through practical chair side demonstrations of the techniques of primary impression making, border molding, secondary impression making, jaw relation record, investing, curing, finishing and polishing, denture try-in, denture insertion and clasp fabrication. They fabricate partial dentures for 12 patients and complete dentures for 8 patients.

4. **Resources:**

To be filled by each Institute

5. **Facilities:**

To be filled by each Institute

6. **Course Administration**

To be filled by each Institute

7. **Students Assessment**

- a. Minimum attendance of 75% is a requirement to appear in university professional examination.
- b. Continuous formative evaluation is conducted during the academic year comprising of 5 theory tests, and 2 clinical assessment tests (ward tests and Pre annual). The results are communicated to students through notice board. Feedback is provided after each evaluation.
- c. The weighting of internal assessment is 20% in 4th professional BDS Examination
- a. There will be two mid-term & term examinations followed by a pre-Annual and annual examinations each year.
- b. The structure of the paper of all the term examinations and pre-annual will be the same as that for annual examination though syllabus will be different.
- c. The structure of Mid-term exam will be half of the term exam.
- d. The syllabus for mid-term & term examinations will be announced by the department at least 02 weeks prior to examination.
- e. Pre-annual examination will be from whole syllabus.
- f. The date sheet for mid-term, term and pre-annual examinations will be published by Examination branch while the examinations will be conducted by respective department. The result will be submitted to examination branch for incorporation in internal assessment.
- g. The University shall take the 4th professional Examination at the end of the academic year. Annual Theory will be of 100 marks & Practical Examination will be of 200 marks. The pass score shall be 50% in theory and practical separately. However, in clinical subjects, student should pass in clinical exams / OSCE (with 50% marks) and unobserved stations (with 50% marks) separately
- h. **Log book**
Each student is expected to maintain record of practical work in log book. Safe keeping (make copies) of the log book is the responsibility of each student. The log book must be submitted to the Prosthodontics department at the end of the academic year.

8. **Communication of Information to Students:** All information communicated to students through Notice boards.

Prosthodontics – Learning Outcomes

Theme/ Topic	Course Content	Learning Outcome		Educational Strategy	Weightings	Assessment Tool
		At the end of each module, student will be able to:				
		Knowledge	Skill			
1. Complete Denture Prosthodontics-I						
Systemic Health Aspects and Nutritional Considerations	Oral-systemic conditions that influence an adaptive prosthodontic experience, Systemic lupous erythematosus, burning mouth syndrome, oral movement disorders, salivary dysfunction.	<ul style="list-style-type: none"> • Enumerate oral-systemic conditions that influence an adaptive prosthodontic experience • Describe management of Systemic lupous erythematosus, burning mouth syndrome, oral movement disorders, salivary dysfunction. • Explain nutritional guidelines for patients undergoing removable prosthodontic treatment • Enlist risk factors for malnutrition in patients with dentures. 		Lecture/Self-directed learning/ Assignment	43.5%	MCQ/SAQ/SEQ
Sequelae of wearing complete dentures	Direct and indirect sequelae caused by wearing removable prosthesis, <ul style="list-style-type: none"> • Traumatic ulcers • Denture irritation hyperplasia • Denture stomatitis • Kelly's 	<ul style="list-style-type: none"> • Enlist direct and indirect sequelae caused by wearing removable prosthesis • Describe management of: <ul style="list-style-type: none"> • Traumatic ulcers • Denture irritation hyperplasia • Denture stomatitis • Kelly's syndrome 	Identify manifestation of various sequelae in the oral cavity	Lecture/Case-based learning		MCQ/SAQ/SEQ;

	<p>syndrome</p> <ul style="list-style-type: none"> Residual ridge reduction Xerostomia Gag 	<ul style="list-style-type: none"> Residual ridge reduction Xerostomia Gag 				
Management	<p>History taking, Treatment Planning and Improving Denture-Bearing Areas</p>	<ul style="list-style-type: none"> Describe management of abused oral tissues before fabrication of a new denture. Enlist objectives of pre-prosthetic surgical prescriptions Explain surgical correction of conditions that preclude optimal prosthetic function Describe methods used for enlargement of denture bearing areas 	<ul style="list-style-type: none"> Record a thorough history of an edentulous patient. Perform extra-oral and intra-oral examination of an edentulous patient. Propose a treatment plan for an edentulous patient 	<p>Lectures; Case-based learning/Chair-side learning</p>		<p>MCQ/SAQ/SEQ; DOPS</p>
	<p>Additional Treatment Planning for Edentulous and Potentially Edentulous Patients (Overdentures, Immediate Dentures)</p>	<ul style="list-style-type: none"> Enlist patients' signs and symptoms that frequently preclude an adaptive complete denture experience Define overdentures Enlist advantages and disadvantages of overdentures Enumerate indications and contraindications for overdentures. Describe the criteria for selection of teeth as overdenture abutments Describe preparation of 		<p>Lectures</p>		<p>MCQ/SAQ/SEQ</p>

