

سَبَّحَ لِلَّهِ مَا فِي السَّمَاوَاتِ وَالْأَرْضِ

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We would also like to acknowledge that the CanMEDS framework is a copyright of the Royal College of Physicians and Surgeons of Canada, and many of the description's competencies have been acquired from their resources (Please refer to: CanMEDS 2015 physician competency framework; Frank JR, Snell L, Sherbino J, editors. CanMEDS 2015 Physician Competency Framework. Ottawa: Royal College of Physicians and Surgeons of Canada; 2015.).

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PART I

INTRODUCTION

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Foreword

The Family Dentistry program is designed to educate dentists in all aspects of dentistry at an advanced level, giving them competency to provide comprehensive treatment for a range of dental problems in patients from all walks of life. Graduates of the program will be able to provide primary dental and oral health care for a wide variety of patients. They will be equipped to function and cooperate with a team of specialists in multiple health care environments. The program is patient-centered, evidence-based, focuses on decision-making, adheres to the highest levels of scientific and ethical standards, and is designed to allow graduates to provide quality dental care throughout the community.

This age is a period of transformation in which the population is growing and our communities are becoming more diverse. Complications during treatment often result from mismanagement at the specialist level. This program is dedicated to restoring the fundamental standards of treatment, allowing dentists to transcend boundaries and overcome uncertainty and complexity in the field of dentistry. The program aims to produce a globally competitive dentist who can work in general practice at an advanced level providing community-centered multidisciplinary care. Family dentistry provides training in both primary care and comprehensive treatment management.

Definition

The Saudi Board of Family Dentistry (SBFD) is a dental specialty course designed to provide didactic, holistic, clinical, and hospital training that integrates the sciences of all dental disciplines to upgrade the standards of the dental profession in Saudi Arabia. The instruction and experience provided by the SBFD allows residents to become highly qualified dentists who can treat complex cases from any of the established specialties and provide quality dental health care in a primary care center.

The SBFD program is a 3-year full-time post-graduate certificate program in family dentistry that provides advanced training in clinical dentistry and applied basic sciences and refines the skills necessary for the general dentist to provide advanced comprehensive patient care for all population groups. The program emphasizes treatment planning, coordination, and clinical care of a large number of patients with comprehensive treatment needs. A graduate of the SBFD program should be able to work in any primary care center in the Kingdom and contribute significantly to the provision of quality treatment in the health care service.

Vision

The vision of this family dentistry course is to become the cornerstone of the specialty programs available in the Kingdom. With a determination and commitment to meet the demands of society, this program takes a modern holistic approach to teaching and aims to produce a globally competitive dentist who can have an active role as a quality primary care provider for the betterment of dental health in the community.

Mission

The mission of this program is to produce a fully competent dentist equipped with a wide range of scientific knowledge who can function independently and provide the best possible treatment available in society.

The course is devised to offer well-structured and independent scientific training for general dental practitioners that will facilitate an ideal work environment and equip trainees in the program with the tools necessary to provide excellent dental care. The SBFD program aims to boost the academic achievement of its residents by implementing strategic, measurable, and effective learning methods.

The goals of the SBFD are to supply the community with qualified specialists in family dentistry, to provide a designated training program for family dentistry specialists and related occupations, to maintain an environment of excellence for residents and apply the measures required for academic success as well as clinical achievement, to introduce trainees to the advanced techniques and modern technology required for oral health research and related scientific endeavors, and to provide consulting family dental services for local as well as international agencies.

The SBFD oral health program provides the community with efficient, effective, and up-to-date resources. We anticipate that our graduate specialists will be important members of the oral health community and perform to an outstanding level in clinics and in research.

Rationale and Importance of the Program

Research shows that poor oral health care leads to carious disease. Dental specialists working in the community, particularly in rural areas, have limited access to facilities provided in the government and private sectors.

It is the ethical and moral duty of all dentists to offer the best possible treatment to all patients. However, problems arise if there is inadequate access to dental care, especially in areas of high demand. Barriers to accessible dental care are a major problem and need to be addressed. It is often difficult to find a dentist who can meet a given patient's dental needs exactly. A holistic approach to patient management is needed, whereby the dentist has the basic and advanced knowledge needed to provide the necessary ongoing care.

The specialty of family dentistry meets this need in the community. The aims of this program is to upgrade dentists' clinical skills, integrate all the sciences involved in dentistry, and foster an understanding of their inter-relationship in everyday primary care.

Educational objectives of the program

Graduates of this program can be credentialed as consultants. Family dentistry is a specialty in which ongoing comprehensive oral health care is delivered to all age groups in the community, taking into account physical, emotional, psychological, environmental, developmental, and familial influences. It emphasizes dental care, preventive dentistry, and health promotion and is a cost-effective way of coordinating delivery of oral health care in the community.

The program provides residents with skills that go beyond the usual interface of dental primary care and equips them to undertake the following:

- Improvement of their clinical skills and awareness of prevention, diagnosis, and treatment strategies across all aspects of family dentistry, regardless of patient age, sex, and ethnicity.
- Management of patients with advanced disease and damaged dentition who require comprehensive multidisciplinary care. This objective is accomplished by comprehensive documentation and presentation at weekly seminars attended by consultants and specialists at the center.

- Recognition of their clinical skill limitations and identifying patients who should be referred to a specialist.
- Application of the biological and scientific basis of the procedures performed by residents and embedding this knowledge into their clinical decision-making and patient care protocols.
- Development of the skills necessary for the best possible patient-dentist relationship.
- Recognition of the patient's social, medical, dental, and psychological needs.
- Recognition of the relationship between oral and systemic health and its role in treatment, specifically identification of risk factors and their management.
- Acquisition of research skills concerning study design and methodology, performing literature reviews, and the ability to critique dental articles.
- Development of skills in the areas of infection control and practice management.
- Acquisition of the skills needed to teach and become the educators of the future.

At the end of this program, the resident will have acquired the following competencies and be able to function effectively in these roles as per CanMEDS framework competencies:

- Dental expert
- Communicator
- Collaborator
- Leader
- Health advocate
- Scholar
- Professional

General Training Requirements

- Admission to the program is in accordance with the commission training rules and regulations.
- Trainees shall abide by the training regulations and obligations established by the SCFHS and those of the training center.
- Training is a full-time commitment. Residents shall be enrolled in full-time, continuous education for the entire duration of the program.
- Training is to be conducted in institutions accredited by the SCFHS.
- Training shall be comprehensive and in fulfillment of requirements and comprehensive patient management.
- Trainees shall be actively involved in patient care with gradual progression of responsibility.

Framework of the Program

1. Structure of the training program
 - The SBFD program runs for a period of 3 years.
 - Didactic clinical sciences and advanced clinical training are integrated into the program.
 - Documentation of progress in the program and all resident activities are maintained by the program director and available for review.
 - Members of the training committee will evaluate residents every 3 months in accordance with the Residency Tri-Month Training Evaluation.
 - The trainee shall be promoted from one level to the next level of training based on the detailed specifications mentioned in the subsequent part of the assessment criteria in reference to the new SCFHS marking system.

- After successful completion of all program requirements during the 3-year training period and passing the final Residency Tri-Month Training Evaluation, candidates will receive a training completion certificate issued by the regional supervising training committee.
- The candidate will then be eligible to undertake the final Saudi Board Certification Examination in Family Dentistry.

2. Supervision of the program

The residency program is supervised by various layers of authority, including the following personnel:

- Chairman of the Scientific Board of Family Dentistry
- Director of the Regional Supervisory Committee
- Director of the Examination Committee
- Director of the Case Evaluation Committee
- Program Director at the Training Center
- Secretary of the SBFD

Minimum Training Requirements

The SCFHS requires 3 years of training and completion of the following requirements for eligibility to sit the SBFD examination:

1. Basic science courses
2. Didactic clinical courses
3. Fulfillment of training leading to clinical competency

PART II

COMPETENCIES AND OUTCOMES

Clinical competencies and learning outcomes	Pages 10–72
Milestones of the SBFD training program and continuum of learning	Pages 73–76
Top conditions in the specialty	Pages 76–77
Procedural requirements on completion of residency	Pages 78–82

Clinical competencies and learning outcomes

Dental Expert

Definition

As dental experts, SBFD residents integrate all of the CanMEDS roles, applying dental knowledge, clinical skills, and a professional attitude to provision of high-quality and safe patient-centered care. Dental expert is the central competence in the CanMEDS framework and defines the clinical scope of practice for SBFD residents.

	Key competencies Residents are able to:	Learning outcomes Residents are able to:	Junior (R1 and R2)	Senior (R3)
1	Establish and maintain basic knowledge, skills, and attitude within a defined scope appropriate to their practice and expertise	1.1 Demonstrate a commitment to high-quality care and safety of patients	☑	✓
		1.2 Integrate the intrinsic roles of CanMEDS into dentistry practice	☑	✓
		1.3 Apply knowledge of the clinical sociobehavioral and fundamental biomedical sciences relevant to their discipline	☑	✓
		Module 1: Basic science This module provides the essential knowledge required in the program, including on topics in anatomy, embryology, oral biology, oral pathology, oral microbiology, pharmacology, oral medicine, radiology, and biomaterials. It is delivered in a style that facilitates learning of the important aspects of basic science.		
		1.1 Head and neck anatomy <ul style="list-style-type: none"> – List the structures and blood supply of the head and neck – List the cranial nerves and describe their function – Explain the structure of the tongue, oropharynx, teeth, and temporomandibular joint – Describe the masticatory muscles 	✓	✓
		1.2 Oral biology <ul style="list-style-type: none"> – Explain the structures relevant to oral biology, especially the microstructure and physiology of oral tissues 	✓	✓

		<ul style="list-style-type: none"> - Explain embryology and development of the face - Explain development of the teeth and supporting structures - Describe the salivary glands 		
		1.3 General pathology <ul style="list-style-type: none"> - Explain cell pathology - Describe inflammation (acute and chronic) - Describe tissue regeneration and repair 	✓	✓
		1.4 Oral pathology <ul style="list-style-type: none"> - Discuss the oral pathology, etiology, and pathogenesis of oral and paraoral disease 	✓	✓
		1.5 General physiology <ul style="list-style-type: none"> - Discuss cell, cell membrane, and body fluid balance - Explain composition of blood, hemoglobin, and anemia - Explain physiology of coagulation, bleeding, and clotting time 	✓	✓
		1.6 Oral microbiology <ul style="list-style-type: none"> - Explain the composition of the oral flora and factors influencing its structure 	✓	✓
		1.7 Dental radiology <ul style="list-style-type: none"> - Explain radiation physics and radiation biology - Discuss radiation hazards and protection - Recognize imaging techniques and diagnostic oral radiology 	✓	✓
		1.8 Pharmacology <ul style="list-style-type: none"> - Discuss agents commonly used to treat oral and systemic diseases - List the indications, contraindications, and potential adverse reactions of medication used - Prescribe medications for patients under their care 	✓	✓
		1.9 Dental biomaterials <ul style="list-style-type: none"> - Discuss the physical, chemical, and mechanical properties of dental materials 	✓	✓

		<ul style="list-style-type: none"> - Select and manipulate various dental material systems used in the oral cavity - Define biocompatibility, toxicity, systemic toxicity, local reactions, and allergic reactions to dental materials (including dental amalgam, cements, dental alloys, composites) - List the indications and types of biocompatibility tests - Define mechanical, physical, and chemical properties of dental biomaterials - Explain the principles of adhesion and surface chemistry 		
		<p>Module 2: Case history, examination, diagnosis, and treatment plan</p> <p>This module trains residents in the essential knowledge and skills needed to take a medical and dental history and perform a physical examination using a number of methods and tools. This gives residents the opportunity to build comprehensive treatment strategies to provide high-quality treatment for their patients.</p>		
		<p>2.1 Patient assessment, examination and diagnosis</p> <ul style="list-style-type: none"> - List the steps and skills needed to conduct an interview for medical and dental history-taking - Elicit a patient's chief complaint and medical, dental, family, and cultural background - List the steps involved in the examination of patients and their oral mucosa and related structures 	☑	✓
		<p>2.2 Radiographic interpretation</p> <ul style="list-style-type: none"> - Appropriate acquisition and interpretation of radiographic data 	☑	✓
		<p>2.3 Development of treatment strategies and plans</p> <ul style="list-style-type: none"> - Explain the phases and sequence of writing a treatment strategy in collaboration with patients and producing a plan that meets their needs 	☑	✓

		<ul style="list-style-type: none"> - Explain the importance of treatment and procedures involved by using evidence-based dentistry concepts while writing a treatment plan - Writing referral and consultation letters and obtaining informed consent 		
		<p>Module 3: Practice management</p> <p>This module provides an understanding of the principles of practice management.</p> <p>3.1 Explanation of ethics in the practice of dentistry</p> <p>3.2 Implementation of accepted sterilization, disinfection, and universal precautions in the practice of dentistry</p>	✓	✓
		<p>Module 4: Dental public health</p> <p>This module provides basic knowledge and understanding of dental public health, which deals with the promotion of oral health and prevention of oral and dental diseases. Dental public health entails assessment of key dental health needs and devising effective solutions to improve dental health at the population level. This is the part of dentistry that requires leadership skills and expertise in population-based dentistry, oral health surveillance, policy development, community-based disease prevention, health promotion, and maintenance of the dental safety net. The graduate will be able to perform the following:</p> <ul style="list-style-type: none"> - Identify the role of dental public health in dentistry - Manage oral health programs at the population level - Demonstrate ethical decision-making in dental public health practice - Design surveillance systems to measure oral health status and its determinants - Communicate on these issues - Lead collaborations in oral and public health - Advocate for public health policy, legislation, and regulations to protect and promote oral and overall health in the community 	✓	✓

		<ul style="list-style-type: none"> - Critically appraise evidence to address oral health issues for individuals and populations - Integrate the social determinants of health into dental public health practice 		
		<p>Module 5: Management of medically compromised patients</p> <p>This module trains residents in the essential knowledge and skills needed to manage and treat medically compromised patients. It provides the opportunities to learn and build self-confidence when delivering safe and high-quality treatment for patients with conditions such as cancer and cardiovascular disease, medication-related osteonecrosis, infectious diseases, diabetes and metabolic disorders, and medical and surgical emergencies, as well as care for patients who have undergone organ transplantation.</p> <p>5.1 Management of cancer</p> <ul style="list-style-type: none"> - Describe the side effects of chemotherapy and radiation therapy - List oncologic emergencies <p>5.2 Management of cardiovascular disease</p> <ul style="list-style-type: none"> - Describe dental management for patients receiving cardiac medication - List cardiovascular emergencies - Perform a dental clearance before cardiac surgery <p>5.3 Management of patients who have undergone organ transplantation</p> <ul style="list-style-type: none"> - Describe dental management for patients on immunosuppressant therapy - Perform a dental clearance before organ transplantation <p>5.4 Management of medication-related osteonecrosis</p> <ul style="list-style-type: none"> - Describe dental management for patients on bisphosphonates - Perform a dental clearance before starting treatment with a bisphosphonate 	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

	<p>5.5 Management of infectious diseases</p> <ul style="list-style-type: none"> - Describe dental manifestations in patients with infectious diseases <p>5.6 Management of diabetes and metabolic disorders</p> <ul style="list-style-type: none"> - Recognize how to manage diabetic emergencies - Describe management of diabetic emergencies <p>5.7 Management of medical and surgical emergencies</p> <ul style="list-style-type: none"> - Describe management of acute chest pain - Describe management of acute breathlessness - Describe management of hypotension and hypertension 		
	<p>Module 6: Management of patients with special needs</p> <p>This module trains residents in the knowledge and skills needed to manage and treat patients with special needs. It provides residents with an opportunity to learn and build self-confidence and to provide safe and high-quality care for these patients.</p> <p>6.1 Neurologic, behavioral, and psychiatric disorders</p> <ul style="list-style-type: none"> - Describe principles of management for patients with a neurologic, behavioral, or psychiatric disorder - Describe the medical and dental manifestations in these patients - Describe appropriate treatment modalities 	☑	✓
	<p>Module 7: Soft skills</p> <p>This module highlights the importance of soft skills for the resident and trains residents in the knowledge and expertise needed to develop and acquire the necessary soft skills.</p> <p>Soft skills is often under-valued in dentistry and dentists often receive inadequate soft skills training.</p> <p>The teaching of soft skills is a challenge that depends on the following:</p> <ol style="list-style-type: none"> 1 Awareness of its importance 2 Self-evaluation 3 Application of methodology to hard skills training 		

		<p>4 Role modeling – preceptors and faculty (observing and mimicking exceptional professionals)</p> <p>7.1 Communication</p> <ul style="list-style-type: none"> – Master an appropriate level of communication skills with patients, supervisors, and coworkers. <p>7.2 Punctuality</p> <ul style="list-style-type: none"> – Recognize the importance of punctuality and its effect on the resident’s future career <p>7.3 Time management</p> <ul style="list-style-type: none"> – Manage time in clinic while maintaining the highest possible standards <p>7.4 Professionalism.</p> <ul style="list-style-type: none"> – Acquire the following traits of a professional dentist: <ul style="list-style-type: none"> • Altruism • Honor and integrity • Respect • Responsibility • Accountability • Excellence and scholarship <p>7.5 Leadership</p> <ul style="list-style-type: none"> – Adopt the characteristics of a leader <p>7.6 Problem-solving</p> <ul style="list-style-type: none"> – Define the problem, generate alternatives, evaluate and select alternatives, and implement solutions <p>7.7 Motivation</p> <ul style="list-style-type: none"> – Acquire self-motivation skills and be able to motivate others in a positive way <p>7.8 Self-development</p> <ul style="list-style-type: none"> – Develop lifelong hard and soft skills by self-directed learning 	✓	✓
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		<p>7.9 Team player</p> <ul style="list-style-type: none"> - Be a good team player who is cooperative and respectful, and treats all team members fairly and in line with the law <p>7.10 Clinical reasoning</p> <ul style="list-style-type: none"> - Think through the various aspects of patient care to arrive at a reasoned decision <p>7.11 Self-confidence</p> <ul style="list-style-type: none"> - Achieve high self-confidence by: <ul style="list-style-type: none"> • Doing what they believe to be right • Admitting own mistakes and learning from them • Convincing patients <p>7.12 Dealing with criticism</p> <ul style="list-style-type: none"> - Describe how to use criticism in a positive way to improve skills <p>7.13 Flexibility and adaptability</p> <ul style="list-style-type: none"> - Adapt to changing environments and be flexible regarding any change in work process 		
		<p>Module 8: Cariology</p> <p>This module provides a deeper understanding of dental caries, including its etiology, progression, and epidemiologic and clinical considerations. There is a focus on diagnosis, prevention, and treatment planning strategies. This module is designed to increase further the resident's understanding of the importance of factors such as lifestyle, general health, and social and cultural circumstances to oral health. It covers the different methods used for the prevention of caries, including immunization, fluoridation, antimicrobial agents, and sugar substitutes.</p> <p>8.1 Dental caries: etiology, clinical characteristics, and risk assessment</p> <ul style="list-style-type: none"> - Discuss the dynamics of the caries process - Explain the role of risk factors contributing to development of caries 		
			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

		<ul style="list-style-type: none"> - Correlate the risk factors for caries with the patient's risk status - Formulate a customized preventive regimen according to the estimated risk of caries - Correlate the risk factors for caries with the patient's risk status 		
		<p>8.2 Diagnosis of caries and detection methods</p> <ul style="list-style-type: none"> - Identify early carious lesions - Demonstrate recent methods used to detect caries - Master the technique for the diagnosis of caries - Examine and detect dental caries in the clinic 	☑	✓
		<p>8.3 Prevention and management of caries</p> <ul style="list-style-type: none"> - Plan a clinical protocol to manage caries based on risk and the diagnosis - Manipulate different protocols for prevention of caries according to the clinical situation - Distinguish between the various oral health formulations available - Synthesize and interpret epidemiologic evidence for the purpose of making clinical decisions and developing clinical practice guidelines - Explain modern conservative management of dental caries - Build a comprehensive treatment plan for the prevention and treatment of an oral condition - Implement a caries prevention program/community project to enhance the promotion of oral health 	☑	✓
		<p>8.4 Tooth surface loss: diagnosis and management</p> <ul style="list-style-type: none"> - Explain the treatment strategies used to treat non-carious cervical lesions and types of restorative material used - Evaluate the etiology and clinical presentation of bruxism - Demonstrate how to diagnose and prevent tooth loss 		

