Residency Program in Prosthodontics

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Vision of the Program

The purpose of Clinical Dentistry Residency in Prosthodontics is to provide the resident with advanced training in all aspects of Prosthodontics. The program is designed to fulfill the requirements of Palestinian Medical Council to enable the candidates to be eligible for examination by the Palestinian Board of Prosthodontics Committee.

The program is structured to provide an education of taught courses and training for dentists who are keen to hold the Palestinian Medical Council Certificate in Prosthodontics.

The program has been designed to satisfy the needs of those who acquire greater skill, knowledge, and experience in prosthodontics. The program includes participation in formal lectures, seminars, pursuit of prosthodontic oriented research, assistance in undergraduate teaching of prosthodontics, and treatment of patients in prosthodontic clinic.

General Objectives:

At the end of this program, the candidate resident will:

- Be able to be competent in all aspects of clinical advanced fixed and removable prosthodontics and has the knowledge to execute complicated prosthodontic treatments.
- Will have the basis for scientific evidence- base inquiry, critical thinking and problem solving.
- Bridge the gap between Evidence Based Practice and Clinical Practice in Prosthodontics.
- Be able to have an advanced level of clinical knowledge and skills of Prosthodontics.

- Have sufficient knowledge and clinical experiences to become proficient in diagnosis, treatment planning and treatment sequencing for complicated cases of fixed and removable prosthodontics cases.
- Learn the principles of research methodology, design, research protocol development, biostatistics, and data analysis.
- Be able to be eligible for the Palestinian Medical Council Certificate Examinations.
- Gain sufficient training in the prosthetic managmnet of oncology, trauma, special needs patients.

Program Purposes

Prosthodontist is the suitable member of the dental team to provide the dental patients with restorations in form of function, and esthetics needs. The scope of treatment required for the patients will range simple procedure to complex full mouth rehabilitation. The candidate in this program will fulfill the following aspects:

- Understanding of basic dental sciences.
- Sufficient knowledge of recent literature.
- Rapport and proper patent- dentist communication skills.
- Effective utilization of dental auxiliaries to provide proper time management techniques.
- Treatment planning and good treatment skills for patients seeking complete dentures, removable partial dentures, fixed partial dentures, maxillofacial prosthetics, and implant prosthodontics and complex rehabilitation.

Curriculum

The study plan of Residency Program includes **Three Years Clinical Training**. The candidate will also be enrolled in learning, seminars presentations, and studying the following **courses** through the duration of his/ her residency, the courses are:

First Year

First Semester (1st January- 30th June)

Course No.	Course Title
Prostho 11001	Prosthodontics I
Prostho 11002	Prosthodontic Clinics 1
Prostho 11003	Seminar and Prosthodontics Journal Club 1

Second Semester (1st July- 31 December)

Course No.	Course Title
Prostho 11004	Prosthodontics II
Prostho 11005	Prosthodontic Clinics 2
Prostho 11006	Seminar and Prosthodontics Journal Club 2
Dent. 11007	Research Methodology and Biostatistics

Second Year

First Semester (1st January- 30th June)

Course No.	Course Title
Prostho 11008	Prosthodontics III
Prostho 11009	Prosthodontic Clinics 3
Prostho 11010	Seminar and Prosthodontics Journal Club 3

Second Semester (1st July- 31 December)

Course No.	Course Title
Prostho 11011	Prosthodontic IV
Prostho 11012	Prosthodontic Clinics 4
Prostho 11013	Seminar and Prosthodontics Journal Club 4

Third Year

First Semester (1st January- 30th June)

Course No.	Course Title
Prostho 11014	Prosthodontic V
Prostho 11015	Prosthodontic Clinics 5
Prostho 11016	Seminar and Prosthodontics Journal Club 5

Second Semester (1st July- 31 December)

Course No.	Course Title
Prostho 11017	Prosthodontic Clinics 6
Prostho 11018	Seminar and Prosthodontics Journal Club 6
Prostho 11019	Research Project

Courses Descriptions

Prosthodontics I (Prostho 11001):

Fixed and Removable prosthodontics lecture series

The courses are designed to address the basic concepts of fixed and removable prosthodontics, the foundation of knowledge of occlusion, and an overview of dental materials.