		<p>overdenture abutments to enhance retention.</p> <ul style="list-style-type: none"> • Describe long-term complications associated with overdenture abutments. • Define immediate dentures. • Differentiate between various types of immediate dentures • Enumerate advantages and disadvantages of immediate denture treatment • Enlist indications and contraindications to immediate denture treatment • Describe treatment planning protocol for providing an immediate denture • Describe immediate and long-term post-operative care in an immediate denture case. 				
	<p>Materials used in management of Edentulous patients</p>	<ul style="list-style-type: none"> • Describe non-elastic and elastic impression materials • Describe disinfection protocols for various impression materials • Describe 	<p>Identify and manipulate various dental materials used in fabrication of dentures</p>	<p>Lectures; Clinical demonstration</p>		<p>MCQ/SAQ/SEQ; DOPS</p>

		<p>polymeric denture base materials.</p> <ul style="list-style-type: none"> • Describe injection molding technique • Explain significance of modified resin base materials • Describe materials used in the fabrication of prosthetic teeth • Compare the properties of porcelain and resin teeth • Describe denture lining materials • Enlist indications of tissue conditioners • Describe cast metal alloys used as denture base materials • Describe various types of denture cleansers • Describe adverse reactions to denture cleansers • Enlist indications and contraindications for denture adhesives. • Describe adverse reactions to denture adhesives. • Describe factors that contribute to the retention of dentures 				
	Maxillary and mandibular substitutes for denture bearing area	<ul style="list-style-type: none"> • Name maxillary and mandibular stress-bearing areas • Describe the supporting 	<ul style="list-style-type: none"> • Record primary impression of an edentulous patient 	Lecture; case-based learning/chair side learning/		MCQ/SAQ/SEQ; DOPS

		<p>structures in maxilla and mandible</p> <ul style="list-style-type: none"> • Describe limiting structures in maxilla and mandible • Enumerate objectives of impression making • Describe preliminary impressions with respect to tray selection, material choice and technique • Describe secondary impressions with respect to tray selection, material choice and technique • Describe theories of impression making • Describe the objectives and sequence of border molding • Define posterior palatal seal • Describe various methods used to record posterior palatal seal • Define boxing of an impression • Define dental cast • Differentiate between various types of casts • Describe the method for fabrication of custom tray 	<ul style="list-style-type: none"> • Pour an impression and produce a master cast • Fabricate a custom tray for an edentulous patient • Perform border molding for a maxillary and mandibular arch. • Record secondary impression for an edentulous patient. 	clinical demonstration		
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2. Complete Denture Prosthodontics-II