		<ul style="list-style-type: none"> - Recognize different modes of management for worn dentition - Diagnose and manage a patient with non-carious cervical lesions using different methods 	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
		<p>Module 9 : Dental and clinical material</p> <p>This module provides knowledge of the basic science of dental biomaterials, including their physical, biological, mechanical, and chemical properties. Selection and manipulation of dental materials and longevity of dental restorations in the clinic are discussed.</p>		
		<p>9.1 Dental amalgam</p> <ul style="list-style-type: none"> - Define dental amalgam - Describe the types of dental amalgam alloys available in terms of their copper content and particle shape; explain the clinical consequences of using the different types of alloy - Describe the amalgamation reaction and related phases and metallurgical symbols - Explain why γ_2 is important in the clinical performance of amalgam - Explain the importance of the eta prime phase in modern amalgam alloys - Explain how γ_2 has been eliminated from modern amalgam - Describe how manipulation of amalgam affects its strength, dimensional change, creep, and corrosion - List the goals of appropriate condensation of amalgam in a cavity preparation and why these goals are clinically important - List the precautionary measures that should be taken by a dental team to limit exposure of the patient and dental personnel to mercury and mercury vapor - Classify the different types of dental amalgam 	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

		<ul style="list-style-type: none"> - Apply steps in manipulation for dental amalgam restoration - Mix dental amalgam 		
		<p>9.2 Composites</p> <ul style="list-style-type: none"> - Indicate and discuss the components of dental composites - Classify dental composites according to their filler content - List the advantages and disadvantages of composite resins - Discuss silorane-based composites - Describe the uses of all-purpose, flowable, composite inlays (laboratory composite) and packable composites - Describe the properties of composites and indicate their clinical importance - Describe the manipulation of direct composite restorations - List the factors affecting the depth of cure for light-activated composites - Discuss polymerization shrinkage of dental composites - Explain the wear of dental composites 	☑	✓
		<p>9.3 Light-curing units</p> <ul style="list-style-type: none"> - List the different types of light-curing units available - List the desirable features of light-curing units - Describe precautions for protecting the eyes of patients and staff - Cure a composite restoration using different types of light 	☑	✓
		<p>9.4 Glass ionomers</p> <ul style="list-style-type: none"> - Indicate the components of glass ionomers - Discuss the chemical reaction of glass ionomer cements - Classify the types and modifications of glass ionomers and their uses - Describe the uses of glass ionomers - Describe the properties of glass ionomers - Describe the manipulation of glass ionomers - Mix a glass ionomer 	☑	✓

		<p>9.5 Hybrid ionomers</p> <ul style="list-style-type: none"> - Describe the uses of hybrid ionomers - Indicate the components used in hybrid ionomers - Describe the properties of hybrid ionomers - Describe the manipulation of hybrid ionomers - Manipulate hybrid ionomers according to the manufacturer's instructions 	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
		<p>9.6 Intermediate restorative materials</p> <ul style="list-style-type: none"> - Identify the different types of intermediate restorative material available - Discuss the indications and contraindications of the different types of intermediate restorative material 	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
		<p>9.7 Fluoride gels, rinses, and varnishes</p> <ul style="list-style-type: none"> - Indicate the components in fluoride gels, rinses, and varnishes - Compare the characteristics of the different types of fluoride treatment - the clinical effectiveness of fluoride gels 	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
		<p>9.8 Pit and fissure sealants</p> <ul style="list-style-type: none"> - Describe the unique features of pit and fissure sealants - List the components in light-activated and amine-accelerated resin sealants and indicate their function - Describe factors that affect penetration of a sealant into a fissure 	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
		<p>9.9 Bonding and bonding agents</p> <ul style="list-style-type: none"> - Classify dentin bonding agents - Define hybridization - Indicate factors affecting the performance of dentin bonding agents - Indicate the components used in bonding agents. - Describe the properties of bonding agents and indicate their clinical importance. 	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

		<ul style="list-style-type: none"> - Describe the manipulation of bonding agents 		
		<p>9.10 Dental cements: liners and bases</p> <ul style="list-style-type: none"> - Differentiate between cement bases and liners - Classify dental cements according to the chemical reaction involved - Classify dental cements according to the type of matrix bonding involved - List the uses of each type of cement - List the components of each type of cement and indicate their function - Describe the setting reaction and indicate any variables that may affect the setting of each type of cement - Describe the clinical importance of film thickness, working and setting times, compressive strength, retention, and type of bonding to tooth structure and fluoride release for each type of cement - Describe the biocompatibility of each type of cement - Describe the manipulation factors affecting the setting time of each type of cement - Mix dental cement according to the manufacturer's instructions - Apply appropriate dental cement to the indicated teeth 	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
		<p>9.11 Ceramics</p> <ul style="list-style-type: none"> - Describe the composition of feldspathic porcelain - Discuss the vitreous and crystalline phases of dental porcelain - Explain the relationship between the specific physical properties of ceramics and the clinical performance of all-ceramic and ceramic-alloy restorations - Describe the mechanism of bonding between alloys and porcelain and what factors may contribute to failure of this bond; explain how to reduce the risk of bond failure - Describe the manipulation of ceramic-alloy restorations 	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

		<ul style="list-style-type: none"> - Describe all-ceramic restorations, i.e., core and veneer - Classify all-ceramic restorations according to their structure and the method of fabrication - Discuss all ceramic-resin bonded restorations - Discuss the different types of digital ceramic restoration and explain the indications, advantages, and shortcomings of each type of restoration - Compare glass and polycrystalline ceramics - Explain the high fracture toughness of partially stabilized zircon 		
		<p>9.12 Impression materials</p> <ul style="list-style-type: none"> - Describe the purpose of impression materials - Classify impression materials - List the requirements for an ideal impression material - List the composition of the different types of impression materials and the role of each ingredient - Describe appropriate dispensing and mixing of each type of impression material - Discuss the disadvantages of hydrocolloid impression materials - Discuss the reaction mechanism of each type of impression material - Compare the properties of hydrocolloid and elastomeric impression materials - Describe the advantages and disadvantages of each type of impression material - Compare the properties and reactions of the four major elastomeric impression materials and indicate their clinical applications - Describe the disinfection technique used for each type of impression material - Select an appropriate impression material based on intended use 	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

		<p>9.13 Gypsum products</p> <ul style="list-style-type: none"> - Discuss the physical and chemical characteristics of gypsum products - Describe the physical properties important for modeling and die materials and explain why they are important - Compare the advantages and disadvantages of the different models and die materials in terms of resistance to abrasion, ease of use, time and equipment needed, and other relevant properties - Compare the physical and chemical characteristics of model plaster, dental stone, and high-strength dental stone - Describe the setting reaction of gypsum materials and the effect of excess water on the set mass - Name the accelerator, retarder, and operator variables that affect the gypsum setting reaction - Define the water-powder ratio, its values for the various types of gypsum, and its effect on the physical properties of gypsum - Describe the factors that influence the ability of gypsum to reproduce detail in an impression - Explain the concept of wetting and its importance to gypsum materials - Define the properties of strength, hardness, resistance to abrasion, and dimensional accuracy, and explain why they are clinically important for gypsum materials - Describe the manipulation of gypsum materials - Pour a primary and final impression with dental stone 	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
		<p>9.14 Casting investments</p> <ul style="list-style-type: none"> - Classify dental investments and their setting reaction - Compare different types of investment (gypsum-bonded phosphate versus silicate-bonded) 	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

		<ul style="list-style-type: none"> - Define setting, hygroscopic, and thermal expansion - Discuss investment for all ceramic restorations - Discuss quick heat investments - Discuss the causes of casting defects 		
		<p>9.15 Dental waxes</p> <ul style="list-style-type: none"> - Classify dental waxes and describe their composition and related physical properties - Describe the difference between pattern waxes and processing waxes - Discuss the properties of melting range, residue, thermal expansion, and residual stress, and cite the clinical relevance of these properties - Define the solid transition temperature of waxes - Describe the composition and uses of inlay wax, casting wax, and baseplate wax and explain the properties of these waxes 	☑	✓
		<p>9.16 Dental casting alloys and soldering</p> <ul style="list-style-type: none"> - Classify dental alloys according to their content of noble and non-noble elements - Identify noble metals and base metals - Discuss dental gold alloys with reference to the alloying elements and explain the role of each element - Explain the gold-copper binary phase diagram with reference to age-hardening mechanisms - Outline the American Dental Association classification system - Describe the general composition and properties of high-noble, noble, and base metal casting alloys - Compare the properties of low and medium gold alloys with those of alloys with a high gold content - Describe alloys for ceramic bonding and discuss the mechanism of bonding 	☑	✓

		<ul style="list-style-type: none"> - Explain the clinical problems associated with the different types of ceramic-bonding alloys - Explain how solders are used in dentistry - Discuss base metal alloys and their applications - Explain the passivation phenomenon - Discuss the properties of titanium and titanium alloys 		
		<p>9.17 Casting procedures, casting defects, and the lost-wax technique</p> <ul style="list-style-type: none"> - Describe the dimensional changes that occur during the casting process and explain how they affect the clinical performance of the cast - Describe the lost-wax technique and its accuracy in producing a dental casting - Explain the process of investing and how the properties of the investment affect the fitness of cast restorations - Describe different casting techniques - Explain the causes of casting defects associated with dental castings and how to overcome them - Observe a demonstration by laboratory production staff of the following: <ul style="list-style-type: none"> • Wax-up • Investing • Casting • Finishing and polishing cast restorations 	☑	✓
		<p>9.18 Abrasive and polishing materials</p> <ul style="list-style-type: none"> - Define finishing, polishing, cutting, and grinding - List the purpose and principles of finishing and polishing techniques - Distinguish finishing, polishing, and cleansing abrasives and techniques and recognize common abrasives - Define abrasion and contrast abrasive tools or slurries with cutting instruments 	☑	✓

		<ul style="list-style-type: none"> - Compare two-body and three-body abrasion - Discuss the factors influencing the rate of abrasion and indicate the factor that is easiest to control clinically - Describe surface roughness and gloss - Describe the finishing and polishing techniques used for common restorative materials and indicate the precautions associated with these techniques; includes dental amalgam, composite, compomer, hybrid ionomer, and acrylic denture resin 		
		<p>9.19 Dental implants</p> <ul style="list-style-type: none"> - Explain how oral forces applied to an endosseous implant stress bone differently when compared with oral forces applied to natural teeth - List the types of material that have been used for endosseous implants and explain which of these osseointegrate or biointegrate with bone - Describe the alloys of titanium that are used for endosseous implants in terms of their composition and physical and surface properties - Describe bioactive and bioresorbable ceramics - Explain calcium phosphate ceramics and their clinical applications - Explain the different techniques available for surface treatment of titanium implants and their advantages and disadvantages - Discuss the advantages of titanium-zirconium alloy as an implant material - Explain why ceramic coatings are applied to endosseous implants 	☑	✓
		<p>9.20 Toxicity of amalgam</p> <ul style="list-style-type: none"> - List the recommendations for mercury hygiene and safety published by the American Dental Association 	☑	✓

		<ul style="list-style-type: none"> - Explain the importance and use of mercury separators in dental clinics - Critique the toxic effect of amalgam as reported in the literature - Apply percussion measures for amalgam toxicity in the clinic 		
		<p>Module 10: Endodontics</p> <p>This module provides comprehensive knowledge of endodontics, including the diagnosis and treatment of pulp and peri-radicular conditions. Emphasis is placed on improving the skills of residents in areas related to chemomechanical debridement of the canal system and obturation of root canals in three dimensions using both traditional and more recent tools, such as rotary instruments and injectable gutta percha.</p>		
		<p>10.1 Tooth morphology and preparation of the access cavity</p> <ul style="list-style-type: none"> - Identify the objectives of preparation of the access cavity - Describe the guidelines for access preparation - Describe the importance of attainment of straight-line access - Investigate the importance of conservation of tooth structure - State the reasons and indications for removing remaining caries during access preparation - Summarize the anatomy of the pulp chamber floor - Identify the armamentaria needed for the preparation of the access cavity and the uses and role of each strategy - Prepare access opening for anterior and posterior teeth 	☑	✓
		<p>10.2 Management of painful tooth emergencies</p> <ul style="list-style-type: none"> - Classify the causes of such emergencies - Compare a true emergency and an urgent case - Identify patients who are at greater risk of experiencing pain after an endodontic procedure 		

		<ul style="list-style-type: none"> - Describe the emotional status of emergency patients and explain how this might affect correct diagnosis and treatment - Recognize and classify endodontic cases according to the difficulty in assessment as recommended by the American Association of Endodontists - Outline a sequential approach to endodontic emergencies - Compare the emergency treatments for symptomatic irreversible pulpitis with/without symptomatic apical periodontitis - Describe the treatment of necrotic pulp with symptomatic apical periodontitis - Describe the emergency treatment of acute apical abscess as well as the indications and steps for incision and drainage - Define flare-up and describe its management - List the factors related to greater frequency of flare-up - Summarize the treatment plan for a flare-up between appointments - Describe the treatment of post-obturation apical periodontitis - Classify and apply supportive pharmacologic therapy in emergencies and its role in controlling pain and infection - Manage an endodontic emergency with appropriate treatment - Perform pulp extirpation for irreversible pulpitis and necrotic pulp - Incise and drain an abscess 	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
		<p>10.3 Cleaning, shaping, and irrigation of the root canal system</p> <ul style="list-style-type: none"> - Differentiate between an apical seat, apical stop, and open apex - List the evaluation criteria for cleaning and shaping of a root canal system 		

		<ul style="list-style-type: none"> - Analyze the common errors and mishaps that occur during preparation of a root canal and explain how to minimize them - Summarize the principles for using rotary nickel-titanium (NiTi) instruments - Compare the non-traditional methods used for preparation of a root canal - Perform mechanical debridement for different types of canal using stainless steel hand files - Describe the action and use of engine-driven and rotary instruments - Differentiate between hand and rotary techniques - List the methods for measuring working length - Describe the techniques used for standardized and flaring preparations. - Summarize the importance of irrigation in endodontics - Outline the ideal characteristics of endodontic irrigants - Compare and contrast the different types of irrigants available and their properties - Describe the methods used for irrigation - Justify removal of the smear layer - Differentiate between the different types of root canal medication and their properties 	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
		<p>10.4 Obturation</p> <ul style="list-style-type: none"> - Describe the significance of homogeneity of obturation - Recognize the apical position of the obturation material - Appreciate the importance of apical and coronal seals - Identify the appropriate time for canal obturation - Define and differentiate between lateral and vertical compactions - Compare the indications for each obturation technique 	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

		<ul style="list-style-type: none"> - Describe the steps and tests for master cone fitting - Critique the cold lateral condensation technique - Identify the significance of depth of spreader penetration during condensation - Discuss the importance of removing excess sealer and obturating material from the pulp chamber - Describe and appraise the clinical and radiographic criteria for evaluating the quality of obturation - Obturate the canal with gutta percha to achieve an apical seal using different systems/methods 		
		<p>10.5 Microbiology and treatment of endodontic infection</p> <ul style="list-style-type: none"> - Classify microorganisms - Define anachoresis - Investigate the biology of microorganisms in the root canal - Identify the redox potential - Differentiate between synergistic and antagonistic bacterial interaction - Explain the host-parasite interaction - Enumerate the characteristics of endodontic pathogens - Compare the methods available for controlling microbes in endodontics - Discuss the presence and absence of bacteria in the periradicular area 	☑	✓
		<p>10.6 Tooth resorption and vital pulp therapy</p> <ul style="list-style-type: none"> - Recognize the homeostasis phenomenon of pulp and the periodontal ligament preventing attack by osteoclasts - Describe the physiology of osteoclasts, their action, and the implications in endodontics - Identify the mechanism for deconstruction of hard tissue - Recognize the osteoclast as a member of the repair team after injury and the endodontic implications 	☑	✓

		<ul style="list-style-type: none"> - Recognize the role of the osteoclast in defense against microbial invasion and the endodontic implications - Understand how to eliminate the bacteria responsible for infection-related resorption - Classify and compare types of root resorption according to clinical and radiographic findings, differential diagnosis, endodontic implications, and treatment - Describe the functions of the vital dental pulp - Recognize formation of reparative dentin - Classify techniques for generating reparative dentin - Describe direct pulp capping - Describe indirect pulp capping - Differentiate between pulpotomy and partial pulpotomy - List indications for vital pulp therapy - Compare vital pulp therapy materials. - Describe treatment recommendations for direct pulp capping - Perform one-step pulp capping - Knowledge of types of final restoration after pulp capping procedures - Select a postoperative follow-up regimen 		
		<p>10.7 Endodontic and periodontal interrelationships</p> <ul style="list-style-type: none"> - Recognize the intercommunication between pulpal and periodontal tissue - Explain the effect of a pathologic pulpal condition on the periodontium - Appraise the influence of periodontal inflammation on pulp - List the theoretical pathways for formation of an osseous lesion - State the differential diagnosis of endodontic-periodontic lesions 	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

		<ul style="list-style-type: none"> - Appraise treatment alternatives for endodontic-periodontic lesions - Identify the causes of endodontic-periodontic, periodontic-endodontic, and mixed lesions clinically 		
		<p>Module 11: Management of dental trauma</p> <p>11.1 Trauma injury of mature and immature teeth</p> <ul style="list-style-type: none"> - List the etiology of trauma and differentiate between accidental injury and non-accidental injury - List the unique aspects of dental trauma - List the appropriate information needed when examining patients with dental injuries - Define enamel fractures, crown fracture without pulp exposure, crown fracture with pulp exposure, crown root fracture, root fracture, concussion, subluxation, luxation, lateral luxation, extrusion, intrusion, and avulsion - Describe the details of radiographic examination when assessing patients with dental injuries - List the limitations of a standard dental radiograph - Recognize the primary aim of treatment in a patient with a crown fracture - Describe the various treatment options for complicated crown fracture - Describe treatment in a case of root fracture - Recognize obliteration of pulp space and design a treatment plan - Diagnose various types of root resorption (surface, inflammatory, replacement) and describe the treatment strategies - Describe the reasons for internal root resorption and a treatment plan - Identify the various treatment plans for an avulsed tooth and differentiate between less and more than 60 minutes with regard to surface treatment 	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

		<ul style="list-style-type: none"> – Master management of different types of dental trauma 		
		<p>Module 12: Prosthodontics</p> <p>This module imparts essential clinical knowledge and skills. It emphasizes the practical aspects of fixed prosthodontics starting with the treatment plan, tooth preparation, provisionalization, impression techniques, cementation, and management of complications.</p>		
		<p>12.1 Treatment planning for single and multiple missing teeth</p> <ul style="list-style-type: none"> – Discuss the strategies for the selection of type of prosthesis – Evaluate the abutment area – Assess the supporting tissues surrounding the abutment teeth – Discuss biomechanical considerations – Explain the solutions for the most common problems in treatment planning – List the types of connectors – Recognize fixed partial denture (FPD) configurations – Discuss the options for replacing single missing teeth in the anterior or posterior area – Discuss the options for replacing multiple missing teeth in the anterior or posterior area – Select and write the most appropriate treatment plan for replacing missing teeth 	☑	✓
		<p>12.2 Resin-bonded FPD</p> <ul style="list-style-type: none"> – List the advantages and disadvantages of resin-bonded FPD – List the indications and contraindications for resin-bonded FPD – Discuss the technique for preparation of abutment teeth for resin-bonded FPD – List the types of resin-bonded FPD – Describe the cementation method for resin-bonded FPD – Explain postoperative care after cementation 	☑	✓