On successful completion of the course, residents will be able to:

- Identify the basic concepts of fixed prosthodontics, principles of tooth preparations, impression materials and techniques in fixed prosthodontics, problems solving in treatment planning for fixed prosthodontics, the needs for provisional restorations and techniques of fabrication, and perio restorative relationship in fixed prosthodontics.
- Explore the basic concepts of removable prosthodontics; all aspects of complete dentures, anatomical landmarks for edentulous maxillary and mandibular jaws, problems solving in treatment planning for complete dentures, impression materials and techniques, management of complaints, maxillomandibular relationships, selection of teeth in complete dentures, and laboratory techniques.
- Describe the basic concepts of removable partial dentures, review of classifications, surveying and treatment planning, laboratory techniques, the metallic and acrylic removable partial dentures, the components of metallic removable partial dentures, and problems solving in removable partial dentures.

- Understand the basics of occlusion to obtain a good occlusal practice in simple and advanced restorative dentistry, the conformative and reorganized approachs, the recording of centric relation and centric relation occlusion, the uses and types of facebows and articulators, the anterior and posterior guidance angles and the occlusal interfernces.

Prosthodontics II (Prostho 11004)

Advanced dental materials lecture series

The dental material science will be taught in the prosthodontics I module in the first year of the residency program. This unique series of lectures will provide the residents with vauable skills and expertise in the field of dental and biomaterials. residents will gain specialist insights into the latest developments in dental materials

Topics to be covered in this course:

- Dental materials: foundations and Properties of dental Material
- Biological Interactions of Dental Materials
- Emerging Materials and Related Technologies
- Additive and subtractive CAD manufacturing in the digital workflow
- Selecting Dental Materials for Clinical Applications
- chemical, mechanical, surface properties and other physical property tests used to evaluate ceramics, Dental CAD/CAM Materials , polymers , etc..
- Applied Polymer Science
- Ceramic and Cement Systems
- Metals and Metal Alloys

- Oral pathology and oral microbiome. Carcinogenesis. Acquisition and metabolism of oral flora. Oral commensal and opportunistic pathogens. Dental plaque. Microbiology and periodontal disease. The mouth as a microbial habitat. Oral defense mechanisms. Oral infections. Overview of infectious agents. Pathology of pre cancer. Overview of virulence
- Research projects in dental materials

<u>This lecture series will:</u>

- give students a deep understanding of the field of dental materials and the necessary knowledge to conduct research in dental material field
- introduce students to materials science, focusing on the major classes of materials used in dentistry including polymers, metals, ceramics and composites
- provide students with up-to-date information on current dental materials.
- Students will learn about material's functional properties, bioactivity and biocompatibility.
- give students a broad knowledge of the principles underlying the mechanical, physical and chemical properties of dental materials, both in preventative and restorative treatment.
- This course is designed to enable students to gain a greater and more in depthunderstanding of the basic sciences knowledge that underpins the clinical uses of dental materials.

In brief;On completion of the course, students will have a specialized knowledge of dental materials and be able to justify selection criteria and instructions for all classes of dental materials.

Dental occlusion and articulation lecture series

This lecture series aims to develop an expanded knwoledge of the masticatory system structure and function. students will learn in depth the fundamentals of optimal occlusion , variable occlusal scheems, etiologies of occlusal traumatism, principles and techniques of occlusal adjustment, clinical applications of occlusion principles in restorative dentistry; occlusal principles and protocols of dental implant loading; occlusion in various types of removable prosthesis. residents will practice occlusion evaluation and examination, registration, transfer and analysis.

<u>students who successfully complete this course will be able to:</u>

- Correctly program a semi-adjustable articulator.
- Develop proper anatomical form in teeth in maximum intercuspation and excursive movements.
- Discuss the various occlusal schemes and the importance of centric relation and maximum intercuspation.
- Describe the relationship of occlusal morphology to mandibular movements and how variations in mandibular movements affect occlusal form.
- Discuss the determinants of occlusion using the proper terminology, and how variations of these determinants modify occlusal pathways.
- Explain what parameters are important for a clinically acceptable restoration.
- Discuss the signs, symptoms, and etiology of occlusal traumatism.