Denture's	Denture's	• Define surfaces	• Fabricate	Lecture; case-		MCQ/SAQ/
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<p>Polished Surfaces</p>	<p>Polished Surfaces, Recording Jaw Relations and their Transfer to an Articulator</p>	<p>and parts of a denture</p> <ul style="list-style-type: none"> • Describe the method for fabrication of a record base • Define neutral zone • Explain significance of neutral zone in complete dentures • Define jaw relations • Describe various methods used to record vertical and horizontal jaw relations • Define vertical dimension of rest, vertical dimension of occlusion and interocclusal distance • Define centric relation • Describe significance of centric relation in jaw relation record • Enlist affects of increased and decreased vertical dimension of occlusion • Classify articulators • Enumerate advantage and disadvantages of semi-adjustable articulators • Differentiate between ARCON and NON-ARCON articulators • Describe 	<p>maxillary and mandibular occlusal rims</p> <ul style="list-style-type: none"> • Record jaw relation of an edentulous patient • Perform articulation of occlusal rims on a semi-adjustable articulator 	<p>based learning/chair-side learning/clinical demonstration</p>		<p>SEQ; DOPS</p>
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		<p>programming of an articulator.</p> <ul style="list-style-type: none"> • Define facebow. • Describe the procedure for recording orientation relation using a facebow. • Enlist advantages and indications of facebow. 				
Selection and Arrangement of Prosthetic teeth	The Occlusal Surfaces: Selection and Arrangement of Prosthetic teeth	<ul style="list-style-type: none"> • Describe various theories for selection of artificial teeth • Classify artificial teeth according to material and occlusal morphology • Enlist landmarks for complete denture teeth setup • Describe anterior tooth setup for maxilla and mandible • Describe posterior tooth setup for maxilla and mandible • Explain various occlusal concepts for complete denture occlusion 	Perform complete upper and lower tooth setup for an edentulous patient	Lecture; Skill lab/ demonstration		MCQ/SAQ/ SEQ; DOPS
The Try-in Appointment	Steps involved in denture try-in	<ul style="list-style-type: none"> • Describe the steps involved in denture try-in 	Perform try-in on an edentulous patient	Lecture; case-based learning/chair-side learning/clinical demonstration		MCQ/SAQ/ SEQ; DOPS
Prosthesis Insertion and Follow-up appointments	Protocol for denture insertion Pressure-indicating paste Occlusal equilibration using BULL rule	<ul style="list-style-type: none"> • Describe the protocol for denture insertion • Enlist indications for use of pressure-indicating paste 	<ul style="list-style-type: none"> • Perform insertion of a complete denture • Instruct a patient about post- 	Lecture; case-based learning/chair-side learning/clinical		MCQ/SAQ/ SEQ; DOPS

	protocol for follow-up appointment for a complete denture patient	<ul style="list-style-type: none"> Describe various patterns observed while reading pressure-indicating paste Enlist post-insertion instructions provided to patient about denture care Describe occlusal equilibration using BULL rule Describe protocol for follow-up appointment for a complete denture patient 	insertion care and handling	demonstration		
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3. Complete Denture Prosthodontics-III

Single Dentures	Single Dentures diagnosis and treatment planning, complications	<ul style="list-style-type: none"> Define a single denture Describe diagnosis and treatment planning for single dentures Describe possible complications associated with single dentures and their management 		Lecture; case-based learning		MCQ/SAQ/SEQ;
Life span of complete denture	Prolonging the useful life span of complete denture: Relines, Repairs and Duplications	<ul style="list-style-type: none"> Differentiate between relining and rebasing Enlist indications for relining and rebasing Describe clinical procedures for relining Describe the physical stages tissue conditioner goes through during setting Discuss materials available for relining and rebasing 		Lecture; case-based learning		MCQ/SAQ/SEQ;

		<ul style="list-style-type: none"> Describe various procedures involved in denture repair Define copy dentures Describe the steps involved in fabrication of copy dentures 				
Speech Consideration with Complete Dentures	Prosthetic considerations in diagnosing and managing speech problems	<ul style="list-style-type: none"> Describe various sounds that may be affected by teeth position Describe prosthetic considerations in diagnosing and managing speech problems 		Lecture; case-based learning		MCQ/SAQ/SEQ;
4. Removable Partial Prosthodontics-I						
Clasp-Retained Partial Denture	tooth-supported and tooth& tissue supported partial dentures	<ul style="list-style-type: none"> Differentiate between tooth-supported and tooth& tissue supported partial dentures Describe six phases of partial denture service Enlist reasons of failure of clasp-retained partial dentures 			25.5%	
Partially Edentulous Arches	Classification of Partially Edentulous Arches	<ul style="list-style-type: none"> Enumerate requirements of an acceptable classification method Describe Kennedy's classification Enlist Applegate's rules Describe advantages and drawbacks of Kennedy's classification 	Identify arches according to Kennedy's classification	Lecture; case-based learning		MCQ/SAQ/SEQ;
Biomechanics of Removable	Possible movements of a	<ul style="list-style-type: none"> Describe possible movements of a 		Lecture		MCQ/SAQ/