		<p>12.3 Cantilever FPD</p> <ul style="list-style-type: none"> - List the advantages and disadvantages of cantilever FPD - List the indications and contraindications for cantilever FPD - State the factors that can influence the success of cantilever FPD - Review recent studies demonstrating the success of cantilever FPD 	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
		<p>12.4 Pier abutment</p> <ul style="list-style-type: none"> - Explain the concept of pier abutment - List the indications and contraindications for non-rigid connectors - Explain the role of a non-rigid connector in pier abutment - List the components of a non-rigid connector - Identify the location of the keyway on a non-rigid connector 	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
		<p>12.5 Prosthetic treatment of dentition with periodontal disease</p> <ul style="list-style-type: none"> - Discuss modifications of tooth preparation for periodontally weakened teeth with regard to type and location of the finish line for anterior and posterior teeth - Discuss the factors affecting the likelihood of success or failure of prosthetic treatment for teeth with root resection - Compare recent and older studies with regard to the prognosis of prosthetic therapy for periodontally weakened teeth - Prepare periodontally weakened teeth 	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
		<p>12.6 Principles of tooth preparation</p> <ul style="list-style-type: none"> - Discuss the biological considerations of oral tissues and tooth structure - Explain the concept of marginal integrity - Discuss preservation of the periodontium - Explain the types of margin placement and margin designs 	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

		<ul style="list-style-type: none"> - Discuss the esthetic considerations with regard to the patient's appearance - Discuss the mechanical considerations with regard to integrity and durability of the restoration - Recognize factors affecting the retention and resistance of a cemented restoration - List the types of bur used for prosthodontic preparation - Prepare a tooth according to tooth preparation principles 		
		<p>12.7 Fluid control, soft tissue management, and impression techniques</p> <ul style="list-style-type: none"> - Be aware of the methods used for fluid control - Discuss the mechanical, chemomechanical, and electrosurgical methods used for soft tissue management - List the types of retraction cord available - Explain the technique used for application of retraction cords - Discuss different types of impression techniques - Make upper and lower impressions using different impression materials - Use the different methods for clinical soft tissue management when indicated 	☑	✓
		<p>12.8 Pontics and the edentulous ridge</p> <ul style="list-style-type: none"> - Evaluate residual ridge contour - Describe and recognize the Siebert classification for residual ridge deformities - List the different classifications of pontic design and their advantages and disadvantages - Discuss the indications and contraindications for various pontic designs - Outline the procedure for pretreatment assessment of pontic space 	☑	✓

		<ul style="list-style-type: none"> - Discuss the biological, mechanical, and esthetic considerations for successful pontic design 		
		<p>12.9 Preparation methods for severely debilitated teeth</p> <ul style="list-style-type: none"> - List the principles for preparation of substitutions for severely debilitated (destroyed) teeth - Explain the orthodontic adjuncts available for restoring damaged teeth - Describe the characteristics of endodontically treated teeth - Discuss the restoration of endodontically treated teeth (rationale for restoring these teeth and factors influencing choice of treatment) - Discuss the treatment plan for anterior and posterior endodontically treated teeth - Restore severely damaged teeth using different methods 	☑	✓
		<p>12.10 Types of post and core</p> <ul style="list-style-type: none"> - Explain the meaning of post and core - List the types of post and core according to their use, material composition, and technique - State the indications, contraindications, advantages, and disadvantages of each type - Describe the techniques used for fabrication, try-in, and cementation - Select and fabricate the appropriate type of post and core according to the indication 	☑	✓
		<p>12.11 Provisional restoration</p> <ul style="list-style-type: none"> - Define provisional restoration and the relevant criteria - List the types and characteristics of the ideal provisional restoration - List the types and techniques of construction and cementation - Explain the effect of different provisional materials on gingival health 	☑	✓

		<ul style="list-style-type: none"> - Discuss critical areas in provisional restorations that maintain the health and position of the gingiva (marginal fit, contour, surface finish) - Select, construct, and cement the different provisional restorations 		
		<p>12.12 Diagnostic wax-up</p> <ul style="list-style-type: none"> - State the purpose and value of dental wax-up - Describe the steps in diagnostic wax-up - Explain the importance of wax-up in esthetic analysis - Use diagnostic wax-up in treatment planning 	☑	✓
		<p>12.13 Try in, adjustment, polishing, and cementation technique</p> <ul style="list-style-type: none"> - Describe the sequence of metal and porcelain try-in - State the types of material used in try-in - Explain the technique and kit use in adjustment of the prosthesis - List the types of finishing kits and how they are used - Describe the cementation technique using different types of ceramics - Apply the steps of try-in, adjustment, polishing, and cementation clinically - List the advantages and disadvantages of each type of ceramic restoration - Mention the indications and contraindications for each type - Describe the criteria for preparation and type of cementation - Select a type of ceramic restoration and adapt the ceramic preparation principles clinically 	☑	✓
		<p>12.14 Causes and management of failed crowns and fixed partial dentures</p> <ul style="list-style-type: none"> - State the causes of failure of a fixed prosthesis - Classify the types of fixed prosthesis failure as biological, mechanical, and esthetic - Discuss the causes, prevention, and management of biological failures 	☑	✓

		<ul style="list-style-type: none"> - Discuss the causes, prevention, and management of mechanical failures - Discuss the causes, prevention, and management of esthetic failures: <ul style="list-style-type: none"> • at the time of cementation • in the event of delayed esthetic failure - Outline the common failures associated with ceramic metal crowns/bridges and their prevention and management - List the common failures related to impression materials and technique used and explain their causes and treatment - List the common failures related to stone model discrepancies and explain their causes and treatment - Explain the common failures associated with pontic selection and how to avoid them - Explain the causes of retentive failures and their prevention - Explain the causes of connector failure - Explain in detail how to avoid failures - Describe the steps in postoperative recall and maintenance - Estimate the consequences of an incorrect contact area, an overextended crown, a short crown, and incorrect contour - Identify factors effecting longevity of the crown - Describe the methods used for removal of a failing fixed prosthesis - Compare failures associated with single crowns, FPD, and all ceramic, resin-bonded, and post and core prostheses - Diagnose and remove a failed prosthesis 		
		<p>12.15 Success and complications of ceramic prostheses</p> <ul style="list-style-type: none"> - Present the clinical studies and failure percentages for various types of cracks in a ceramic prosthesis - Classify ceramic failures and discuss each type 	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

		<p>Module 13: Temporomandibular dysfunction and occlusion</p> <p>This module provides an understanding of the different concepts about occlusion and the principles thereof, including mandibular movement, angles, occlusal plane, and vertical dimension of occlusion. It also highlights the factors affecting the stability of occlusion and their role in successful treatment in the long term and provides an understanding of the function of the TMJ and the associated muscles and teeth, and how they work in harmony. Furthermore, it trains residents how to make jaw relation records for different restorative cases, starting from simple restorations to full mouth rehabilitation, and how to diagnose and manage the different occlusal problems that arise.</p>		
		<p>13.1 Anatomy of the stomatognathic system</p> <ul style="list-style-type: none"> - Define the stomatognathic system - List the structures of the stomatognathic system - Recognize the functions of the stomatognathic system - Discuss the following functional abnormalities of the stomatognathic system: <ul style="list-style-type: none"> • mouth breathing • thumb sucking, lip biting, finger biting, tongue thrust • abnormal development: macroglossia, short upper lip - Explain the temporomandibular articulation 	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
		<p>13.2 Temporomandibular joint dysfunction</p> <ul style="list-style-type: none"> - Discuss the function of the TMJ - Define disorders of the TMJ - Explain causes of TMJ dysfunction - List signs and symptoms of TMJ dysfunction - Discuss referral patterns for pain - Perform a clinical examination for TMJ dysfunction - Interpret evaluations of jaw function - Diagnose TMJ dysfunction 	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

		<ul style="list-style-type: none"> - Describe a plan for management of TMJ dysfunction - Describe the impact of psychosocial issues on a patient with persistent TMJ dysfunction - Provide behavioral advice for management of TMJ dysfunction - Construct appropriate occlusal appliances for the diagnosis and treatment of TMJ dysfunction - Communicate and work with colleagues on the multidisciplinary management of TMJ dysfunction - Monitor and evaluate the effectiveness of treatment regimes 		
		<p>13.3 Alignment and occlusion of dentation</p> <ul style="list-style-type: none"> - Identify the factors and forces determining tooth position - Describe intra-arch and inter-arch tooth alignment - Outline the buccolingual and mesiodistal occlusal contact relationships - Classify the common occlusal relationships of the posterior and anterior teeth - Identify occlusal contact during protrusive, iatrogenic protrusive, and retrusive mandibular movement 	☑	✓
		<p>13.4 Fundamentals of occlusion</p> <ul style="list-style-type: none"> - Define centric relation - Explain maximum intercuspation occlusion - Explain the different types of mandibular movement - Explain the Bennett movement angle - List the determinants of occlusion - Explain incisal guidance (vertical and horizontal overlap of anterior teeth) - Define occlusal plane, the curve of Spee, and the curve of Wilson - Discuss the causes and management of bruxism and clenching 	☑	✓

		<ul style="list-style-type: none"> - Recognize the categories of occlusion: bilaterally balanced, unilaterally balanced, and mutually protected articulation - Explain the types of occlusal interference 		
		<p>13.5 Trauma as a result of occlusion</p> <ul style="list-style-type: none"> - Define occlusal trauma - Classify occlusal trauma - Diagnose occlusal trauma 	☑	✓
		<p>13.6 Bruxism</p> <ul style="list-style-type: none"> - Differentiate between functional and parafunctional mandibular movements - Compare centric bruxism (clenching) and eccentric bruxism - Outline the types and etiologies of bruxism - Describe the treatment methods used for bruxism - Verify the consequences of excessive bruxism - Manage bruxism problems using appropriate methods 	☑	✓
		<p>13.7 Etiology and management of dental wear</p> <ul style="list-style-type: none"> - Explain the meaning and types of dental wear - Become familiar with the wear index classification - Classify worn dentition according to location - Verify the effect of wear on occlusion - Discuss the diagnosis, prevention, and management of dental wear problems - State the types of severe wear occlusion - Generate a treatment plan for severe wear occlusion 	☑	☑
		<p>13.8 Overview of full mouth rehabilitation</p> <ul style="list-style-type: none"> - Define full mouth rehabilitation and determine its indications - Discuss the various occlusal concepts and philosophies pertaining to full mouth rehabilitation 	☑	☑

		<ul style="list-style-type: none"> – Describe the steps involved in the process of full mouth rehabilitation – Apply the steps of full mouth rehabilitation to clinical cases 		
		<p>Module 14: Dental implants</p> <p>This module provides basic knowledge of dental implants and the skills necessary for diagnosis and planning treatment. Residents discuss the rationale for dental implants and the principle of osseointegration as well as the prosthetic components of implants, including types of dental implant and the concepts of biomechanics, occlusion of implant restoration, and an implant in the esthetic zone. Finally, the resident will gain experience in maintenance of a dental implant.</p>	☑	✓
		<p>14.1 Historical overview of dental implantology, types of dental implant, and the concept of osseointegration</p> <ul style="list-style-type: none"> – Outline the history of implants and Dr. Branemark’s discovery of osseointegration – Discuss the scientific basis for osseointegration – Describe the types of bone and bone reaction – Differentiate between healing related to cortical bone and cancellous bone at the cell level – Identify the stages leading to integration – Explain the biology of bony adaptation at the implant surface 	☑	✓
		<p>14.2 Biomechanics, biomaterials, and surface treatment of dental implants</p> <ul style="list-style-type: none"> – Discuss the biomechanical principles of implants – Recognize the need for the control of biomechanical loading on dental implants (moments, stress, and strain) – Identify forces and their components (moments, force transfer mechanisms, impact, and stress-strain relationships) and their influence on clinical decision-making and the treatment plan 	☑	✓

		<ul style="list-style-type: none"> - Explain the scientific rationale for the design of dental implants - List the different types of surface coating - Apply biomechanical principles in a treatment plan 		
		<p>14.3 Occlusion of implant restoration</p> <ul style="list-style-type: none"> - Differentiate between implant occlusion and natural occlusion - Discuss the basics and consequences of biomechanical overload, bone mechanics, force directions, and various occlusal schemes that contribute to the success of implant restorations - Explain the importance of controlling the position, angulation, and occlusal force on the implant 	☑	✓
		<p>14.4 Patient selection for an implant and planning treatment</p> <ul style="list-style-type: none"> - Review medical and dental history - Recognize local, systemic, and behavioral risk factors - State the steps in clinical and radiographic examination - Explain the surgical and radiographic methods used to insert stents - Develop and apply treatment strategies 	☑	✓
		<p>14.5 Evaluation of radiographic images in patients considering an implant</p> <ul style="list-style-type: none"> - List the necessary radiographic information needed - Describe the types of radiographic images needed to obtain the information required for implant planning - Describe the importance and sequence of radiographic monitoring for implant therapy - Define image-guided surgery - Interpret different radiographic images for single or multiple implants - Identify the anatomic landmarks used to select the correct position for the implant 	☑	✓

	<p>14.6 Treatment planning for single-tooth implant restoration</p> <ul style="list-style-type: none"> - Outline the alternative treatments available for single-tooth replacement - Discuss the contraindications and limitations of a single-tooth implant - Explain the orthodontic and occlusal considerations related to posterior implant treatment 	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	<p>14.7 Implant in the esthetic zone</p> <ul style="list-style-type: none"> - Explain the general esthetic principles and related guidelines - Discuss esthetic considerations related to maxillary anterior implant restoration - Recognize the role of the biological width on esthetic implant rehabilitation - Analyze the clinical considerations that must be addressed when placing an implant in the esthetic zone 	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	<p>14.8 Screw-retained versus cement-retained implant restoration</p> <ul style="list-style-type: none"> - State the indications for screw-retained prosthetic restoration - State the indications for cement-retained prosthetic restoration - Explain the advantages and disadvantages of screw-retained and cement-retained prosthetic restoration - Select and utilize screw-retained implant restoration - Select and utilize cemented-retained implant restoration 	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	<p>14.9 Surgical aspects of implant dentistry</p> <ul style="list-style-type: none"> - Describe the first surgical procedure - Describe the second surgical procedure - Explain the postoperative management - List the complications that can occur after this surgery 	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	<p>14.10 Prosthetic aspects</p> <ul style="list-style-type: none"> - Explain the steps involved in a fixed implant prosthesis for single-tooth replacement: 	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

		<ul style="list-style-type: none"> • in the esthetic zone • for posterior teeth <ul style="list-style-type: none"> – Explain the steps involved in a fixed implant prosthesis for partially edentulous situations – Differentiate between prefabricated and customized healing abutments for soft tissue management – State the different types or options for screw-retained and cemented-retained abutments – Discuss the types of implant temporization and techniques used – Compare the different options for making an impression (closed versus open tray technique, and abutment versus fixture level impressions) – Describe the procedures for bite registration, abutment selection (plan sit), torquing, and insertion – Develop a treatment plan for complex implant cases – Describe the process of full mouth rehabilitation using dental implants – Discuss the use of implants for growing patients – Make a final impression with closed try (at the abutment and fixture level) – Make a final impression with open try at the fixture level 		
		<p>14.11 Immediate dental implant loading</p> <ul style="list-style-type: none"> – State the rationale for immediate implant loading – List the guidelines for immediate loading – Identify factors that decrease the risk of immediate occlusal loading – Explain the advantages and disadvantages of non-functional immediate loading – Justify the risk of immediate occlusal loading 	☑	☑
		<p>14.12 Implant-natural tooth connection</p> <ul style="list-style-type: none"> – Evaluate the natural abutment appropriately 	☑	☑

		<ul style="list-style-type: none"> - Distinguish biomechanical differences in movement between an implant and a natural tooth - Recognize the difference in supporting mechanisms - State the advantages and disadvantages of connecting a natural tooth to an implant - Justify the potential risk of connecting a natural tooth to an implant - Describe the connection method 		
		<p>14.13 Complications and management of a prosthetic implant</p> <ul style="list-style-type: none"> - Discuss the biological complications, i.e., incidence rate, etiology, and solutions - Discuss the mechanical complications, i.e., incidence rate, etiology, and solutions - Discuss the esthetic complications, i.e., incidence rate, etiology, and solutions - Estimate and recognize complications of a prosthetic implant in a case 	☑	☑
		<p>14.14 Treatment planning for an implant-supported FPD</p> <ul style="list-style-type: none"> - Discuss the prosthetic options - Classify the types of prosthetic movement - State the advantages of an implant-supported FPD - Describe preloading and the parameters affecting preloading - Identify a passive casting material and factors influencing fabrication 	☑	☑
		<p>14.15 Maintenance of a dental implant</p> <ul style="list-style-type: none"> - Recognize the periodontal aspects of a dental implant - Define peri-implantitis - Discuss the consequences of peri-implantitis - Explain the hygiene protocol and instrumentation - List the chemotherapeutic agents used - Define the Implant Crown Aesthetic Index 	☑	✓

		<ul style="list-style-type: none"> - Examine implant cases and identify any complications - Manage complications in implant cases 		
		<p>Module 15: Restorative and esthetic dentistry</p> <p>This module provides essential clinical skills related to practical aspects of tooth preparation and selection of appropriate restoration methods. Residents discuss common restorative problems and review their causes and solutions with reference to scientific articles.</p>		
		<p>15.1 Instruments and equipment used for tooth preparation</p> <ul style="list-style-type: none"> - Recognize the different types of instruments used in the operative field, including construction materials, parts, grasp technique, and instrument motion - Justify the use of different types of instruments according to the clinical situation 	☑	✓
		<p>15.2 Amalgam restoration</p> <ul style="list-style-type: none"> - Identify the indications for dental amalgam - Correlate types of amalgam with their properties and indications - Indicate the criteria for successful amalgam restoration - Restore posterior teeth using amalgam restoration - Finish and polish an amalgam restoration to create appropriate anatomy and occlusion 	☑	✓
		<p>15.3 Fundamental concepts of enamel and dentin adhesion</p> <ul style="list-style-type: none"> - Compare the different types of adhesive available - Select the correct type of adhesive system to be used in a specific clinical situation - Recognize the durability of bonding adhesives according to different manipulative techniques - Apply dental adhesive for composite restoration following the standard protocol 	☑	✓

		<p>15.4 Composite restoration</p> <ul style="list-style-type: none"> - Explain the indications and contraindications of composite restoration - Correlate the material properties with indications and contraindications - Explain the conservative design for cavity preparation for anterior and posterior composite restoration - Discuss manipulation of layering techniques for anterior composite restorations - Describe finishing and polishing techniques - Restore anterior and posterior teeth with composite restorations - Finish and polish a composite restoration using different tools 	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
		<p>15.5 Glass ionomers</p> <ul style="list-style-type: none"> - Explain the indications and contraindications of glass ionomers - Discuss the steps in manipulation of glass ionomer restoration - Appraise the importance of water content in a glass ionomer and the effect of contamination by moisture - Restore teeth using a glass ionomer restoration technique 	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
		<p>15.6 Common restorative problems: restoration failures and repair</p> <ul style="list-style-type: none"> - Discuss reasons for failure of the different types of dental restoration - Explain the criteria for successful restoration - Justify appropriate management for each type of failure - Appraise the clinical criteria for evaluation of restoration - Frame precise, structured, and meaningful clinical questions and identify and apply the best available evidence to answer these questions - Manage a failed restoration 	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
		<p>15.7 Controversial issues in operative dentistry</p> <ul style="list-style-type: none"> - Identify and analyze controversial issues in operative dentistry 	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