- Demonstrate the process of an occlusal adjustment.
- Describe the role and function in specific mandibular movement of each of the muscles of mastication.
- Discuss implant occlusion and to provide clinical guidelines for optimal implant restorations and possible solutions managing complications related to implant occlusion.
- To present guidelines for appropriate implant occlusion for single and multiple implant restorations and describe restorative techniques to minimize implant complication and overloading

Research Methodology and Educational Methods (Dent. 11007):

The course will aim to help the residents to perform data collection, analysis, and interpretation of clinical related research prosthodontic aspects. It also, provides the residents the necessary knowledge to design, execute and interpretate of clinical and clinical related research projects.

<u>On successful completion of the course, residents will be able to:</u>

- Identify different types of data and their level of measurement.
- Explore the development of a research idea from hypothesis to interpretation.
- Judge the credibility of methodology and statical analysis of research articles.
- Understand basic statistical issues and epidemiological concepts needed for the development of a study protocol.
- Understand and differentiate between common types of epidemiological studies.
- Recognize the role of secondary research in Evidence Based Practice (Systemic Literature Review and mapping) in all aspects of Prosthodontics.

Goals & Objectives:

- To familiarize residents with the principles of problem definition and hypothesis construction
- To familiarize residents with the rationale and procedures for generating and documenting data
- To understand the conceptual foundations and methodological tools of quantitative and qualitative healthcare related research.
- To locate, comprehend, critically analyze and evaluate research articles in prosthodontics and related disciplines and apply the findings to practice.
- To develop beginning research skills necessary to plan and carry out all phases of quantitative research to build knowledge related to the practice of prosthodontics.
- To provide the residents with necessary guidelines for assembling and interpreting results, evaluating and writing scientific papers, lab reports, and research proposals, and publishing studies.
- To provide the residents with necessary guidelines for research presentation with emphasis on PowerPoint presentation.
- Describe advantages and disadvantages of a variety of teaching methods. (e.g., lectures, problem-based learning, case- based learning, seminars, discussion group, experimental learning, service learning, distance education, online education, flip class)
- Differentiate between educational measurement and evaluation.
- Describe the difference between nor-reference measurement and criterion reference measurement in dental education.
- Discuss strategies for clinical teaching and creating a positive clinical teaching atmosphere in dental education.
- Practice creative a positive clinical teaching atmosphere in one of your assigned clinical teaching roles in your department.

- Differentiate between educational objectives and outcome measures.
- Describe the purpose of Bloom's Taxonomy of Educational Objectives.
- Demonstrate use of defined, "measurable" verbs in educational objectives.
- Prepare an educational goal/ outcome and 2-4 objectives for one session/ one chapter in this course.
- Prepare a one-page outline of topics to serve as a handout for students.
- Prepare an educational goal/ outcome and 5-10 objectives for one predoctoral dental lecture or seminar presentation.
- Write 5-10 original exam items (with answers) to evaluate your selected content area.
- Analyse exam item statistics and make revisions in exam items as needed.
- Design a pre-doctoral class using online tools.

The course includes:

- Introduction to Research and the Research Process
- Research Ethics and Integrity
- Developing a Research Problem and formulate a research question
- The Research Hypothesis: Role and Construction
- Research design
- Literature search, mapping and review
- Literature review and citation (Endnote citation manager)

- Data types and data collection methods
- Sampling Methodology
- Quantitative and qualitative methods
- Proposal development phases
- Research critique
- Scientific writing and scientific presentation
- Research protocol

Prosthodontics III (Prostho 11008):

The courses are designed to cover all advance topics of esthetic dentistry, dental implantology and digital workflow in dentistry.

Esthetic dentistry lecture series:

This lecture series is a part of the prosthodontics III and IV course of the fixed and removable prosthodontics residency program. Resisdents will be exposed to the complexities involved in esthetic diagnosis and will gain clinical competence in formulating and executing treatment plans for patients desiring esthetic improvements. residents will have the ability to successfully complete a digital and analog smile analysis and recommend and execute treatment plans which include but are not limited to porcelain laminates, direct and indirect composite restorations, implant restorations in the esthetic zone, bleaching techniques, crown and bridge prostheses, and partial coverage porcelain restorations.