Partial Denture	partial denture and various components that counter these movements	partial denture and various components that counter these movements.				SEQ;
Connectors	Major and Minor Connectors	<ul style="list-style-type: none"> Describe principles for design and location of connectors Describe indications, contraindications and characteristics of various maxillary and mandibular major connectors Define minor connectors Describe function, form and location of minor connectors Define tissue stops and their functions 		Lecture; case-based learning		MCQ/SAQ/ SEQ;
5. Removable Partial Prosthodontics-II						
Rests and Rest Seats		<ul style="list-style-type: none"> Define rest and rest seat Classify rests Enlist advantages of rests Describe the outline form of an occlusal rest and rest seat Describe various forms of rests in detail 		Lecture; case-based learning		MCQ/SAQ/ SEQ;
Retainers	Direct Retainers	<ul style="list-style-type: none"> Define retainers Classify direct retainers Describe factors affecting amount of retention Describe basic principles of clasp design Enlist indications and 		Lecture; case-based learning		MCQ/SAQ/ SEQ;

		<p>contraindications for circumferential and bar clasps</p> <ul style="list-style-type: none"> Describe RPI and RPA systems Describe internal attachments 				
	Indirect Retainers	<ul style="list-style-type: none"> Define indirect retainers Describe factors that influence the effectiveness of indirect retainers Describe auxiliary functions of indirect retainers Describe various forms of indirect retainers 		Lecture; case-based learning		MCQ/SAQ/SEQ;
Denture Base Considerations	Tooth-supported and tooth & tissue supported denture bases	<ul style="list-style-type: none"> Describe functions of tooth-supported and tooth & tissue supported denture bases Compare advantages and disadvantages of metal and resin denture bases Describe methods of attaching artificial teeth Describe stress-breakers 		Lecture; case-based learning		MCQ/SAQ/SEQ;
6. Removable Partial Prosthodontics-III						
Removable Partial Denture Design	Principles of Removable Partial Denture Design	<ul style="list-style-type: none"> Describe the difference in prosthesis support and influence on design Differentiate between two main types of removable partial denture 	Design a cast partial denture for a partially dentate patient on model/cast	Lecture; case-based learning; demonstration		MCQ/SAQ/SEQ; DOPS
Surveying	Surveying	<ul style="list-style-type: none"> Define surveying Differentiate 	Identify parts of a surveyor	Lecture; case-		MCQ/SAQ/

		<p>between various types of surveyors</p> <ul style="list-style-type: none"> • Enlist objectives of surveying • Describe factors which determine the path of placement and removal • Describe tripodding and its types 		<p>based learning; demonstration</p>		SEQ;
Management	Diagnosis and Treatment Planning	<ul style="list-style-type: none"> • Enumerate objectives of prosthodontic treatment • Enlist indications for removable partial dentures • Enlist steps involved in diagnosis of a patient • Enlist available prosthodontic treatment options • Describe factors that affect prosthesis selection 	<ul style="list-style-type: none"> • Record history of a partially dentate patient • Perform extra and intra oral examination of a partially dentate patient • Establish a diagnosis and formulate a treatment plan 	<p>Lecture; case-based learning/chair side learning/clinical demonstration/ Role play</p>		MCQ/SAQ/SEQ; DOPS
	Preparation of Mouth for Removable Partial Dentures	<ul style="list-style-type: none"> • Describe oral surgical preparation for removable partial denture patient • Describe conditioning of abused and irritated oral tissues 		<p>Lecture; case-based learning;</p>		MCQ/SAQ/SEQ;
7. Fixed Prosthodontics-I						
History taking and Examination in dentistry	History taking and Clinical Examination	<ul style="list-style-type: none"> • Describe Prosthodontic Diagnostic Index for partially dentate and completely dentate patient 	<ul style="list-style-type: none"> • Record history for a prospective fixed prosthesis patient • Perform 	<p>Lecture; case-based learning; Role play</p>	20%	MCQ/SAQ/SEQ;

			examination of a prospective fixed prosthesis patient			
Treatment Planning	<ul style="list-style-type: none"> treatment options for: A single missing tooth Missing tooth with mesially tilted abutments Pier abutments Ante's Law factors which affect replacement of multiple missing teeth 	<ul style="list-style-type: none"> Describe treatment options for: A single missing tooth Missing tooth with mesially tilted abutments Pier abutments Describe Ante's Law Describe factors which affect replacement of multiple missing teeth 		Lecture; case-based learning;		MCQ/SAQ/SEQ;
Important principles	Various principles of Occlusion	<ul style="list-style-type: none"> Describe Posselt's envelope of motion Enumerate the determinants of mandibular movement Describe various occlusal schemes for fixed prosthodontics 		Lecture		MCQ/SAQ/SEQ;
	Principles of Tooth Preparation	<ul style="list-style-type: none"> Describe biological considerations of tooth preparation Describe mechanical considerations of tooth preparation Describe advantages of supragingival margins Describe indications for subgingival margins 		Lecture; case-based learning;		MCQ/SAQ/SEQ;