		<ul style="list-style-type: none"> - Identify the best available evidence for answering clinical questions in operative dentistry 		
		<p>15.8 Properties of light and color in dentistry</p> <ul style="list-style-type: none"> - Discuss the components of daylight with different wavelengths - List different light sources (illumination) - Define emission, transmission, and absorption of light - Discuss primary, secondary, and complementary colors - Discuss the dimensions of color with reference to hue, value, and chroma - Discuss the optical triad of fluorescence, opalescence, and translucency - Discuss the factors affecting shade matching - List the recommended protocol for shade matching - Apply the principles of light and color in clinical cases - Select the tooth shade using different shade guide systems 	☑	✓
		<p>15.9 Indirect tooth-colored restorations</p> <ul style="list-style-type: none"> - Differentiate between composite and indirect ceramic restorations - Appraise different materials used for indirect tooth-colored restorations - Justify the use of different techniques according to the clinical situation - Master indirect tooth-colored restoration techniques 	☑	✓
		<p>15.10 Conservative treatment for discolored teeth</p> <ul style="list-style-type: none"> - Recognize the types and characteristics of tooth discoloration with reference to etiology - Describe the strategies applied in the management of discolored teeth (bleaching, microabrasion, macroabrasion). - Distinguish the types, composition, and mode of action of tooth-bleaching agents and techniques 	☑	✓

		<ul style="list-style-type: none"> - Identify the effects of bleaching on restorative agents - List the alternative therapies available for tooth bleaching - Master the different techniques used to treat discolored teeth - Recognize the potential adverse effects of internal bleaching and discuss means of prevention - Describe how a bleaching agent can alter dentin - Practice home and office bleaching in indicated cases 		
		<p>15.11 Esthetic considerations in diagnosis and treatment planning</p> <ul style="list-style-type: none"> - Differentiate between esthetic and cosmetic considerations and recognize how to achieve high esthetic quality - List esthetic dental problems - Differentiate the etiology as well as diagnostic and treatment modalities for all diseases and lesions that may affect the best esthetic outcome - Perform a facial and smile analysis - Identify the esthetic treatment modalities available for different esthetic and dental problems - Interpret all treatment modalities for esthetic defects - Recognize the indications, contraindications, advantages, and disadvantages of different types of direct and indirect esthetic veneer - Prepare indicated teeth for composite and porcelain veneers - Build up a composite veneer on indicated teeth - Cement porcelain veneers using different types of resin cement 	☑	✓
		<p>Module 16: Digital dentistry (CAD/CAM) This module provides the residents with the knowledge and understanding of CAD/CAM technology (computer-aided design, computer-aided manufacturing) to improve their ability to design and create dental restorations, including crowns, inlays,</p>	☑	✓

		<p>onlays, veneers, and other prostheses It also provides training in chairside CAD/CAM allowing residents to fabricate durable high-quality restorations in a short time.</p> <ul style="list-style-type: none"> - Define CAD/CAM restorations as they relate to dentistry and discuss their importance - Understand the fundamentals of computer-aided design and manufacturing - List the different systems available on the market - List the indications for CAD/CAM technology - Describe the longevity of modern ceramic restorations with reference to the literature. - Fabricate a step-by-step scan, design, and mill restoration using CAD/CAM at the chairside - List the advantages and disadvantages of CAD/CAM restorations over conventional restorations. - Discuss the different digital ceramic materials available on the market and their indications and quality for anterior and posterior restorations - List the materials and techniques used for cementing CAD/CAM restorations 		
		<p>Module 17: Periodontal-restorative interrelationship</p> <p>This module provides a basic knowledge of the relationship between periodontal tissues and types of restorative procedures that will have an impact on the long-term success of a restoration.</p>		
		<p>17.1 Introduction to periodontics</p> <ul style="list-style-type: none"> - Identify components of the periodontal apparatus - Describe the different periodontal biotypes - Explain the anatomic, restorative, orthodontic, and habitual factors that contribute to periodontal disease - Estimate the periodontal prognosis and impact thereon of individual risk factors 		

		<ul style="list-style-type: none"> - Discuss the impact of individual systemic and local risk factors on the periodontal prognosis - Understand mucogingival therapy and periodontal plastic surgery - Define gingival recession and state its etiology - Classify gingival recession - List the indications and contraindications for surgical treatment of gingival recession - Distinguish the various soft tissue grafting techniques - Recognize the relationship between soft tissue recession and orthodontics - Classify ridge defects and explain gingival augmentation - Define biological width - Correlate gingival dimensions (biologic width) with restorative therapy Discuss crown lengthening in regard to its classification, indications, contraindications, and pre-surgical preparation and documentation. - Identify guided tissue regeneration - Define essential terminology (osseinduction/osseoconduction) - List main bone grafting materials and membranes 	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
		<p>17.2 Factors affecting gingival esthetics</p> <ul style="list-style-type: none"> - Identify the supracrestal connective tissue, junctional epithelium, and sulcus - List the anatomic components of the gingiva - Describe the osseous crest and explain its importance - Explain the role of the gingiva - Identify the periodontal biotype and bioform, including types and significance - Describe the gingival margin outline in smile analysis - Explain the meaning of emergence profile and its significance in gingival esthetics and health 	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

		<ul style="list-style-type: none"> - Explain the effect of tooth morphology on two aspects of gingival undulation - Clarify the impact of contact points on esthetics, explaining the following concepts: <ul style="list-style-type: none"> • 5 mm rule – Tarnow • Tooth shape and association with black triangles • Changes in interdental papilla (IDP) following extraction • Diastema and IDP • Gingiva biotype and IDP • Implant and IDP • Flat fixture platform versus scalloped fixture platform - Correlate tooth position and gingival progression in three planes - Define the gingival aesthetic line and gingival aesthetic angle - List the four classes of gingival aesthetic line - Differentiate between an ideal, aesthetically acceptable, and gummy smile - Identify the different esthetic treatment modalities: <ul style="list-style-type: none"> • Gingivectomy • Crown lengthening • Cosmetic periodontal surgery • Grafts • Guided tissue regeneration • Orthodontic excursion/intrusion • Ridge augmentation • Orthognathic surgery - Discuss the different types of esthetic periodontal defects and the methods used for correction: <ul style="list-style-type: none"> • Violation of biological width • Gingival asymmetry • Esthetic/functional crown lengthening • Excessive gingival display • Excessive gingival pigmentation; gingival abrasion technique 		
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	<p>17.3 Effect of restorative treatment on gingival health</p> <p>Biologic width</p> <ul style="list-style-type: none"> - Explain the biologic width assessment method - Justify variation in biologic width - Ramifications of biologic width violation - Recognize the signs of biologic width violation - Describe the procedures used to correct biologic width violation (surgical and orthodontic) 	<input type="checkbox"/> <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> <input type="checkbox"/>
	<p>17.4 Margin placement</p> <ul style="list-style-type: none"> - List the types: supragingival, equigingival, subgingival - State the reasons for extending margins subgingivally - Explain the consequences of extending margins subgingivally - Discuss the margin placement guideline - Identify the different tissue retraction techniques 	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	<p>17.5 Provisional restoration</p> <ul style="list-style-type: none"> - Explain the effect of different provisional materials on gingival health - Discuss critical areas in provisional restoration that maintain the health and position of the gingiva (marginal fit, contour, surface finish) - Know the consequences of faulty provisional restorations 	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	<p>17.6 Marginal fit and crown contour</p> <ul style="list-style-type: none"> - Describe the role of margin fit and open margins as causative factors in the inflammatory response of the gingiva - Explain the effect of crown contour, including emergence profile, height of contour, embrasures, and overhang on gingival health 	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

		<p>17.7 Subgingival debris and hypersensitivity</p> <ul style="list-style-type: none"> - Illustrate the effect of subgingival debris following restorative procedures on the periodontal ligament - Discuss the hypersensitivity of the gingiva to the following dental materials: <ul style="list-style-type: none"> • Non-precious alloys • Class II amalgam restorations • Composite • Glass ionomer cement • Porcelain - Identify recession factors: Bone width (thick/thin) - Gingiva (thin or fibrotic, flat, or scalloped) 	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
		<p>17.8 Interproximal embrasures</p> <ul style="list-style-type: none"> - Explain how to manage interproximal embrasures (natural tooth and implant) - Clarify the relationship between gingival embrasure volume and papillary formation - State the causes of open gingival embrasures - Describe the methods used to alter gingival embrasures - Manage the form of gingival embrasure for patients with gingival recession - Explain the restorative correction techniques used for open gingival embrasures 	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
		<p>17.9 Restoration of root-resected teeth</p> <ul style="list-style-type: none"> - Identify the indications, contraindications, and advantages of restoration of resected teeth - Describe a special prosthetic design for resected teeth 	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
		<p>Module 18: Pediatric dentistry</p> <p>This module provide the clinical knowledge and skills necessary in pediatric dentistry. It emphasizes the practical aspects of tooth preparation and selection of appropriate restoration methods.</p>		

		<ul style="list-style-type: none"> - Diagnose and treat occlusal problems in the primary, mixed, and young permanent dentition - Understand the growth and development of the stomatognathic system and an ability to provide treatment aimed at allowing optimal development of this system - Explain the methods of pain control for pediatric patients, including local anesthesia techniques - Explain fluoride therapy in the management of dental caries in children - Describe pulp therapy for primary and young permanent teeth - Diagnose and manage traumatic injuries in infants and children 	☑	✓
		<p>Module 19: Orthodontics</p> <p>This module provides essential clinical knowledge and skills in the field of orthodontic dentistry.</p> <ul style="list-style-type: none"> - Understand the concept of growth and development - Explain space analysis for permanent and mixed dentition - Diagnose orthodontic dental malocclusion and skeletal discrepancies - Recognize potential complications and the need to refer to an orthodontic specialist when appropriate 	☑	✓
2	Perform a complete and appropriate patient assessment	<p>2.1 Prioritize issues to be addressed in a patient encounter, including the patient's preferences</p>	☑	✓
		<p>2.2 Elicit a history, perform a dental examination, select appropriate investigations, and interpret their results for the purpose of diagnosis and management, disease prevention, and health promotion</p>	✓	✓
		<p>2.3 Select dentally appropriate investigative methods in a resource-effective and ethical manner</p>	☑	✓
		<p>2.4 Demonstrate effective clinical problem-solving and judgment to address patients' problems, including interpreting the available data and integrating information to generate a differential diagnosis and management plan</p>	✓	✓

3	Effective use of preventative and therapeutic interventions	3.1 Implement an effective management plan in collaboration with the patient and family	☑	✓
		3.2 Demonstrate effective, appropriate, and timely application of preventive and therapeutic interventions relevant to dental practice		
		3.3 Obtain and document informed consent, explaining the risks and benefits of and the rationale for a proposed procedure or therapy	✓	✓
		3.4 Prioritize a procedure or therapy according to clinical urgency and available resources	✓	✓
		3.5 Perform a procedure in a skilled and safe manner ensuring that the patient receives appropriate pain management and adapt to unanticipated findings or changing clinical circumstances	☑	✓
4	Demonstrate proficiency in use of appropriate diagnostic and therapeutic skills	4.1 Demonstrate effective, appropriate, and timely performance of diagnostic procedures relevant to clinical practice	✓	✓
		4.2 Demonstrate effective, appropriate, and timely performance of therapeutic procedures relevant to clinical practice	✓	✓
		4.3 Ensure appropriate informed consent is obtained for dental treatment	✓	✓
		4.4 Appropriately document and disseminate information related to procedures performed and their outcomes.	✓	✓
		4.5 Ensure adequate follow-up for comprehensive care	✓	✓
5	Establish plans for ongoing care and timely follow-up	5.1 Implement a patient-centered care plan that supports ongoing care, follow-up investigations, and response to treatment	✓	✓
		5.2 Demonstrate effective, appropriate, and timely consultation with other health professionals as needed for optimal patient care	✓	✓

COMPETENCIES AND OUTCOMES

6	Actively contribute as an individual and as a member of a team providing care to the continuous improvement of quality of health care and patient safety	6.1 Recognize and respond to harms from health care delivery, including patient safety incidents	✓	✓
		17.10 Adopt strategies that promote patient safety and address human and systems factors	✓	✓

(S) Clinical skills: ✓ Practicing skill independently; Practicing skill under supervision;
 ■ Skill is not yet acquired

COMMUNICATOR

Definition

As communicators, SBFD residents learn to facilitate the dentist-patient relationship and their families and the dynamic exchanges that occur before, during, and after the dental visit.

	Key competencies Residents are able to:	Enabling competencies Residents are able to:	Junior (R1 and R2)	Senior (R3)
1	Establish professional therapeutic relationships with patients and their families	1.1. Recognize that being a good communicator is a core clinical skill for dentists, and that effective dentist-patient communication can foster satisfaction on the part of both patient and dentist, adherence to the treatment plan, and improved clinical outcomes	✓	✓
		1.2. Establish a positive therapeutic relationship with patients and families that is characterized by understanding, trust, respect, honesty, and empathy	✓	✓
		1.3. Respect patient confidentiality, privacy, and autonomy	✓	✓
		1.4. Listen effectively to patients to understand them better and improve the clinical relationship	✓	✓
		1.5. Be aware and responsive to patient's non-verbal behaviors to enhance communication and to understand and manage anxious and fearful dental patients	✓	✓
		1.6. Effectively facilitate a structured clinical encounter	✓	✓
		1.7. Optimize the physical environment for the patient's comfort, dignity, and privacy, in addition to applying all the safety standards needed	✓	✓
		1.8. Recognize the values and perspectives of patients, dentists, and other dental health care professionals that may have an impact on the quality of care and modify the approach to the patient accordingly	✓	✓
		1.9. Break bad news in an empathic manner	✓	✓

		1.10 Communicate using a patient-centered approach that encourages trust and autonomy and is characterized by empathy, respect, and compassion	✓	✓
		1.11 Apply psychologic and behavioral principles in patient-centered communication	✓	✓
		1.12 Take time to talk and listen to dental patients to understand them better and improve the clinical relationship	✓	✓
		1.13 Foster direct and close contact with patients that is characterized by honesty and empathy to create a therapeutic alliance based on trust and respect	✓	✓
		1.14 Optimize the physical environment for the patient's comfort, dignity, privacy, engagement, and safety.	✓	✓
		1.15 Show concern about patient privacy and comfort	✓	✓
		1.16 Apply all the safety standards needed	✓	✓
		1.17 Recognize when the values, biases, or perspectives of patients, dentists, or other dental health care professionals may have an impact on the quality of care and modify the approach to the patient accordingly.	✓	✓
		1.18 Recognize and respect the dental patient's need for privacy	✓	✓
		1.19 Manage disagreements and emotionally charged conversations	✓	✓
		1.20 Respect each patient's perspective, situation, concerns, and values and provide an alternative treatment plan if appropriate	✓	✓
		1.21 Adapt to the unique needs and preferences of each patient and their clinical condition and circumstances	✓	✓
2	Elicit and synthesize relevant information, incorporating the perspective of the patient and family, colleagues, and other professionals	2.1 Use patient-centered interviewing skills to gather information about a disease, and also about the patient's beliefs, concerns, expectations, and experience of illness	✓	✓
		2.2 Encourage the dental patient to take the lead in conversations, initiating topics concerning complaints, symptoms, worries, values, and preferences	✓	✓
			✓	✓

COMPETENCIES AND OUTCOMES

		2.3 Seek and synthesize relevant information from other sources, including the family (with the patient's consent).	✓	✓
		2.4 Collect the necessary relevant information from the family, previous dentists, or other dental specialists, the patient's physician (if related to a medical issue), and other professionals (with the patient's permission)	✓	✓
		2.5 Act professionally when screening for sensitive information	✓	✓
3	Convey dental health care information and plans to patients and families, colleague, and other professionals	3.1 Deliver information and explanations that are clear, accurate, and timely, while checking for patient and family understanding	✓	✓
		3.2 Use language that is easily understood and matches the patient's requirements and expectations	✓	✓
		3.3 Disclose harmful patient safety incidents to patients and their families accurately and appropriately.	✓	✓
4	Engage patients and families in developing plans that reflect the patient's dental health care needs and goals	4.1 Facilitate discussion with patients and their families in a way that is respectful, non-judgmental, and culturally safe	✓	✓
		4.2 Respect diversity and difference, including but not limited to the impact of gender, religion, and cultural beliefs on decision-making	✓	✓
		4.3 Assist patients and their families to identify, access, and make use of information and communication technologies to support their treatment plan, dental care, and manage their dental health	✓	✓
		4.4 Engage patients, their families, and relevant health care professionals in shared decision-making to develop a care plan	✓	✓
5	Document and share written and electronic information about the clinical encounter to optimize	5.1 Maintain clear, accurate, and appropriate records (written or electronic) of clinical encounters and plans	✓	✓
		5.2 Present verbal reports of clinical encounters and plans in an effective manner	✓	✓
		5.3 Communicate effectively using written and digital records	✓	✓

<p>clinical decision-making, patient safety, confidentiality, and privacy</p>	<p>5.4 Share information with the public or media about a dental issue in a manner that respects patient privacy and confidentiality</p>	<p>✓</p>	
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(S) Clinical skills; ✓ Practicing skill independently; ☑ Practicing skill under supervision; ■ Skill is not yet acquired

COLLABORATOR

Definition

As collaborators, SBFD residents work effectively with other dental health care professionals to provide safe, high-quality, patient-centered care.

	Key competencies Residents are able to:	Enabling competencies Residents are able to:	Junior (R1 and R2)	Senior (R3)
1	Work effectively and appropriately with dentists, physicians, and professional dental health care colleagues	1.1 Participate in intraprofessional (among dental colleagues) and interprofessional (among other dental and medical health care professionals) relationships and teamwork	✓	✓
		1.2 Work with other health care professionals and dental specialists to integrate care at the individual and community level.	✓	✓
		1.3 Recognize and respect differences in role, responsibilities, and competencies of other health care professionals	✓	✓
		1.4 Work with others by applying the principles of team dynamics to assess, plan, provide, and integrate care for individual patients or groups of patients	✓	✓
		1.5 Negotiate overlapping and shared responsibilities with dentists and other health care professionals during episodic and ongoing care	✓	✓
		1.6 Recognize one's own professional role and responsibilities and those of others, including dental assistants, laboratory technicians, radiologists, hygienists, and other dental and medical specialists		
		1.7 Engage in respectful shared decision-making with dentists and other colleagues in the dental health care professions	✓	✓

2	Work with dentists and other dental health care professionals to promote understanding, manage differences, and resolve conflict	2.1 Show respect toward colleagues and members of a multidisciplinary team	✓	✓
		2.2 Encourage the opinions and ideas of other interprofessional and intraprofessional dental health care team members	✓	✓
		2.3 Respect differences, misunderstandings, and limitations on the part of professional colleagues	✓	✓
		2.4 Value diversity among dental professionals		✓
		2.5 Use constructive negotiation to resolve conflict		✓
3	Handover of care to another dental health care professional when necessary to facilitate continuity of safe patient care	3.1 Determine when care should be transferred to another dentist or dental health care professional	✓	✓
		3.2 Recognize one's own limitations and know when to seek help	✓	✓
		3.3 Demonstrate handover of care, using both verbal and written communication, to another dental health care professional, setting, or stage of care	✓	✓
		3.4 Write appropriate referral and consultation request forms	✓	✓

(S) Clinical skills; ✓ Practicing skill independently; ☑ Practicing skill under supervision; ■ Skill is not yet acquired

LEADER

Definition

As leaders, SBFD residents engage with others to contribute to the vision of a high-quality dental health care system and take responsibility for the delivery of excellent patient care through their activities as clinicians, administrators, scholars, or teachers.