Peridontal - prosthetic relationships are of great inportance to gain an optimom treatment outcome.The establishment of a harmonious relationship between dental restorations and the periodontium is a basic educational purpose.

Upon completion of the course, residents will be able to:

- Describe the concept of biologic width as it relates to restorative procedures and periodontal health.
- Evaluate and diagnose cases need crown lengthening procedures in the esthetic and posterior zones and select the suitable surgical technique.
- Identify violations of the biological width and management.
- Know the basic laser physics.
- Concentrate on the current laser dentistry concepts and techniques.
- Know the laser applications in prosthodontic clinic.
- Demonstrate aesthetic analysis and smile design.
- Evaluate smile testing and mockup applications.
- Demonstrate digital smile design.
- Understand adhesion principles, indirect restorations and dental veneers.
- Differentiate between different types of ceramics in esthetic dentistry.
- Know cementation techniques for dental veneers and indirect restorations.
- Concentrate on intra oral scanning features, types and application in prosthodontics clinic.

Prosthodontics IV (Prostho 11011):

Implantogoly lecture series:

these lectures will render the rehabilitative capabilities of the residents more concret. The prosthetically driven consept in implantology will be the fundamental consept while teaching oral rehabilitation, which will expand the resisdent's abilty to use dental implants in the treatment of total and partial edentulism. technoogical advances and tools that are boosting dental implants will be deeply adressed, including computer guided implantolgy and deigital planning .

Upon completion of the course, residents will be able to:

- Know treatment planning in implant dentistry.
- Describe basic principles in implant dentistry.
- Differntiate between different types of abutments, Cemented Vs. Screw retained restorations; indications of use.
- Understand impression materials and techniques in implant dentistry.
- Describe the occlusal scheme of implant supported restorations.
- Be familiar with immediate loading, provisional restorations of implant treatments, and overdentures supported by dental implants.
- Evaluate and manage the prosthodontics complications of implant dentistry.

Prosthodontic V (Prostho 11015):

This course will provide residents with the most updated information concerning the Management of the geriatric patients and special needs in

the prosthodontic clinic. Maxillofacial prosthontics will also be covered in this course. Dental technology and related topics will be also included.

Maxillofacial prosthodontics lecture series:

This seriesof lectures are part of the prosthodontics V course directed to the resisdents in the fixed and removable prosthodontics speciality program. lectures present a classification system for maxillofacial prostheses, while explaining its types. It also aims to describe their origin and development, currently available materials, and techniques, predicts the future requirements, and subsequently discusses its avenues for improvement as a restorative modality.

Geriatric Prosthodontics and special needs lecture series:

This series is a part of the prothodontics V course directed to the residents in the fixed and removable prosthodontics speciality program. th electures concentrate on effects of age on the health of geriatric patients, diagnosis and treatment of oral disease in geriatric patients, and how to deal with complications of chronic systemic diseases in loss of teeth and need of special intervention for people at this age group.

Providing dental care to patients with disabilities may require modifications to the traditional treatment plan. Patients with special needs include individuals who are disabled due to physical limitations (congenital, traumatic and/or physiological), medical complications (systemic, acquired and/or hereditary), developmental problems (congenital and/or acquired), and cognitive impairments (mental, sensory, emotional and/or behavioral).

the residents should be able to define patients with special needs, Identify barriers to dental care faced by the special needs population.And discuss treatment and oral hygiene strategies to support the oral health of patients with special needs.

The Digital Dentistry lecture series :

The Digital Dentistry lecture series is a part of the prosthodontics V course in the residency program.These lectures provide fundamental knowledge to

understand everything from intra-oral scanning for teeth and implants, virtual implant treatment planning, virtual smile design, digital dentures, dental photography, the over all technological digital work flow.