		<ul style="list-style-type: none"> • Compare different margin designs • Describe esthetic considerations of tooth preparation 				
8. Fixed Prosthodontics-II						
Crown Preparation	The Complete Cast Crown Preparation	<ul style="list-style-type: none"> • Enlist advantages, disadvantages, indications and contraindications of complete cast crown • Describe steps of complete cast crown preparation 	Perform complete cast crown preparation on a typodont.	Lecture; Skill lab/Dental simulators		MCQ/SAQ/SEQ; DOPS
	The Metal - Ceramic Crown Preparation	<ul style="list-style-type: none"> • Enlist advantages, disadvantages, indications and contraindications of metal-ceramic crown • Describe steps of metal-ceramic crown preparation 	Perform metal-ceramic crown preparation on a typodont.	Lecture; Skill lab/Dental simulators		MCQ/SAQ/SEQ; DOPS
	The All - Ceramic Crown Preparation	<ul style="list-style-type: none"> • Enlist advantages, disadvantages, indications and contraindications of all-ceramic crowns and veneers • Describe steps of all-ceramic crown and veneer preparation 	Perform all-ceramic crown and veneer preparation on a typodont.	Lecture; Skill lab/Dental Simulators		MCQ/SAQ/SEQ; DOPS
9. Fixed Prosthodontics-III						
Fixed Prosthodontics	Tissue management and Impression making	<ul style="list-style-type: none"> • Describe various methods for isolation/saliva control • Describe various methods for 		Lecture		MCQ/SAQ/SEQ;

		<p>displacement of gingival tissues</p> <ul style="list-style-type: none"> Describe recommended disinfection methods according to impression materials 				
Fixed Prosthodontics	Pontic Design	<ul style="list-style-type: none"> Describe biologic, mechanical and esthetic considerations for successful pontic design Classify pontics Enlist indications, contraindications, advantages and disadvantages of various pontic designs 		Lecture; case-based learning;		MCQ/SAQ/SEQ;

10. Implant Prosthodontics

Introduction	Introduction to Dental Implantology	<ul style="list-style-type: none"> Define dental implant Define components of a dental implant assembly Classify dental implants Enlist differences between teeth and implants 		Lecture;	6%	MCQ/SAQ/SEQ;
osseointegration	The Science of osseointegration	<ul style="list-style-type: none"> Define osseointegration Describe factors that determine success and failure of osseointegration 		Lecture;		MCQ/SAQ/SEQ;
Management/Complications in Implant Prosthodontics	Fixed Full Arch Implant Supported Prosthesis for Edentulous patient	<ul style="list-style-type: none"> Describe treatment options for edentulous maxilla Describe treatment options for edentulous mandible 		Lecture; case-based learning;		MCQ/SAQ/SEQ;

	Managing Problems and Complications	<ul style="list-style-type: none"> Enlist possible problems and complications associated with dental implants 		Lecture; case-based learning;		MCQ/SAQ/SEQ;
	Implant overdentures	<ul style="list-style-type: none"> Describe inclusion and exclusion criteria for implant treatment Describe various available implant supported overdenture treatment options Enumerate indications for ball, magnetic and bar attachments 		Lecture;		MCQ/SAQ/SEQ;

11. Defect Prosthodontics

Maxillofacial Prosthodontics	Maxillofacial Prosthodontics for Edentulous patient	<ul style="list-style-type: none"> Describe prosthetic considerations for edentulous maxillofacial prosthesis Describe Aramany's classification for partially edentulous maxillectomy dental arches Describe Cantor and Curtis classification for partially edentulous mandibulectomy dental arches Differentiate between various types of maxillary obturator prosthesis Describe troubleshooting an obturator for: 		Lecture; Case-based learning	5%	MCQ/SAQ/SEQ;
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		<ul style="list-style-type: none">• Lack of retention• Nasal reflux• Hypernasality• Enlist types of soft palate prostheses• Describe prosthodontic treatment considerations for irradiated edentulous and partially dentate patients				
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BDS Curriculum Year III (2023)