	Key competencies Residents are able to:	Enabling competencies: Residents are able to:	Junior (R1 and R2)	Senior (R3)
1	Contribute to improved delivery of dental health care in teams, organizations, and systems	1.1 Apply the science of quality improvement to contribute to improving the systems of patient care		✓
		1.2 Contribute to a culture that promotes patient safety	✓	✓
		1.3 Analyze patient safety incidents to improve systems of care	✓	✓
		1.4 Use health informatics to improve the quality of patient care and optimize patient safety	✓	✓
2	Manage clinical practice and career effectively	2.1 Set priorities and manage time to achieve a balance between clinical practice, patient care, outside activities, and personal life	✓	✓
		2.2 Manage a practice, including finance and human resources	✓	✓
		2.3 Implement processes to ensure improvement in personal practice		✓
		2.4 Employ information technology appropriately for patient care		✓
3	Allocate health care resources appropriately	3.1 Allocate dental care resources for optimal patient care	✓	✓
		3.2 Apply evidence and management processes to achieve cost-effective care		✓
4	Demonstrate leadership in professional practice	4.1 Demonstrate leadership skills to enhance dental care	✓	✓
		4.2 Lead or implement a change in health care		✓
		4.3 Chair or participate effectively in committee meetings		✓

(S) Clinical skills; ✓ Practicing skill independently; ☑ Practicing skill under supervision; ■ Skill is not yet acquired

ORAL HEALTH ADVOCATE

Definition

As health advocates, SBFD residents learn to use their expertise and influence to advance the oral health and well-being of patients, communities, and populations.

	Key competencies Residents are able to:	Enabling competencies Residents are able to:	Junior (R1 and R2)	Senior (R3)
1	Respond to an individual patient's dental health needs	1.1 Work with patients to identify their individual oral health needs	✓	✓
		1.2 Work with patients and families to increase opportunities to adopt healthy dental behaviors	✓	✓
		1.3 Incorporate disease prevention and oral health promotion at the individual patient level	✓	✓
2	Respond to the oral health needs of the communities they serve	2.1 Work with a community or population to identify the determinants of oral health that affect its members		✓
		2.2 Improve clinical practice by applying a process of continuous quality improvement to prevention, promotion, and surveillance of oral health		✓
		2.3 Contribute to the process of improving oral health in the community or population served		✓

(S) Clinical skills: ✓ Practicing skill independently; ☑ Practicing skill under supervision; ■ Skill is not yet acquired

SCHOLAR

Definition

As scholars, SBFD residents learn to demonstrate a lifelong commitment to excellence in practice through continuous learning and by teaching others, evaluating evidence, and contributing to scholarship.

	Key competencies Residents are able to:	Enabling competencies Residents are able to:	Junior (R1 and R2)	Senior (R3)
1	LIFELONG LEARNING Maintain and enhance professional activities through ongoing learning	1.1 Develop, implement, monitor, and revise a personal learning plan to enhance professional practice	✓	✓
		1.2 Identify opportunities for learning and improvement by regularly reflecting on and assessing personal performance using various internal and external data sources	✓	✓
		1.3 Engage in collaborative learning to improve personal practice and contribute to collective improvements in practice in an ongoing way	✓	✓
		1.4 Learn from and make use of the expertise of other dentists or dental health care professionals	✓	✓
2	TEACHER Teach students, residents, patients, the public, and other health care professionals	2.1 Recognize the influence of role modeling and the impact of the formal, informal, and hidden curriculum on students		✓
		2.2 Participate in teaching with dental students, interns, residents, and colleagues		
		2.3 Promote a safe learning environment	✓	✓
		2.4 Ensure patient safety is maintained when learners are involved	✓	✓
		2.5 Plan and deliver a learning activity		✓
		2.6 Provide feedback to enhance learning and performance		✓
		2.7 Assess and evaluate learners, teachers, and programs in an educationally appropriate manner		✓

3	EVIDENCE-BASED DECISION-MAKING Integrate best available evidence into practice	3.1 Recognize uncertainty in clinical practice and knowledge gaps in clinical and other professional encounters and generate focused questions that address these uncertainties		✓
		3.2 Identify, select, and navigate pre-appraised resources	✓	✓
		3.3 Critically evaluate the integrity, reliability, and applicability of health-related research and literature	✓	✓
		3.4 Integrate evidence into decision-making in clinical practice	✓	✓
4	RESEARCH Contribute to creation and dissemination of knowledge and practices applicable to health	4.1 Demonstrate an understanding of the scientific principles of research and scholarly inquiry and the role of research evidence in health care	✓	✓
		4.2 Identify ethical principles for research and incorporate them when obtaining informed consent, considering potential harms and benefits as well as vulnerable populations	✓	✓
		4.3 Contribute to a research program	✓	✓
		4.4 Pose questions amenable to scholarly inquiry and select appropriate methods to address them	✓	✓
		4.5 Summarize and communicate to professional and lay audiences, including patients and families, the findings of relevant research and scholarly inquiry	✓	✓

(S) Clinical skills; ✓ Practicing skill independently; ☑ Practicing skill under supervision; ■ Skill is not yet acquired

PROFESSIONAL

Definition

As professionals, SBFD residents are trained to be committed to dental health and well-being of individual patients and society through ethical practice, high standards of personal behavior, accountability to the profession and society, dentist-led regulation, and maintenance of personal oral health.

	Key competencies Residents are able to:	Enabling competencies Residents are able to:	Junior (R1 and R2)	Senior (R3)
1	COMMITMENT TO PATIENTS Demonstrate a commitment to patients by applying best practices and adhering to high ethical standards	1.1 Demonstrate appropriate professional behavior and relationships in all aspects of practice, including honesty, integrity, humility, commitment, compassion, respect, altruism, respect for diversity, and maintenance of confidentiality	✓	✓
		1.2 Put patients' interests before their own or those of any colleague, organization or business	✓	✓
		1.3 Keep information about patients confidential and use it only for the purposes for which it is given	✓	✓
		1.4 In certain cases, it may be justified to make confidential patient information known without consent if it is in the public interest or in the patient's interest	✓	✓
		1.5 Maintain appropriate boundaries in relationships with patients	✓	✓
		1.6 Demonstrate a commitment to excellence in all aspects of practice	✓	✓
		1.7 Recognize and respond to ethical issues encountered in practice	✓	✓
		1.8 Reject politely any payment, gift, hospitality, or request to make or accept any referral that may affect professional judgment	✓	✓
		1.9 Treat patients politely and with respect, acknowledging their dignity and rights as individuals	✓	✓

		1.10 Recognize and promote the patient's right to make the final decisions about oral and dental treatment	✓	✓
		1.11 Treat patients fairly and in line with the law	✓	✓
		1.12 Recognize and manage conflicts of interest		✓
		1.13 Display professional behavior in the use of technology-enabled communication		✓
2	COMMITMENT TO SOCIETY	2.1 Demonstrate accountability to patients, society, and the profession by conforming to societal expectations of dentists	✓	✓
	Demonstrate a commitment to society by recognizing and responding to societal expectations of oral health care	2.2 Demonstrate a commitment to patient safety and quality improvement	✓	✓
3	PROFESSIONAL COMMITMENT	3.1 Adhere to professional and ethical codes, standards of practice, and laws governing dental practice	✓	✓
	Demonstrate a commitment to the profession by adhering to standards and participating in dentist-led regulation	3.2 Know and adhere to the laws and regulations that affect a dentist's work, premises, equipment, and business	✓	✓
		3.3 Recognize and respond to unprofessional and unethical behaviors on the part of dentists or other health care colleagues	✓	✓
		3.4 Treat all team members and other colleagues fairly and without discrimination in line with the law	✓	✓
		3.5 Participate in peer assessment and setting of standards		✓
		3.6 Share knowledge and skills effectively with other team members and colleagues in the interests of patients		✓

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4	COMMITMENT TO SELF	4.1 Demonstrate self-awareness and manage influences on personal well-being and professional performance	✓	✓
	Demonstrate a commitment to dental health and well-being to foster optimal patient care	4.2 Manage personal and professional demands for a sustainable practice throughout life	✓	✓
		4.3 Promote a culture that recognizes, supports, and responds effectively to colleagues in need.	✓	✓

(S) Clinical skills; ✓ Practicing skill independently; ☑ Practicing skill under supervision;
 ■ Skill is not yet acquired

Milestones and continuum of learning

Milestones are a new feature of CanMEDS 2015 (part of the CBD project) and reflect the abilities expected of a health professional at a certain stage of expertise. These milestones represent a continuum of learning and training. This continuum focuses on residency and continuing professional development after graduation. The CBD continuum approach breaks down specialist education into a series of integrated stages (see diagram) whereby residents in the program develop competencies in different stages of their residency and continue these in clinical practice. These stages are as follows:

Transition to discipline: This is a preparatory stage emphasizing the clinical knowledge and skills of the resident before entering the clinic

Foundation of discipline: This stage covers scientific research and basic core science before moving on to more advanced discipline-specific competencies

Core of discipline: This is the main stage, in which the resident covers the core competencies that make up the bulk of the discipline; this starts with the basic specialty and progresses to become more advanced and complex during the transition from junior to senior residency

Continuing professional development: After graduation, dentists progress in competence to attain expertise during continuing professional development (learning in practice).

Clinically, residents in the training program are exposed to a number of cases from different training centers. Therefore, their responsibility in the clinic increases and progresses across the duration of the training period, starting with clinical examination and making the correct diagnosis through to devising a treatment plan and implementing appropriate management. Junior residents have the responsibility for examination, collecting full patient records and data, making the correct diagnosis, and writing a treatment plan. Junior residents also perform dental procedures in the clinic and provide high-quality treatment for their patients. Early on, these procedures are performed under the supervision of an assigned specialist and consultant. Senior residents have greater responsibility for management of advanced cases, in addition to teaching junior residents under minimum supervision by a specialist and consultant.

The following table shows the expected continuum of learning that should be achieved at each level of progression.

Procedure	Junior level	Senior level	Consultant
Medical expert Comprehensive dental treatment includes: <ul style="list-style-type: none"> • Clinical examination • Diagnosis • Treatment plan • Restorative procedures • Limited endodontic, prosthodontic, and periodontic procedures 	Residents have limited knowledge and skills but broad competencies Residents work in a dental clinic under close supervision	Residents show knowledge and experience as specialists in restorative, endodontic, prosthodontic, and periodontic procedures Residents work in dental clinics without close supervision Residents perform dental procedures as expected of a dental	Dentists at this stage maintain achieved competencies and continue their professional development to acquire skills or update them within their scope of practice

<ul style="list-style-type: none"> Recall and follow-up 	<p>Their attitude is accepted as being under development</p>	<p>specialist in restorative, endodontic, prosthodontic, and periodontic procedures</p> <p>Their attitude develops as expected of a specialist in restorative dentistry</p>	
<p>Communicator</p>	<p>Residents can actively listen and respond to a patient inquiry</p> <p>Residents can communicate using appropriate non-verbal body language to demonstrate attentiveness, interest, and responsiveness to patients and families</p>	<p>Residents use appropriate non-verbal behaviors to enhance communication with patients</p> <p>Residents provide information on diagnosis and prognosis in a clear, compassionate, respectful, and objective manner</p> <p>Residents facilitate discussions with patients and families in a respectful and safe environment</p>	<p>Dentists demonstrate advanced non-verbal communication skills in difficult situations</p> <p>Dentists teach others how to use non-verbal communication to enhance dentist-patient rapport</p> <p>Dentists are role models for their colleagues</p>
<p>Collaborator</p>	<p>Residents respect the established rules of their team</p> <p>Residents receive and respond appropriately to input from other health care professionals</p> <p>Residents differentiate between task and relationship issues among health care professionals.</p>	<p>Residents work effectively with dentists and other colleagues in the health care professions</p> <p>Residents establish and maintain positive and healthy relationships with dentists and other colleagues in the health care professions</p>	<p>Dentists contribute to policy discussions related to collaborative care</p> <p>Dentists teach, assess, and utilize a model of collaborative care</p> <p>Dentists use e-Health tools to enhance collaboration in health care</p>

<p>Leader</p>	<p>Residents describe the process for reporting adverse events and medical errors.</p> <p>Residents determine cost discrepancies between the best practice and their current practice.</p>	<p>Residents analyze adverse events and medical errors to enhance systems of care</p> <p>Residents develop plans to change areas within their practice that are not cost-effective</p> <p>Residents evaluate a problem, set priorities, execute the plan, and analyze the results</p>	<p>Dentists contribute to improvement of health care delivery in teams, organizations, and systems</p> <p>Dentists design processes that balance standardization and variability to reduce medical errors and ensure patient safety in the delivery of health care</p> <p>Dentists provide mentorship and guidance to help others develop leadership and motivational skills</p>
<p>Health advocate</p>	<p>Residents respond to an individual patient's health needs by advocating for the patient within and beyond the clinical environment</p> <p>Residents analyze a given patient's needs for health services or resources related to the scope of their discipline</p> <p>Residents select appropriate patient education resources related to their discipline</p>	<p>Residents apply the principles of behavior modification during conversations with patients to improve oral health</p> <p>Residents participate in a process to improve oral health in the community</p>	<p>Dentists collaborate with organizations and surveillance programs to identify needs at the population level</p> <p>Dentists plan or lead implementation of a program to improve the oral health of the community</p>

Scholar	Residents review and update earlier learning plan(s) with input from others	Residents create a learning plan, incorporating all the CanMEDS domains	Dentists develop a plan to enhance competence across all CanMEDS domains for practice and update it as needed
	Residents demonstrate basic skills in teaching others	Residents discuss a learning plan and strategy for ongoing self-monitoring with a mentor and faculty advisor	Dentists plan systematic approaches to the assessment of learners and evaluation of programs
	Residents demonstrate an understanding of the importance of scientific research and analyze its limitations and applicability	Residents conduct scientific research	Dentists conduct and publish scientific research in academic journals
Professional	Residents manage tensions between societal and dentists' expectations.	Residents demonstrate a commitment to patients by applying best practices and adhering to high ethical standards	Dentists exhibit appropriate professional behavior Dentists exhibit honesty, integrity, dedication, compassion, respect, and altruism
	Residents demonstrate an ability to regulate tension, emotions, thoughts, and behaviors while maintaining their capacity to perform professional tasks.		Dentists serve as a role model and teach professionalism to learners and colleagues

Top ten conditions encountered in the specialty

1. Dental caries
2. Reversible pulpitis and irreversible pulpitis
3. Medically compromised patients
4. Apical abscess
5. Missing teeth
6. Tooth discoloration
7. Tooth sensitivity
8. Tooth fracture
9. Restoration failure
10. Malocclusion

Top ten causes of a visit to a dental accident and emergency service

1. Dental pain
2. Dental trauma
3. Intraoral swelling
4. Extraoral swelling
5. Porcelain fracture or chipping
6. Lost, unstable, fallen down crown
7. Loss of healing abutment/fixture of implant
8. A fallen restoration
9. Postoperative sensitivity
10. Tooth mobility

Top ten dental procedures performed

1. Preventive treatment (OHI and fluoride application)
2. Amalgam restoration
3. Composite restoration
4. Root canal treatment
5. Removable prosthesis
6. Prosthetic crown
7. Post and core
8. Bleaching
9. Extraction
10. Dental implants

Common complications and malpractice issues

1. Root canal perforation
2. File separation in the canal
3. Open margin
4. Flare-up
5. Overhang
6. Spacing between crowns
7. Root fracture during extraction
8. Broken restoration
9. Tooth discoloration (due to intrinsic and extrinsic factors)
10. Occlusal interference

Procedural requirements upon completion of residency according to the level of training

Procedure	CODE	Minimum requirement (3 years)	Minimum requirement/year			Remarks
			R1	R2	R3	
I. TREATMENT PLAN AND DIAGNOSIS						
Approved treatment plan according to SBFD guidelines for adult patients	Tx-1	9	3	3	3	Per patient
Approved treatment plan according to SBFD guidelines for pediatric patients	Tx-2	3	0	1	2	Per patient
Approved treatment plan according to SBFD guidelines for medically compromised patients	Tx-3	2	0	1	1	Per patient
Approved treatment plan according to SBFD guidelines for patients with special needs	Tx-4	1	0	0	1	Per patient
Diet analysis for adult patients	Tx-5	9	3	3	3	Per patient
Smile analysis for adult patients	Tx-6	9	3	3	3	Per patient
Diet analysis for pediatric patients	Tx-7	3	0	1	2	Per patient
Diet analysis for medically compromised patients	Tx-8	2	0	1	1	Per patient
Diet analysis for patients with special needs	Tx-9	1	0	0	1	Per patient
II. CARIOLOGY						
Caries control for adult patients	C-1	9	3	3	3	Per patient
Caries control for pediatric patients	C-2	3	0	1	2	Per patient

Caries control for medically compromised patients		C-3	2	0	1	1	Per patient
Caries control for patients with special needs		C-4	1	0	0	1	Per patient
Caries assessment for adult patients		C-5	9	3	3	3	Per patient
Caries assessment for pediatric patients		C-6	3	0	1	2	Per patient
Caries assessment for medically compromised patients		C-7	2	0	1	1	Per patient
Caries assessment for patients with special needs		C-8	1	0	0	1	Per patient
III. OPERATIVE							
Amalgam	Amalgam, all classes	O-1	40	10	15	15	Per restoration
Composite	Anterior (CI III, IV, V)	O-2	70	20	25	25	Per restoration
	Posterior (CI I, II, V, VI)	O-3	70	20	25	25	Per restoration
	Anterior composite buildup	O-4	5	1	2	2	Per restoration
	Posterior composite buildup	O-5	15	3	5	7	Per restoration
Glass ionomer (resin-modified)		O-6	20	5	5	10	Per restoration
Pit and fissure sealant		O-7	20	5	5	10	Per restoration
Preventive resin restoration		O-8	20	5	5	10	Per restoration
Metal (inlay/onlay)		O-9	1	-	1	-	Per restoration

IV. ESTHETIC							
In-office bleaching		O-10	8	1	3	4	Assessed per arch with a minimum of four teeth per arch
Home bleaching		O-11	8	1	3	4	Per arch
Non-vital bleaching		O-12	6	1	2	3	Per tooth
Microabrasion		O-13	5	1	2	2	Per tooth
Enameloplasty/reshaping		O-14	4	0	2	2	Per tooth
Ceramic (inlay/onlay)		O-15	10	2	3	5	Per tooth
Veneer	Direct, composite	O-16	5	1	2	2	Per tooth
	Indirect, ceramic	O-17	12	-	6	6	Per tooth
All ceramic crowns		O-18	25	5	10	10	Per tooth
V. ENDODONTIC							
Anterior	RCT	E-1	15	5	5	7	Per tooth
Premolar	RCT	E-2	15	5	5	5	Per tooth
Molar	RCT	E-3	15	5	5	5	Per tooth
VI. RESTORATION OF ENDODONTICALLY TREATED TEETH							
Prefabricated post and core/esthetic		Re-1	20	0	10	10	Per tooth
Cast post and core		Re-2	10	-	5	5	Per tooth
VII. PROSTHODONTIC							
Porcelain-fused-to-metal crowns		P-1	15	0	7	8	Per crown
Conventional complete denture		P-2	4	-	2	4	Per arch
Removable partial denture		P-3	2	-	-	-	Chrome-cobalt – per arch
Immediate denture		P-4	2	-	2	-	Per arch
Non-surgical management of TMJ dysfunction		P-5	2	-	1	3	Per patient

VIII. IMPLANT						
Implant fixed prosthesis	I-1	2	-	2	2	Per unit
Implant removable prosthesis	I-2	1	-	-	1	Per arch
IX. PEDODONTICS						
Fissure sealant	Pd-1	15	0	5	10	Per tooth
Restoration	Pd-2	30	0	10	20	Per tooth
Topical fluoride	Pd-3	10	0	5	5	Per patient
Pulp therapy	Pd-4	10	0	5	5	Per tooth
Stainless steel crown	Pd-5	10	0	5	5	Per tooth
Space maintainer	Pd-6	5	0	1	2	Per arch
X. SURGERY						
Extraction	S-1	30	5	10	15	Per tooth
Surgical extraction	S-2	10	0	5	5	Per tooth
XI. PERIODONTICS						
Scaling and root planing	Pr-1	9	3	3	12	Per patient
Scaling and root planing with open debridement	Pr-2	1	0	0	2	Per patient
Crown lengthening	Pr-3	3	0	1	2	Per tooth
XII. DENTAL TREATMENT UNDER GENERAL ANESTHESIA	DA-1	1	0	0	1	Per patient
XIII. RECALL						
6 months, completed comprehensive case recall for adult patients	R-1	6	0	3	3	Per patient
6 months, completed comprehensive case recall for pediatric patients	R-2	2	0	1	1	Per patient

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6 months, completed comprehensive case recall for medically compromised patients	R-3	1	0	0	1	Per patient
6 months, completed comprehensive case recall for patients with special needs	R-4	1	0	0	1	Per patient
Minimum clinical case requirement per resident level (per patient case)						
Comprehensive requirement specification:						
Complexity	Number required		Specification			
Simple (S)	4		3 crowns (with endodontic, restoration, and prosthodontic procedures)			
Moderate (M)	3		3 crowns + surgery (with endodontic, restoration, and prosthodontic procedures)			
			4–10 crowns (with endodontic, restoration, and prosthodontic procedures)			
Complex (C)	2		4–10 crowns + surgery (with endodontic, restoration, and prosthodontic procedures)			
			More than 10 crowns (with endodontic, restoration, and prosthodontic procedures)			
Total:	9 Comprehensive Cases in 3 years					
Note: Please refer to Part IV (Assessment) for more detailed information						

PART III

LEARNING OPPORTUNITIES

A. General principles

1. Teaching and learning will be structured and program-based with more responsibility for self-directed learning.
2. Every week, at least 6 hours of formal teaching time should be reserved. Formal teaching time is planned in advance with an assigned tutor, time slots, and a venue. Formal teaching time excludes clinical training.
3. The Core Education Program (CEP) will include formal teaching and learning activities related to universal topics (20%), core specialty topics (70%), and trainee-selected topics (10%).
4. A monthly journal club activity should be planned in advance with an assigned tutor, time slots, and venue. Residents from all hospitals in the region will gather for this activity.
5. Every month, at least 1 hour should be assigned to a meeting, including with mentors, review of portfolio, patient progress, or mini-CEX.
6. Trainees are required to attend and participate in the academic and clinical activities of the department, including clinics, journal club, systematic reviews, and treatment plan seminars. Attendance and participation shall not be less than 75% of the number of activities within any training rotation/period.