Evaluation and Treatment of Temporomandibular Disorders lecture series:

This lecture series is a part of the prosthodontics V course of the fixed and removable prosthodontics residency program. TMD is a common source of jaw, headaches and orofacial pain and contributes to functional limitations associated with chewing, talking and yawning. An evidence based examination used to diagnose the common diagnostic subsets of TMD is discussed and practiced in clinic. An evidence based informed escalation-of-treatment approach will be covered for TMD to include patient education, modalities, exercises, and manual procedures. Non surgical treatments for disc displacements will be reviewed. The rationale for the use of the various oral appliances fabricated by dentists will be highlighted. The team approach between the physical therapy and dental professions will be highlighted throughout the course.

<u>Upon completion of the course, residents will be able to:</u>

- Know how to manage Bruxism.
- Differentiate between different types of splint therapy.
- Describe problem solving and treatment of complex cases.
- Be familiar with EXOCAD.
- Understand the 3-D printing techniques in the Lab.
- Understand the different types of obturators in Maxillofacial prosthodontics,
- Demonstrate impression techniques of maxillofacial prosthodontics

Prosthodontic Clinics 1 (Prostho. 11002), Prosthodontic Clinics 2 (Prostho 11005)

The resident will have three days Tutorials in a week a full clinical training in Fixed Removable Prosthodontic Clinics to fulfil the following clinical requirements:

- Four Cases Complete Dentures for edentulous patients, one of the cases must involve a treatment of advanced case (Sever bone resorption, flabby ridge, Epulis Fissaratum, Knife edge ridge) with a preprosthetic surgery treatment planning.
- Three cases Metallic Removable Partial Dentures.
- Two cases Immediate Denture.
- Restoration of Twelve endotreated teeth using fiber and non metal posts, and crowing them using Digital Impression Techniques (CAD/ CAM).
- Four cases of conventional ceramometal fixed partial denture (3- unit and above).
- Three cases of anterior all ceramic fixed partial denture (Zircoia based and lithium disilicate glass ceramics).
- One case Resin Bonded Fixed Partial Dentures

Prosthodontic Clinics 3 (Prostho 11009), Prostho Clinics 4 (Prostho 11012)

The resident will have three days Tutorials in a week a full clinical training in Fixed Removable Prosthodontic Clinics to fulfil the following clinical requirements:

- Restoring and insertion of (4-6) Dental implants using guided surgery and making the impression using different impression techniques (closed and opened) (One case should include Intra Oral Scanner)
- Restoring and treatment planning of Three Full Mouth Rehabilitation (including Multidisciplinary treatment Complex): One Periodontal surgery (Either Esthetic Crown lengthening Surgery, splintting of periodontally comprimized dentition, Laser therapy or sinus lifting procedures), and One Orthodontic Treatment (Either extrusion and intrusion of teeth, or creation of space for prosthodontic needs). One of the cases should include Raising the vertical Dimension.
- One Case Fixed Removable Prosthodontics including precession attachment complex.
- Twelve Ceramic Laminate Veneers.
- Four units (Inlay and Onlay) Ceramic Restorations.
- Two Cases of Overdentures supported by Teeth.

Prosthodontic Clinics 5 (Prostho 11015), Prosthodontic Clinics 6 (Prostho 11017)

The resident will have three days Tutorials in a week a full clinical training in Fixed Removable Prosthodontic Clinics to fulfil the following clinical requirements:

- Treating Two cases of Tempromandibular Disorders (TMD).
- One case overdenture supported by dental implants (One of the cases should include Locators attachments).
- Eight restorations using implants (At least Two screw retained restorations)

- Full mouth case including restorations supported by dental implants and natural teeth in the same case.

Seminar and Prosthodntics Journal Club (**Prostho 11003)**:

This tutorial and recurring course is designed to enable the residents to find out articles from the following topics, to discuss, summarize, and do article critiques in a multidisciplinary discussion. The course will be extended over the full duration of residency program.