B. Universal topics

Introduction

Universal topics are high-value interdisciplinary topics of the utmost importance to the trainee. The reason for delivering the topics centrally is to ensure that every trainee receives high-quality teaching and develops essential core knowledge. These topics are common to all specialties. Topics included meet one or more of the following criteria:

- Impactful: topics that are common or life-threatening
- Interdisciplinary: topics that are difficult to teach in a single discipline
- Orphan: topics that are poorly represented in the undergraduate curriculum
- Practical: topics that trainees will encounter in hospital practice

Development and delivery

These topics will be developed and delivered centrally by the Commission through an e-learning platform that is didactic in nature with a focus on practical aspects of care. These topics will be more content-heavy than those discussed in the workshops and the other face-to-face interactive sessions planned. The suggested duration of each topic is 1.5 hours. The topics will be delivered in a modular fashion. At the end of each learning unit there will be an online formative assessment. After completion of all topics, there will be a combined summative assessment in the form of context-rich multiple-choice questions. All trainees must attain minimum competency in the summative assessment. The titles of these universal topics are listed and described in the following modules.

Module	Topic	Subtopic
1	Introduction	• Safe drug prescribing
		• Hospital-acquired infections
		• Sepsis, systemic inflammatory response syndrome, disseminated intravascular coagulation
		• Antibiotic stewardship
		• Blood transfusion
2	Cancer	• Principles of management of cancer
		• Side effects of chemotherapy and radiation therapy
		• Oncologic emergencies
3	Diabetes and metabolic disorders	• Recognition and management of diabetic emergencies
		• Management of diabetic complications
		• An abnormal electrocardiogram
4	Medical and surgical emergencies	• Management of acute chest pain
		• Management of acute breathlessness
		• Management of hypotension and hypertension
5	Acute care	• Preoperative assessment
		• Management of acute pain
		• Management of chronic pain
6	Ethics and health care	• Occupational hazards for health care workers
		• Evidence-based approach to smoking cessation
		• Patient advocacy
		• Ethical issues: transplantation/organ harvesting; withdrawal of care
		• Ethical issues: treatment refusal; patient autonomy
		• Role of doctors in death and dying

C. Core specialty topics

Basic science course:

The aim of the basic medical science course (BSC) is to provide postgraduate students with a solid scientific background and thorough knowledge in the basic medical subjects that are relevant to their specialty in oral medicine & pathology. This course consists of intensive didactic lectures or seminars designed at the postgraduate level for different topics in head and neck anatomy, physiology, general pathology, pharmacology, haematology, and oral biology & genetics.

No	Courses	List of Topics
1	Head and neck anatomy	Introduction of head and neck anatomy
		Clinical anatomy of skull and mandible
		Clinical anatomy of face and scalp
		Embryology: development of face, nose, lips, and palate
		Cranial cavity, meninges, blood supply meninges, dural venous sinuses, diploic and emissary veins. Cranial nerves: attachment to brain, foramina of exit
		Overview of functions of cranial nerves: clinical tests
		Bony orbit, eyelid, lacrimal apparatus: extrinsic muscles
		of eyeball, nerves, and vessels. Eyeball and intrinsic muscles. Orbit and eyeball; fascia, muscles, vessels
		and nerves of orbit
		Anatomy of temporal bone, structure of ear
		Histology of nervous tissue
		Degeneration and regeneration of nerves
		Nervous system (I): organization and functions
		Nervous system (II): functional anatomy of the brain, protection
		Cerebral hemispheres: functional areas and blood supply
		Cerebellum, blood supply and functions
		Cerebrospinal fluid: formation, absorption, and functions
		Blood-brain barrier
		Brain stem
		Spinal cord: internal and external structure
		Parotid region
		Deep fascia and anterior triangle of neck
		Carotid triangle: main arteries of neck
		Mandibular nerve and related ganglia. Trigeminal neuralgia
		Embryology: branchial arches and pharyngeal pouches
		Temporal and infratemporal regions

		Maxillary artery
		Posterior triangle of neck
		Muscles of mastication
		Temporomandibular joint and pterygoid plexus
		Last four cranial nerves (IX–XII)
		Submandibular region and floor of mouth
		Oral cavity, tongue, and palate. Histology: oral cavity, tongue, and palate
		Nasal cavity
2	Oral biology and genetics	Introduction to oral biology
		Embryology of head, face, and oral cavity
		Development of the tooth, its supporting structure, and enamel
		Dentin-pulp complex and periodontium
		Oral mucosa
		Salivary glands
		Repair and regeneration of oral tissues
		Structure and biochemistry of DNA
		Transmission genetics
		Linkage, mapping, and chromosomes
		Specialized topics I (mechanisms of mutation, genetic engineering, and genomics)
		Specialized topics II (cancer, basics of population genetics)
3	Oral pathology	Developmental defects of the head and neck
		Teeth anomalies
		Cyst of the jaw and soft tissue
		Epithelial and melanotic lesions
		Soft tissue tumors
		Odontogenic cysts and tumors
		Salivary gland disease and tumors
		Bone pathology
Identification and methods used		
		Introduction to general pathology. Review of investigative techniques in pathology
		Histopathology processes
		Cellular pathology I (cellular adaptation of growth and differentiation)
		Cellular pathology II (cell injury and cell death)

4	General pathology	Intracellular accumulations (lipids, proteins, glycogen, and pigments)
		Inflammation (acute and chronic)
		Tissue regeneration and repair
		Infectious diseases
		Hemodynamic disorders, thrombosis, and shock
		Diseases of the immune system (hypersensitivity reactions, autoimmune diseases, immunodeficiency syndromes)
		Neoplasia
		Environmental and nutritional diseases
5	Pharmacology and therapeutics	Introduction to pharmacology; drug therapy, clinical and general pharmacology
		Infection and inflammation; antibacterial, antiviral, and antifungal agents
		Anti-inflammatory drugs
		Immunomodulatory agents
		Nervous system-related drugs; pain pathway modulators, narcotic and non-narcotic analgesics, and antianxiety and antipsychotic agents
		Cardiovascular system-related drugs
		Endocrine system-related drugs
		Preanesthetic medications
Anesthetics		
		Introduction to physiology
		Cell, cell membrane transport and electrical properties, and body fluid balance
		Composition of blood, hemoglobin, and the anemias
		White blood cells, their role in inflammation and immunity, and disorders
		Physiology of coagulation, bleeding and clotting time, and bleeding and clotting disorders
		Blood groups, blood transfusion and its complications
		Autonomic nervous system
		Introduction to cardiovascular system. Electrocardiogram interpretation

6	Physiology	Coronary circulation and ischemic heart disease
		Respiratory system: pulmonary ventilation mechanism, gas exchange and transport, regulation of respiration, pulmonary function tests and their clinical application
		Introduction to renal physiology: glomerular filtration; pathophysiology of renal failure
		Swallowing and swallowing disorders; saliva
		Vomiting and acid-base regulation
		Adrenal glands, hormones, and pathophysiology of the adrenal cortex.
		Pancreatic hormones, glucose homeostasis, and diabetes mellitus
		Hormone classification and mechanisms of action
		Pituitary gland and hormones: pathophysiology of pituitary gland/hypophyseal axis
		Thyroid hormones and parathyroid hormones.
		Calcium homeostasis and calcium metabolism assignment
		Motor cortex and pathways; clinical motor reflexes
		Synapses and sensory receptors
		Neurophysiology of pain I and II
		Analgesia in dental practice
7	Oral radiology	Imaging:
		Digital imaging
		Film imaging
		Projection geometry
		Intraoral projections
		Intraoral radiographic anatomy
		Extraoral projections and anatomy
		Panoramic imaging
		Cone-beam computed tomography: basic principles and normal anatomy
		Other imaging modalities
		Quality assurance and infection control in oral and maxillofacial radiology
		Prescribing diagnostic imaging

		Radiographic interpretation
		Principals of radiographic interpretation
		Dental caries
		Periodontal diseases
		Inflammatory diseases
		Cysts
		Benign tumors
		Other bony diseases
		Malignant diseases
		Systemic diseases
		Paranasal sinuses diseases
		TMJ abnormalities
		Soft tissue calcifications and ossifications
		Salivary gland diseases
		Trauma
		Dental anomalies
		Craniofacial anomalies
8	Scientific research, biostatistics, and informatics	Study design and planning of data management procedures
		Statistical analysis methods
		Scientific and technical writing
		Research methodology
		Human-computer interaction in dentistry
		Dental bioinformatics and computing
		Clinical dental research informatics
9	Dental biomaterials	To provide residents with the knowledge necessary to select appropriately and manipulate the various dental material systems used in the oral cavity

10	Oral microbiology	To provide residents with advanced knowledge on the composition of oral flora and factors influencing the oral microbiota.
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D. Specialty courses

These courses are the specialty components of the diagnostic sciences, preventive, restorative, and prosthodontic curriculum. The main focus is on developing the residents' skills and knowledge of the basic principles needed to prepare them for proficient patient care. The knowledge and psychomotor skills gained in this course also provide residents with the ability and confidence to acquire further knowledge and technical skills in the different disciplines of oral medicine and pathology.

No	Course	Topics
1	<ul style="list-style-type: none"> • Examination and diagnosis History-taking Clinical examination Radiographic interpretation Development of treatment strategies and plans Writing referral and consultation letters Obtaining informed consent 	<ul style="list-style-type: none"> • List the steps and skills needed to conduct a patient interview and for medical and dental history-taking • Obtain and interpret a patient's chief complaint, history of present illness, medical, dental, family and cultural background, social history, and review of systems • Explain factors in the dental, medical, and social history likely to be relevant to the presenting condition and its previous management • Describe the relevant biology, anatomy, and physiology of normal and abnormal intraoral and extraoral structures and tissues • List the steps for examination of the patient, including their oral mucosa and related structures, periodontium, and dental hard tissues and make the appropriate diagnoses • Discuss the systemic factors likely to influence the above • Identify the dental and medical tests and investigations needed for the diagnosis • Consolidate all data from the history, symptoms, examination, and tests to make a final diagnosis

		<ul style="list-style-type: none"> • Obtain and interpret appropriate laboratory and radiographic data and additional diagnostic information by consultation with other health care providers • Explain the phases and sequences of writing a treatment strategy in conjunction with the patient and producing a plan according to their needs and preferences, including any future need for revision or modification • Explain the importance and procedure involved in using evidence-based dentistry concepts when writing a treatment plan • Identify emergency conditions that require immediate treatment • Recognize components of a consultation and referral letter • Explain and discuss with patients and parents or guardians of patients who lack decisional capacity the findings, diagnoses, treatment options, realistic treatment expectations, patient responsibilities, time requirements, sequence of treatment, • in order to establish therapeutic alliance between the patient and/or parent or guardian and care provider
2	<ul style="list-style-type: none"> • Management of medically compromised patients 	Treat patients with a wide range of acute and chronic systemic disorders
3	<ul style="list-style-type: none"> • Management of dental emergencies and traumatic injuries 	<ul style="list-style-type: none"> • Anticipate, diagnose, and provide initial treatment and follow-up management for medical emergencies that may occur during dental treatment • Diagnose and manage dental emergencies • Provide initial treatment and then manage patients with complex orofacial emergencies and infections • Perform initial treatment and management of extraoral facial trauma • Treat intraoral hard and soft tissue lesions of traumatic origin • Manage intraoral soft tissue lesions of non-traumatic origin

4	<ul style="list-style-type: none"> • Oral surgery and hospital protocol 	<ul style="list-style-type: none"> • Perform surgical and nonsurgical extraction of erupted teeth • Perform biopsies of oral tissues • Provide dental treatment in an operating room • Provide comprehensive management and care for individual inpatients or day-stay patients from the beginning to the end of the stay • Request and respond to requests for consultations • Identify needs and make referrals to appropriate health care providers for the treatment of physiologic, psychological, and social problems presented by dental patients • Perform dental consultations and request medical consultations for hospitalized patients and patients in other health care settings
5	<ul style="list-style-type: none"> • Management of patient with special needs 	<ul style="list-style-type: none"> • Identify and manage patients with special needs • Consultation with different medical specialties as appropriate • Manage the patient in clinical and hospital sitting • Evaluate the need for use of behavioral and/or pharmacologic modalities in the management of pain and anxiety based on psychosocial factors and the clinical procedures anticipated • Use pharmacologic agents in the treatment of dental patients
6	<p style="text-align: center;">Endodontic</p> <ul style="list-style-type: none"> • Introduction to endodontics, diagnosis, and treatment planning • Diagnostic tools and techniques used in endodontics • Pulp anatomy • Access opening 	<ul style="list-style-type: none"> • Explain the scope of endodontics in dentistry • Classify pulpal and periapical pathosis • Organize diagnostic steps in a sequential manner • Describe the tools and techniques used in diagnosis • Identify factors that will affect the treatment plan • Describe the anatomic regions of pulp • Describe common shapes of roots in cross-section and common canal configurations in these roots • Explain the process of access opening

7	Endodontic	<ul style="list-style-type: none"> • Biological and mechanical objectives of cleaning and shaping • Endodontic instruments • Isolation • Working length determination • Instrumentation (hands and rotary) 	<ul style="list-style-type: none"> • Describe the objectives of both cleaning and shaping • Describe the design (longitudinal, cross-sectional, and tip configuration) of the common canal preparation instruments and their mode of use • Explain the differences between stainless steel and NiTi instruments • Explain the basis for sizing and taper (standardization) of hand-operated instrument0073 • Describe the correct use of instruments to prevent breakage within the canal • Describe the action and use of engine-driven (Gates Glidden drills and Peeso reamers) and rotary instruments • Differentiate between hand and rotary techniques (including advantages and disadvantages) • Describe the importance of rubber dam isolation during endodontic procedures • Describe the apical anatomy • List the methods for measuring working length • Explain how to determine the appropriate size of the master apical file • Describe the techniques used for standardized and flaring preparations • State the properties of an “ideal” root canal irrigant • Describe the needles and techniques that provide the maximal irrigant effect • Discuss the main types, properties, and role of intraconal and interappointment medicaments
8	Endodontic	<ul style="list-style-type: none"> • Obturation • Coronal seals 	<ul style="list-style-type: none"> • Evaluate the importance of apical and coronal seals • List the criteria for the ideal obturating material • Differentiate between lateral and vertical compaction • Describe the lateral and vertical compaction technique • List the other techniques used for obturation • Describe the steps and tests for master cone fitting

			<ul style="list-style-type: none"> List the criteria for the ideal sealer List the most common sealers used Explain the importance and technique for removing excess sealer and obturating material from the pulp chamber Name the most common core materials and their advantages and disadvantages Outline the postoperative risks to the unrestored tooth Discuss the clinical and radiographic criteria for evaluating quality of obturation Describe signs of successful and unsuccessful root canal therapy
9	Endodontic	<ul style="list-style-type: none"> Restoration of endodontically treated teeth Types of post and core 	<ul style="list-style-type: none"> Recognize the restorative options following root canal therapy State the factors influencing the choice of technique used to restore endodontically treated teeth Discuss the types of core material List the steps and instruments used in preparation of a post space Describe the common mistakes that can be made during the preparation of a post space Know the types of cement used with a post Explain the method used to mix dental cement
10	Prosthodontics	<ul style="list-style-type: none"> Introduction to FPD Diagnostic casts 	<ul style="list-style-type: none"> Recognize the scope and importance of fixed prosthodontic treatment Discuss prosthodontic principles and treatment methods from a scientific standpoint, i.e., with reference to evidence-based, in vivo, and in vitro studies State the areas of treatment in prosthodontics List all types of materials used in laboratory work Discuss the importance and uses of diagnostic casts Explain the laboratory procedures for construction of a cast

11	Prosthodontics	<ul style="list-style-type: none"> • Principles of occlusion • Occlusal analysis • Diagnostic wax-up 	<ul style="list-style-type: none"> • Explain the main principles of occlusion • Discuss the importance of and procedure used for occlusal analysis • Discuss importance and uses of diagnostic wax-up • Discuss the purpose of using a facebow • Classify the articulators used in dentistry • Name the parts of the articulators • Describe the procedure for mounting diagnostic casts
12	Prosthodontics	<ul style="list-style-type: none"> • Basic principles of treatment planning for teeth • Restorations and replacement • Principles of tooth preparation • Provisional restorations 	<ul style="list-style-type: none"> • Acquire basic concepts for diagnosis and treatment planning to restore and replace teeth and short edentulous spans • Discuss the main principles of crown and bridge preparation • List the types of provisional restoration • Describe the techniques for constructing provisional restorations
13	Prosthodontics	<ul style="list-style-type: none"> • Restoration of endodontically treated teeth • Types of posts and cores 	<ul style="list-style-type: none"> • Recognize the restorative options following root canal therapy • State the factors influencing the choice of technique used in restoring endodontically treated teeth • Discuss the types of core material • Lists the steps and instruments used in preparation of a post space • Describe the common mistakes that can be made during the preparation of a post space • Know the types of cement used with a post • Explain the method used to mix dental cement
14	Prosthodontics	<ul style="list-style-type: none"> • Tissue management • Making a final impression • Interocclusal record • Working cast and die • Die preparation 	<ul style="list-style-type: none"> • Discuss indications for tissue management • Describe the different methods of gingival tissue displacement and hemostasis • Discuss the requirements of an ideal final impression • List types of impression material used • Explain the principles and techniques used for making an impression • State the types of bite registration material