Topics for the residency program in Prosthodontics:

- Centric relation
- Vertical Dimension
- Occlusal trauma
- Occlusion on Implants
- Occlusal interferences
- Correction of occlusal disharmony
- Optimal occlusion
- TMDs and occlusal splints
- Night guards
- Mastication and bite force
- Articulators
- Bruxism
- Teeth guidance
- Short dental arch
- Classical article from selected journal

Seminar and Prosthodntics Journal Club (**Prostho 11006)**:

This tutorial and recurring course is designed to enable the residents to find out articles from the following topics, to discuss, summarize, and do article critiques in a multidisciplinary discussion. The course will be extended over the full duration of residency program.

Topics for the residency program in Prosthodontics:

- Denture Esthetics
- Attachments for RPDs
- Designs for metallic RPDs
- Overdentures on implants vs. natural teeth
- Overdentures on bars vs. ball attachments
- Denture Occlusion
- Denture stability and retention
- Patient satisfaction after denture treatment
- Classical article from selected journal

Seminar and Prosthodntics Journal Club (**Prostho 11010)**:

This tutorial and recurring course is designed to enable the residents to find out articles from the following topics, to discuss, summarize, and do article critiques in a multidisciplinary discussion. The course will be extended over the full duration of residency program.

Topics for the residency program in Prosthodontics:

- Impression material for FPDs

- Intraoral scanners vs. conventional impressions
- CAD/CAMs and milling machines
- CBCT
- Guided surgical stents for implants
- Classical article from selected journal

Seminar and Prosthodntics Journal Club (**Prostho 11013)**:

This tutorial and recurring course is designed to enable the residents to find out articles from the following topics, to discuss, summarize, and do article critiques in a multidisciplinary discussion. The course will be extended over the full duration of residency program.

Topics for the residency program in Prosthodontics:

- Implant parts
- Splinted implants vs. non-splinted
- Screw retained vs. cemented crowns on implants
- All on four
- Osseointegration of implants
- Preserving papilla between implants/teeth and implants
- Immediate and early loading on implants
- Implants in periodontitis patients
- Zirconia on implants
- GBR (guided bone regeneration)
- Restoring endontically treated teeth

- Core build up restorations
- Fiber posts
- Factors of post selection
- Glass Ionomer cements
- Dentine bonding
- Polymerization shrinkage of composite
- Resin based cements
- FPDs survival rates
- High strength ceramics
- Zirconia
- Veneers
- Inlays and onlays
- Metals used in dentistry
- Classical article from selected journal

Seminar and Prosthodntics Journal Club (**Prostho 11016)**:

This tutorial and recurring course is designed to enable the residents to find out articles from the following topics, to discuss, summarize, and do article critiques in a multidisciplinary discussion. The course will be extended over the full duration of residency program.

Topics for the residency program in Prosthodontics:

Copy complete denture; When and How?
Decision to extract a tooth; a Dilemma in Treatment planning!

Centric relation occlusion; Updates.
Single complete dentures; Review.
Management of sever atrophic ridge in Complete Denture.
Metal Ceramic Restorations; survival rate and longevity in Prosthodontics.
Failure of Fixed restorations; Review.
Impression materials and techniques of complete dentures.
Occlusal scheme of complete dentures; updates.
Ant's Law: its need in Prosthodontics.
Management of tooth wear in full mouth rehabilitation.
The raise of vertical dimension in Fixed Prosthodontics.
Strategic teeth in treatment planning for Fixed Prosthodontics.
Ferrule effect in custom made posts.
Castable ceramic posts.
Zirconia restorations: updates and challenges.
Telescopic crowns; when and how!
Removable or Fixed Prosthodontics; how to decide!
Metal alloys in Prosthodontics; updates.
Intraoral scanners; types, features, and uses.
Facebows and articulates; review.
Digital work flow in laboratory Prosthodontics.
Porcelain laminate veneers; indications and techniques.
Occlusion in daily Prosthodontics practice; challenges and solutions.
Prosthodontic management of Amelogenesis and dentinogensis Imperfecta
Prosthodontic Management of hypodontia
Management of prosthodontic complications in implant dentistry.
Overdentures; an Overview
Immediate dentures; challenges and solutions.
Denture fixatives
Denture stomatitis.
Broken dentures.
Luring cements: Review.
Metallic Removable Partial Dentures; Updates.

- Classical article from selected journal