			<ul style="list-style-type: none"> • Describe the methods used for bite registration • Discuss the requirements of an ideal working cast • Describe the different materials and techniques used for a die system and die trimming
15	Prosthodontics	<ul style="list-style-type: none"> • Dental laboratory procedure • Dental alloy • Dental porcelain • Framework designs for metal ceramic restoration • Metal-ceramic restorations • All-ceramic restorations • Metal and porcelain try-in • Characterization and glazing • Cementation 	<ul style="list-style-type: none"> • Explain the steps of wax pattern fabrication • Explain the laboratory procedures for construction of cast restorations • Identify all types of dental laboratory materials • Describe the different types of ceramics used • Describe the different types of metal alloy used in a porcelain-fused-to-metal prosthesis • Recognize the importance and procedure of framework designs for metal ceramic restoration • State the laboratory steps for fabricating metal-ceramic restorations • State the laboratory steps for fabricating all-ceramic restorations • Explain the steps of clinical try-in for crowns • State the advantages, disadvantages, and steps of stain application • List the types of luting agents used for cementation • Explain the correct technique for cementation
16	Prosthodontics	<ul style="list-style-type: none"> • Removable prosthodontics 	<ul style="list-style-type: none"> • Introduction to the clinical and theoretical aspects of removable prosthodontics, involving examination, diagnosis, treatment planning, construction of removable prostheses, and maintenance of the hard and soft tissues • Concepts involved in the design and production of complete and partial dentures • Health and safety in the clinic Communication with the dental laboratory

17	Cariology	<ul style="list-style-type: none"> • Dynamics of dental caries • Diagnosis of caries • Caries risk assessment and the CAMBRA system, Part 1 • Caries risk assessment and the CAMBRA system, Part 2 	<ul style="list-style-type: none"> • Explain the dynamics of caries • Discuss the concept of balance and imbalance with regard to dental caries • Explain the factors affecting the dental caries process • Introduction to the concepts of critical pH, saturation, demineralization, and remineralization • Justify the appearance of incipient lesions • Demonstrate the optimum method for diagnosis of caries • Describe the different clinical presentations of caries • Explain the principles of the International Caries Detection and Assessment System • Revise the concepts of sensitivity and specificity • Explain the role of oral bacteria and biofilm in dental caries • Explain the effect of fluoride and formation of fluorapatite • Explain the role of diet in development of caries • Explain the role of saliva in dental caries • Summarize the different salivary tests available • Contrast the different models used to estimate the risk of caries, e.g., CAMBRA • Explain the principles of CAMBRA • Develop preventive and management strategies based on the risk of caries
18	Restorative	<ul style="list-style-type: none"> • Introduction to operative and esthetic dentistry • Factors affecting operative treatment plan • Amalgam, composite, and glass ionomer restorations • Instruments used in operative practice • Dental adhesives 	<p>Recognize the importance and scope of operative restorative dentistry</p> <ul style="list-style-type: none"> • State the main factors that can affect the choice of material and technique to be used • List the types, advantages, indications, and contraindications of amalgam, composite, and glass ionomer restorations • Explain the basic principles of amalgam and composite preparations and restorations

			<ul style="list-style-type: none"> • Describe the process of polymerization for composites and methods to reduce polymerization shrinkage and stress • Describe the technique of matrix application, incremental placement, and finishing and polishing for composite resins • Recognize the types of adhesive systems
19	Restorative	<ul style="list-style-type: none"> • Main principles in esthetic, color, and shade selection • Conservative treatments for discolored teeth • Inlays and onlays • Smile analysis • Esthetic veneers 	<ul style="list-style-type: none"> • Define esthetics and recognize the basic artistic elements that need to be considered to ensure optimal esthetic results • Smile analysis • Describe the scientific basis of color • Explain the steps in the color replication process (shade selection and duplication) • Explain the methods used in the main shade guide systems • Recognize the different types and causes of tooth discoloration • Describe the strategies applied for management of discolored teeth (bleaching, microabrasion, and macroabrasion) • Describe the techniques, indications, and contraindications for restoration of ceramic inlays and onlays • Describe the types, techniques, indications, and contraindications for preparation and restoration of esthetic veneers, both direct and indirect • Describe the techniques used for creation of provisional restorations
20	Digital dentistry	<ul style="list-style-type: none"> • Digital dentistry 	<ul style="list-style-type: none"> • Pursue advanced didactic education and clinical experience in the field of digital and CAD/CAM technology for comprehensive dental treatment • Practice diagnostic and treatment planning techniques to provide comprehensive clinical treatment • Acquire didactic, laboratory, and comprehensive patient care experience in application of computerized treatment techniques

21	Periodontics	<ul style="list-style-type: none"> • Periodontal considerations • Basic concepts in periodontics • Components of the gingiva • Periodontal disease classification • Periodontal examination • Periodontic indices • Biological width • Introduction to management • Introduction to periodontal surgery 	<ul style="list-style-type: none"> • Recognize the basic concepts used in periodontics • List the components of the gingiva • Differentiate between normal and diseased gingiva • Identify the main classification of periodontal diseases • List the steps in clinical examination and assessment methods to arrive at a periodontal diagnosis (probing depth, bleeding index, clinical attachment level, radiographic evidence of bone loss, and the presence or absence of signs and symptoms) • Diagnose periodontal disease by periodontal examination and radiographs • Performing Phase I therapy (scaling and root planing) • Recognize and manage periodontal emergencies and complications of periodontal treatment • Evaluate the results of periodontal treatment, and establish and monitor a periodontal maintenance program • Explain the meaning and importance of biological width • Name the main periodontal treatment modalities used • Identify the different periodontal surgical therapies and their indications • Discuss the healing period after surgical crown lengthening
22	Dental implants	<ul style="list-style-type: none"> • Introduction to dental implants 	<ul style="list-style-type: none"> • Describe the history and types of dental implants • Identify implant terminology • Explain the process of devising an appropriate treatment plan • Recognize the importance of soft and hard tissue • Describe the components of a dental implant • Describe the steps in the surgical component of the implant • Recognize the healing period for the surgical component

			<ul style="list-style-type: none"> • Identify the prosthetic components of the implant • Describe the different technique for taking an impression • State the types of crown (cemented and screwed) along with their indications, contraindications, advantages, and disadvantages • Implant maintenance
23	Pediatric dentistry	<ul style="list-style-type: none"> • Pediatric dentistry 	<ul style="list-style-type: none"> • Introduction to pediatric dentistry • Examination and treatment planning • Dental radiology in children (part of course assessment) • Pain control in pediatric dentistry, methods for local anesthesia • Psychological management of the developing child: perspective I • Psychological management of the developing child: perspective II • Non-pharmacological behavioral management of the developing child in the dental environment • Preventive care in pediatric dentistry I • Preventive care in pediatric dentistry II • Fluoride therapy in the management of dental caries in children and adolescents I • Fluoride therapy in the management of dental caries in children and adolescents II • Basic principles and advances in cariology • Caries in children • Restorations of primary and young permanent teeth (new trends) • Pulp therapy for primary and young permanent teeth I • Pulp therapy for primary and young permanent teeth II • Gingival and periodontal diseases and conditions in children • Diagnosis and management of traumatic injuries of the oral and perioral structures including the primary and permanent dentition, in infants, children, and adolescents

			<ul style="list-style-type: none"> • Treatment of conditions that can be corrected or significantly improved by early evidence-based interventions that might require guidance of eruption, supervision of space, and interceptive orthodontic treatments
24	<ul style="list-style-type: none"> • Temporomandibular dysfunction and occlusion 		<ul style="list-style-type: none"> • Diagnose and manage a patient's occlusion • Treat minor occlusal abnormalities • Diagnose and non-surgically treat uncomplicated temporomandibular disorders
25	<ul style="list-style-type: none"> • Practice management 		<ul style="list-style-type: none"> • Function as a patient's primary oral health care provider • Treat patients efficiently in a dental practice setting • Use and implement accepted sterilization, disinfection, universal precautions, and procedures to address occupational hazards in the practice of dentistry • Practice and promote the principles of jurisprudence and ethics in the practice of dentistry and in relationships with patients, personnel, and colleagues • Provide patient care by working effectively with allied dental personnel including sit-down, four-handed dentistry
26	<ul style="list-style-type: none"> • Dental public health 		<ul style="list-style-type: none"> • Use accepted prevention strategies such as oral hygiene instruction, nutritional education, and pharmacologic intervention to help patients maintain and improve their oral and systemic health • Apply a preventive program or public education strategy in a selected community (e.g., schoolchildren)
27	<ul style="list-style-type: none"> • Orthodontics 		<ul style="list-style-type: none"> • Understand the concept of growth and development <ul style="list-style-type: none"> • Methods of studying growth • Theories of growth • Clinical application of growth and development in orthodontics • Space analysis for permanent and mixed dentition • Correctly diagnose orthodontic dental malocclusions and skeletal discrepancies

		<ul style="list-style-type: none"> • Recognize potential complications and when to refer to an orthodontic specialist • Adjunctive orthodontic treatment (e.g., up righting and extrusion)
28	<ul style="list-style-type: none"> • Soft skills 	<ul style="list-style-type: none"> • Raise awareness of its importance • Encourage self-evaluation • Apply methods to hard skills training • Role model preceptors and faculty (observing and mimicking exceptional professionals) <p>Communication</p> <ul style="list-style-type: none"> – Demonstrate communication skills with patients, supervisors, and coworkers <p>Punctuality</p> <ul style="list-style-type: none"> – Identify the importance of punctuality and its effect on a resident's career <p>Time management</p> <ul style="list-style-type: none"> – Manage time allotted in clinic while maintaining high standards <p>Professionalism</p> <ul style="list-style-type: none"> – Acquire the traits of a professional dentist including: <ul style="list-style-type: none"> • Altruism • Honor and integrity • Respect • Responsibility • Accountability • Excellence and scholarship <p>Leadership</p> <ul style="list-style-type: none"> – Acquire leadership qualities <p>Problem-solving</p> <ul style="list-style-type: none"> – Define the problem, generate alternatives, evaluate and select alternatives, and implement solutions <p>Motivation</p> <ul style="list-style-type: none"> – Be able to motivate self and others in a positive way <p>Self-development</p> <ul style="list-style-type: none"> – Develop lifelong hard and soft skills by self-directed learning

		<p>Team playing</p> <ul style="list-style-type: none"> - How to be a cooperative and respectful team player, treating all team members fairly and in line with the law <p>Clinical reasoning</p> <ul style="list-style-type: none"> - Think through the various aspects of patient care to arrive at a reasonable decision <p>Self-confidence</p> <ul style="list-style-type: none"> - Achieve self-confidence by: <ul style="list-style-type: none"> • Doing what they believe to be right • Admitting mistakes and learning from them • Ability to convince patients <p>Dealing with criticism</p> <ul style="list-style-type: none"> - Describe how to use criticism in a positive way to improve skills <p>Flexibility and adaptability</p> <ul style="list-style-type: none"> - Adapt to a changing environment and demonstrate flexibility regarding any change in work process
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BOOK REVIEWS

Residency 1

#	Topics	Textbook	Assigned chapter	Year
Restorative				
Cariology				
#	Topic	Textbook	Assigned chapter	Year
	Dynamics of dental caries and risk assessment	<i>Summitt's Fundamentals of Operative Dentistry: A Contemporary Approach</i> , 4th ed (2013)	Chapter 5 Caries management: diagnosis and treatment strategies	R1
		<i>Dental Caries: The Disease and Its Clinical Management</i> , 3 rd ed (2015)	Chapter 2 Dental caries: What is it? Chapter 5 Pathology of dental caries Chapter 6 Saliva and caries development Chapter 7 Biofilms in caries development Chapter 8 Diet and dental caries	

			Chapter 9 Demineralization and remineralization: the key to understanding clinical manifestations of dental caries	
	Diagnosis of caries	<i>Dental Caries: The Disease and Its Clinical Management</i> , 3rd ed (2015)	Chapter 2 Dental caries: What is it? Chapter 3 Clinical features of caries lesions Chapter 10 The foundations of good diagnostic practice Chapter 11 Visual-tactile caries diagnosis Chapter 12 Additional caries detection methods	R1
	Prevention and management of caries	<i>Dental Caries: The Disease and Its Clinical Management</i> , 3rd ed (2015)	Chapter 13 The caries control concept Chapter 14 Fluorides in caries control Chapter 15 Role of oral hygiene Chapter 16 Are antibacterials necessary in caries prophylaxis? Chapter 17 Principles of caries control for the individual patient Chapter 19 Classical restorative or the minimally invasive concept	R1
Operative (Dental materials)				
	Mechanical properties, physical properties, and biocompatibility of dental materials	<i>Phillips' Science Of Dental Materials</i> , 12th ed (2013)	Chapter 4 Mechanical properties of dental materials Chapter 7 Biocompatibility	R1
	Patient assessment, diagnosis and treatment planning	A. Summitt's <i>Fundamentals of Operative Dentistry: A Contemporary Approach</i> , 4th ed (2013)	Chapter 2 Patient evaluation and problem-oriented treatment planning	R1

		B. Diagnosis and Treatment Planning in Dentistry, 3rd ed (2016)	Chapter 1 Patient evaluation and assessment Chapter 4 Developing the treatment plan	
	Instruments and equipment for tooth preparation	<i>Summitt's Fundamentals of Operative Dentistry: A Contemporary Approach</i> , 4th Ed. (2013)	Chapter 7 Nomenclature and Instrumentation	R1
	Dental amalgam	<i>Phillips' Science of Dental Materials</i> , 12th Edition (2013)	Chapter 15 Dental Amalgams	R1
	Amalgam restoration	<i>Summitt's Fundamentals of Operative Dentistry: A Contemporary Approach - 4th Ed.</i> (2013)	Chapter 12 Amalgam restorations	R1
IMPLANT				
#	Specialty	Textbook	Assigned chapter	Year
1	Dental Implant	<i>Contemporary Implant Dentistry, 3rd Edition</i> , Carl Misch	Chapter 7 Bone Density: A Key Determinant for Treatment Planning Misch,	R1
2	Dental Implant	<i>Contemporary Implant Dentistry, 3rd Edition</i> , Carl Misch	Chapter 10 Available Bone and Dental Implant Treatment Plans Misch	R1
3	Dental Implant	<i>Contemporary Implant Dentistry, 3rd Edition</i> , Carl Misch	Chapter 25 Clinical Biomechanics in Implant Dentistry Misch	R1
PERIODONTOLOGY				
#	Specialty	Textbook	Assigned chapter	Year
	Periodontics	<i>Newman and Carranza's Clinical Periodontology 13th Edition</i> , Michael G. Newman	Chapter 3 Anatomy, Structure, and Function of the Periodontium	R1
	Periodontics	<i>Newman and Carranza's Clinical Periodontology 13th Edition</i> , Michael G. Newman	Chapter 5 Classification of Diseases and Conditions Affecting the Periodontium	R1

	Periodontics	<i>Newman and Carranza's Clinical Periodontology 13th Edition,</i> Michael G. Newman	Chapter 32 Periodontal Examination and Diagnosis	R1
	Periodontics	<i>Newman and Carranza's Clinical Periodontology 13th Edition,</i> Michael G. Newman	Chapter 33 Radiographic Aids in the Diagnosis of Periodontal Disease	R1
PROSTHODONTICS				
#	Specialty	Textbook	Assigned chapter	Year
1	Complete Denture	<i>Rehabilitation of the Edentulous Patient: Fabrication of Complete Dentures,</i> Zarb and Bolender	Developing an Analogue/Substitute for the Maxillary Denture-Bearing Area	R1
2	Complete Denture	<i>Rehabilitation of the Edentulous Patient: Fabrication of Complete Dentures,</i> Zarb and Bolender	Developing an Analogue/Substitute for the Maxillary Denture-Bearing Area	R1
3	Complete Denture	<i>Rehabilitation of the Edentulous Patient: Fabrication of Complete Dentures,</i> Zarb and Bolender	Identification of Shape and Location of Arch Form: The Occlusion Rim and Recording of Trial Denture Base	R1
4	Complete Denture	<i>Rehabilitation of the Edentulous Patient: Fabrication of Complete Dentures,</i> Zarb and Bolender	Biological and Clinical Considerations in Making Jaw Relation Records and Transferring Records from the Patient to the Articulator	R1
5	Complete Denture	<i>Rehabilitation of the Edentulous Patient: Fabrication of Complete Dentures,</i> Zarb and Bolender	Selecting and Arranging Prosthetic Teeth and Occlusion for the Edentulous Patient	R1
6	Removable Partial Denture	<i>Removable Partial Denture Design-Outline Syllabus, 5th Ed.,</i> A.J. Krol, T.E. Jacobson, F.C. Finzen	Chapter 1 Components of Removable Partial Denture	R1
7	Removable Partial Denture	<i>Removable Partial Denture Design-Outline Syllabus, 5th Ed.,</i> A.J. Krol, T.E. Jacobson, F.C. Finzen	Chapter 5 Major and Minor Connectors	R1

8	Removable Partial Denture	<i>Removable Partial Denture Design-Outline Syllabus, 5th Ed.,</i> A.J. Krol, T.E. Jacobson, F.C. Finzen	Chapter 6 Clasp Assemblies and Indirect Retainers	R1
9	Removable Partial Denture	<i>Removable Partial Denture Design-Outline Syllabus, 5th Ed.,</i> A.J. Krol, T.E. Jacobson, F.C. Finzen	Chapter 8 Tooth Borne Removable Partial Denture Design	R1
10	Removable Partial Denture	<i>Removable Partial Denture Design-Outline Syllabus, 5th Ed.,</i> A.J. Krol, T.E. Jacobson, F.C. Finzen	Tooth Mucosa Borne (Extension Base) Partial Denture Design	R1

Residency 2

#	Topic	Textbook	Assigned chapter	Year
Restorative				
Cariology				
#	Topics	Textbook	Assigned chapter	Year
Operative (Dental materials)				
	Composites	<i>Phillips' Science of Dental Materials,</i> 12th ed (2013)	Chapter 13 Resin-based composites	R2
	Composite restoration Common restorative problems	A <i>Summitt's Fundamentals Of Operative Dentistry: A Contemporary Approach,</i> 4th ed, (2013)	Chapter 10 Direct anterior restorations Chapter 11 Direct posterior esthetic restorations	R2
		B <i>Sturdevant's Art and Science of Operative Dentistry,</i> 7th ed	Chapter 8 Clinical technique for direct composite resin and glass ionomer restorations	
	Light-curing units	<i>Sturdevant's Art and Science of Operative Dentistry,</i> 7th ed	Chapter 11 Light curing of restorative materials	R2
	Bonding	<i>Phillips' Science of Dental Materials,</i> 12th ed	Chapter 12 Bonding and bonding agents	R2

	Enamel and dentin adhesion	Summitt's Fundamentals Of Operative Dentistry: A Contemporary Approach - 4th Ed. (2013)	Chapter 9 Adhesion to enamel and dentin	R2
	Glass ionomer	<i>Sturdevant's Art and Science of Operative Dentistry</i> , 7th ed	Chapter 13 Dental biomaterials (glass ionomers) Chapter 8 Clinical technique for direct composite resin and glass ionomer restorations	R2
	Esthetic considerations in diagnosis and treatment planning	<i>Summitt's Fundamentals Of Operative Dentistry: A Contemporary Approach</i> , 4th ed (2013)	Chapter 3 Esthetic considerations in diagnosis and treatment planning	R2
	Properties of light and color in dentistry	<i>Summitt's Fundamentals Of Operative Dentistry: A Contemporary Approach</i> , 4th ed (2013)	Chapter 4 Color and shade matching	R2
	Indirect tooth-colored restorations	<i>Summitt's Fundamentals of Operative Dentistry: A Contemporary Approach</i> , 4th ed (2013)	Chapter 19 Esthetic inlays and onlays	R2
Medically compromised patients				
#	Topic	Textbook	Assigned chapter	Year
1	Patient evaluation	<i>Dental Management of Medically Compromised Patients</i> (Little)	Chapter 1	R2
	Cardiovascular disease	<i>Dental Management of Medically Compromised Patients</i> (Little)	Chapter 2	R2
	Pulmonary disease	<i>Dental Management of Medically Compromised Patients</i> (Little)	Chapter 3	R2
	Endocrine disease	<i>Dental Management of Medically Compromised Patients</i> (Little)	Chapter 6	R2

LEARNING OPPORTUNITIES

	Immunologic disease	<i>Dental Management of Medically Compromised Patients</i> (Little)	Chapter 7	R2
	Hematologic and oncologic disease	<i>Dental Management of Medically Compromised Patients</i> (Little)	Chapter 8	R2
Pedodontic patients				
4		<i>The Handbook of Pediatric Dentistry</i> (Nowak)	All Chapters	R2
4		<i>Contemporary Implant Dentistry</i> , 3rd ed (Misch)	Chapter 27 Dental implants surfaces: a review	R2
5		<i>Contemporary Implant Dentistry</i> , 3rd ed (Misch)	Chapter 12 Pre-implant prosthodontics: overall evaluation, specific criteria, and pretreatment prostheses	R2
Implant				
#	Specialty	Textbook	Assigned chapter	Year
	Dental Implant	<i>Contemporary Implant Dentistry</i> , 3rd Edition, Carl Misch	Dental Implants Surfaces: A Review Misch, Chapter 27	R2
	Dental Implant	<i>Contemporary Implant Dentistry</i> , 3rd Edition, Carl Misch	Pre-Implant Prosthodontics: Overall Evaluation, Specific Criteria and Pretreatment Prostheses Misch, Chapter 12	R2
Periodontology				
#	Specialty	Textbook	Assigned chapter	Year
	Periodontics	<i>Newman and Carranza's Clinical Periodontology</i> 13th Edition, Michael G. Newman	The Role of Dental Calculus and Other Local Predisposing Factors, Chapter 13	R2
	Periodontics	<i>Newman and Carranza's Clinical Periodontology</i> 13th Edition, Michael G. Newman	Impact of Periodontal Infection on Systemic Health, Chapter 15	R2

	Periodontics	<i>Newman and Carranza's Clinical Periodontology 13th Edition, Michael G. Newman</i>	Clinical Features of Gingivitis, Chapter 18	R2
	Periodontics	<i>Newman and Carranza's Clinical Periodontology 13th Edition, Michael G. Newman</i>	Gingival Enlargement, Chapter 19	R2

Residency 3

#	Topic	Textbook	Assigned chapter	Year
Restorative				
Operative				
	Conservative treatments for discolored teeth	A <i>Summitt's Fundamentals Of Operative Dentistry: A Contemporary Approach, 4th ed (2013)</i>	Chapter 16 Natural tooth bleaching	R3
		B <i>Sturdevant's Art and Science of Operative Dentistry, 7th ed</i>	Chapter 9 Additional conservative esthetic procedures (micro and macro abrasion/bleaching)	
	Veneers	A <i>Summitt's Fundamentals Of Operative Dentistry: A Contemporary Approach, 4th ed (2013)</i>	Chapter 17 Porcelain veneers	R3
		B <i>The Science and Art of Porcelain Laminate Veneers, 2003 (Gurel)</i>	Chapter 2 Smile design Chapter 7 Atlas of porcelain laminate veneers	
	Root caries	<i>Summitt's Fundamentals Of Operative Dentistry: A Contemporary Approach, 4th ed (2013)</i>	Chapter 13 Diagnosis and treatment of root caries	R3

	Tooth surface loss: diagnosis and management (Diagnosis and management of non-carious lesions)	A <i>Summitt's Fundamentals Of Operative Dentistry: A Contemporary Approach</i> , 4th ed (2013)	Chapter 15: Class 5 Restorations	R3
		B <i>Dental Erosion: From Diagnosis To Therapy</i> (2006)	Chapter 3 Interaction between attrition, abrasion, and erosion in tooth wear Chapter 4 Diagnosis of erosive tooth wear Chapter 13 Restorative therapy of erosion	
	Digital dentistry	A <i>Clinic Applications of Digital Dental Technology</i> , 1st ed	Chapter 4 Digital application in operative dentistry	R3
		B <i>Sturdevant's Art and Science of Operative Dentistry</i> , 7th ed	Chapter 12 Digital dentistry in operative dentistry	
Medically compromised patients				
#	Topic	Textbook	Assigned chapter	Year
	Gastrointestinal disease	<i>Dental Management of Medically Compromised Patients</i> (Little)	Chapter 4	R3
	Genitourinary disease	<i>Dental Management of Medically Compromised Patients</i> (Little)	Chapter 5	R3
	Neurologic and behavioral disorders	<i>Dental Management of Medically Compromised Patients</i> (Little)	Chapter 9	R3
2	Head and neck cancer	Booklet: <i>Oral Health in Cancer Therapy, A Guide for Health Care Professionals</i> , 3rd ed.	All chapters	R3
Special care dentistry				
		<i>Special Care Dentistry</i> (Fiske)	All chapters	R3
6		<i>Contemporary Implant Dentistry</i> , 3rd ed (Misch)	Chapter 29 Maintenance of dental implants	R3
Implant				
#	Specialty	Textbook	Assigned chapter	Year
	Dental Implant	<i>Contemporary Implant Dentistry</i> , 3rd Edition, Carl Misch	Maintenance of Dental Implants Misch, Chapter 29	R3

<i>Periodontology</i>				
#	Specialty	Textbook	Assigned chapter	Year
	Periodontics	<i>Newman and Carranza's Clinical Periodontology 13th Edition, Michael G. Newman</i>	Acute Gingival Infections, Chapter 20	R3
	Periodontics	<i>Newman and Carranza's Clinical Periodontology 13th Edition, Michael G. Newman</i>	Bone Loss and Patterns of Bone Destruction, Chapter 24	R3
	Periodontics	<i>Newman and Carranza's Clinical Periodontology 13th Edition, Michael G. Newman</i>	Periodontal Treatment of Medically Compromised Patients, Chapter 39	R3

LITERATURE REVIEW

#	Topic	Assigned literature to be discussed in sessions	Home reading	R1
RESTORATIVE				
CARIOLOGY				
5	Composites	<ol style="list-style-type: none"> Correa MB, Peres MA, Peres KG, et al. Amalgam or composite resin? Factors influencing the choice of restorative material. <i>J Dent.</i> 2012;40:703-710. Chandwani ND, Pawar MG, Tupkari JV, et al. Histological evaluation to study the effects of dental amalgam and composite restoration on human dental pulp: an in vivo study. <i>Med Princ Pract.</i> 2014;8:40-44. Chen MH. Update on dental nanocomposites. <i>J Dent Res.</i> 2010;89:549-560. Rathke A, Tymina Y, Haller, B. Effect of different surface treatments on the composite– composite repair bond strength. <i>Clin Oral Investig,</i> 2009; 13:317-323. 	<ol style="list-style-type: none"> Casselli DS, Faria-e-Silva AL, Casselli H, et al. Effect of curing unit and adhesive system on marginal adaptation of composite restorations. <i>Gen Dent.</i> 2012; 60:e408-412. Kimyai S, Oskoe SS, Mohammadi N, et al. Effect of different mechanical and chemical surface treatments on the repaired bond strength of an indirect composite resin. <i>Lasers Med Sci.</i> 2015;30:653-659. 	R1

		<p>5. Reddy SN, Jayashankar DN, Nainan M, et al. The effect of flowable composite lining thickness with various curing techniques on microleakage in class II composite restorations: an in vitro study. <i>J Contemp Dent Pract.</i> 2013;14:56-60.</p> <p>6. Gorucu J, Gurgan S, Cakir FY, et al. The effect of different preparation and etching procedures on the microleakage of direct composite veneer restorations. <i>Photomed Laser Surg.</i> 2011;29:205-211.</p> <p>7. Gupta SK, Saxena P, Pant VA, et al. Release and toxicity of dental resin composite. <i>Toxicol Int.</i> 2012;1:225-234.</p> <p>8. Kumar CN, Gururaj M, Paul J. A comparative evaluation of curing depth and compressive strength of dental composite cured with halogen light curing unit and blue light emitting diode: an in vitro study. <i>J Contemp Dent Pract.</i> 2012;13:834-837.</p>	<p>11. Kwon Y, Ferracane J, Lee IB. Effect of layering methods, composite type, and flowable liner on the polymerization shrinkage stress of light cured composites. <i>Dent Mater.</i> 2012;28:801-809.</p> <p>12. Park J, Chang J, Ferracane J, et al. How composite should be layered to reduce shrinkage stress: incremental or bulk filling? <i>Dent Mater.</i> 2008;24:1501-1505.</p> <p>13. Kadowaki Y, Kakuda S, Kawano S, et al. Bond performance of "Touch and Cure" adhesives on resin core systems. <i>Dent Mater J.</i> 2016;35:386-391.</p> <p>14. Lawson NC, Bansal R, Burgess JO. Wear, strength, modulus and hardness of CAD/CAM restorative materials. <i>Dent Mater.</i> 2016;32:e275-e283.</p>	
6			<p>Rothmund L, Reichl FX, Hickel R, et al. Effect of layer thickness on the elution of bulk-fill composite components. <i>Dent Mater.</i> 2017;33:54-62</p>	R1

<p>7</p>	<p>Glass ionomer and resin-modified glass ionomer</p>	<ol style="list-style-type: none"> 1. Banomyong D, Messer H. Two-year clinical study on postoperative pulpal complications arising from the absence of a glass-ionomer lining in deep occlusal resin-composite restorations. <i>J Investig Clin Dent.</i> 2011;4:265-270. 2. Donly KJ, Segura A. Fluoride release and caries inhibition associated with resin modified glass-ionomer cement at varying fluoride loading doses. <i>Am J Dent.</i> 2002;15:8-10. 3. Ngo H. Glass-ionomer cements as restorative and preventive materials. <i>Dent Clin North Am.</i> 2010;54:551-563. 4. Hicks J, Garcia-Godoy F, Donly K, et al. Fluoride-releasing restorative materials and secondary caries. <i>Dent Clin North Am.</i> 2002;46:247-276. 5. Lin A, McIntyre NS, Davidson RD. Studies on the adhesion of glass-ionomer cements to dentin. <i>J Dent Res.</i> 1992;71:1836-1841. 6. Matis BA, Cochran M, Carlson T. Longevity of glass-ionomer restorative materials: results of a 10-year evaluation. <i>Quintessence Int.</i> 1996;27:373-382. 7. Mickenautsch S, Yengopal V, Banerjee A. Pulp response to resin-modified glass ionomer and calcium hydroxide cements in deep cavities: A quantitative systematic review. <i>Dent Mater.</i> 2010;26:761-770. 	<ol style="list-style-type: none"> 11. Zhang L, Tang T, Zhang ZL, et al. Improvement of enamel bond strengths for conventional and resin modified glass ionomers: acid etching vs. conditioning. <i>J Zhejiang Univ Sci B.</i> 2013;14:1013-1024. 12. Mickenautsch S, Yengopal V. Demineralization of hard tooth tissue adjacent to resin-modified glass-ionomers and composite resins: a quantitative systematic review. <i>J Oral Sci.</i> 2010;52:347-357. 13. Mitsuhashi A, Hanaoka K, Teranaka T. Fracture toughness of resin-modified glass ionomer restorative materials: effect of powder/liquid ratio and powder particle size reduction on fracture toughness. <i>Dent Mater.</i> 2003;19:747-757. 14. Mickenautsch S, Tyas MJ, Yengopal V, et al. Absence of carious lesions at margins of glass-ionomer cement (GIC) and resin-modified GIC restorations: a systematic review. <i>Eur J Prosthodont Restor Dent.</i> 2010;18:139-145. 	<p>R1</p>
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		<p>8. Moazzami S, Sarabi N, Hajizadeh H, et al. Efficacy of four lining materials in sandwich technique to reduce microleakage in Class II composite resin restorations. <i>Oper Dent.</i> 2014;39:256-263.</p> <p>9. Namgung C, Rho YJ, Jin BH, et al. A retrospective clinical study of cervical restorations: longevity and failure-prognostic variables. <i>Oper Dent.</i> 2013;38:376-385.</p> <p>10. Zhang L, Tang T, Zhang ZL, et al. Improvement of enamel bond strengths for conventional and resin-modified glass ionomers: acid-etching vs. conditioning. <i>J Zhejiang Univ Sci B.</i> 2013;14:1013-1024.</p>	<p>15. Khoroushi M, Keshani F. A review of glass ionomers: From conventional glass-ionomer to bioactive glass-ionomer. <i>Dent Res J.</i> 2013;10:411-420.</p> <p>16. Zanata RL, Navarro MF, Barbosa SH, et al. Clinical evaluation of three restorative materials applied in a minimal intervention caries treatment approach. <i>J Public Health Dent.</i> 2003;63:221-226.</p> <p>17. Rekha CV, Varma B, Jayanthi. Comparative evaluation of tensile bond strength and microleakage of conventional glass ionomer cement, resin modified glass ionomer cement and compomer: An in vitro study. <i>Contemp Clin Dent.</i> 2012;3:282-287.</p>	
8	Bonding	<p>1. Kugel G, Ferrari M. The science of bonding: from first to sixth generation. <i>J Am Dent Assoc.</i> 2000;131 Suppl:20S-25S.</p> <p>2. Liu Y, Tjäderhane L, Breschi L, et al. Limitations in bonding to dentin and experimental strategies to prevent bond degradation. <i>J Dent Res.</i> 2011;90:953-968.</p>	<p>8. Van Meerbeek B, Yoshihara K, Yoshida Y, et al. State of the art of self-etch adhesives. <i>Dent Mater.</i> 2011;27:17-28.</p>	R1

		<p>3. Milia E, Cumbo E, Cardoso RJ, et al. Current dental adhesives systems. A narrative review. <i>Curr Pharm Des.</i> 2012;18:5542-5552.</p> <p>4. Moszner N, Salz U, Zimmermann J. Chemical aspects of self-etching enamel-dentin adhesives: a systematic review. <i>Dent Mater.</i> 2005;21:895-910.</p> <p>5. Özcan M, Pekkan G. Effect of different adhesion strategies on bond strength of resin composite to composite dentin complex. <i>Oper Dent.</i> 2013;38:63-72.</p> <p>6. Pashley DH, Tay FR, Carvalho RM, et al. From dry bonding to water-wet bonding to ethanol-wet bonding. A review of the interactions between dentin matrix and solvated resins using a macromodel of the hybrid layer. <i>Am J Dent.</i> 2007;20:7-20.</p> <p>7. Van Meerbeek B. Adhesion to enamel and dentin: current status and future challenges. <i>Oper Dent.</i> 2003;28:215-235.</p>	<p>9. Tachibana A, Castanho GM, Vieira SN, et al. Influence of blood contamination on bond strength of a self-etching adhesive to dental tissues. <i>J Adhes Dent.</i> 2011;13:349-358.</p> <p>10. Sigusch BW, Pflaum T, Völpel A, et al. The influence of various light curing units on the cytotoxicity of dental adhesives. <i>Dent Mater.</i> 2009;25:1446-1452.</p>	
1	-Dental Caries Dynamics and Risk Assessment -Diagnosis of Caries	<p>1. Jenson L, Budenz AW, Featherstone JD, et al. Clinical protocols for caries management by risk assessment. <i>J Calif Dent Assoc.</i> 2007;35:714-723.</p>	<p>8. Ismail AI, Sohn W, Tellez M, et al. The International Caries Detection and Assessment System (ICDAS): an integrated system for measuring dental caries. <i>Community Dent Oral Epidemiol.</i> 2007;35:170-178.</p>	R1

		<p>2. Ekstrand KR, Ricketts DN, Kidd EA. Reproducibility and accuracy of three methods for assessment of demineralization depth of the occlusal surface: an in vitro examination. <i>Caries Res.</i> 1997;31:224-231.</p> <p>3. Young DA, Featherstone JD, Roth JR, et al. Caries management by risk assessment. Implementation guidelines. <i>J Calif Dent Assoc.</i> 2007;35:799-805.</p> <p>4. Nyvad B. Diagnosis versus detection of caries. <i>Caries Res.</i> 2004;38:192-198.</p> <p>5. Rochlen GK, Wolff MS. Technological advances in caries diagnosis. <i>Dent Clin North Am.</i> 2011;55:441-452.</p> <p>6. Mount GJ. Defining, classifying, and placing incipient caries lesions in perspective. <i>Dent Clin North Am.</i> 2005;49:701-723.</p> <p>7. Young DA, Featherstone JD. Implementing caries risk assessment and clinical intervention. <i>Dent Clin North Am.</i> 2010;54:495-505.</p>	<p>9. Fontana M, Young DA, Wolff MS. Evidence-based caries, risk assessment, and treatment. <i>Dent Clin North Am.</i> 2009;53:149-161.</p>	
2	Prevention and management of caries	<p>1. Maltz M, Alves LS, Jardim JJ, et al. Incomplete caries removal in deep lesions: a 10-year prospective study. <i>Am J Dent.</i> 2011;24:211-214.</p>	<p>8. Cheng J, Chaffee BW, Cheng NF, et al. Understanding treatment effect mechanisms of the CAMBRA randomized trial in reducing caries increment. <i>J Dent Res.</i> 2015;94:44-51.</p>	R1

		<p>2. Thompson VP, Kaim JM. Nonsurgical treatment of incipient and hidden caries. <i>Dent Clin North Am.</i> 2005;49:905-921.</p> <p>3. Peters MC. Strategies for noninvasive demineralized tissue repair. <i>Dent Clin North Am.</i> 2010;54:507-525.</p> <p>4. Twetman S. Treatment protocols: nonfluoride management of the caries disease process and available diagnostics. <i>Dent Clin North Am.</i> 2010;54:527-540.</p> <p>5. Dennison JB, Hamilton JC. Treatment decisions and conservation of tooth structure. <i>Dent Clin North Am.</i> 2005;49:825-845.</p> <p>6. Ismail AI, Hasson H. 5-Fluoride supplements, dental caries and fluorosis: A systematic review. <i>J Am Dent Assoc.</i> 2008;139:1457-1468.</p> <p>7. Weyant RJ, Tracy SL, Anselmo TT, et al. Topical fluoride for caries prevention: Executive summary of the updated clinical recommendations and supporting systematic review. <i>J Am Dent Assoc.</i> 2013;144:1279-1291.</p>	<p>9. Runnel R, Mäkinen KK, Honkala S, et al. Effect of three-year consumption of erythritol, xylitol and sorbitol candies on various plaque and salivary caries-related variables. <i>J Dent.</i> 2013;41:1236-1244.</p> <p>10. Simonsen RJ. Preventive resin restorations and sealants in light of current evidence. <i>Dent Clin North Am.</i> 2005;49:815-823.</p> <p>11. Mobley CC. Nutrition and dental caries. <i>Dent Clin North Am.</i> 2005;47:319-336.</p>	
OPERATIVE				
3	Patient assessment, diagnosis, and treatment planning	<p>1. Chang J, Kim HY. Does caries risk assessment predict the incidence of caries for special needs patients requiring general anesthesia? <i>Acta Odontol Scand.</i> 2014;72:721-728.</p>		R1

		2. Mills EJ. A clinical method for the diagnosis and treatment planning of restorative dental patients. <i>J Oral Implantol.</i> 2002;28:122-127.		
14	-Tooth surface loss Amelogenesis imperfecta Fluorosis	1. Grippo JO, Simring M, Schreiner S. Attrition, abrasion, corrosion and abfraction revisited: a new perspective on tooth surface lesions. <i>J Am Dent Assoc.</i> 2004;135:1109-1118. 2. Seow WK. Developmental defects of enamel and dentine: challenges for basic science research and clinical management. <i>Aust Dent J.</i> 2014;59:143-154. 3. Hattab FN, Yassin OM. Etiology and diagnosis of tooth wear: a literature review and presentation of selected cases. <i>Int J Prosthodont.</i> 2000;13:101-107. 4. Davies SJ, Gray RJ, Qualtrough AJ. Management of tooth surface loss. <i>Br Dent J.</i> 2002;192:11-16. 5. Levitch LC, Bader JD, Shugars DA, et al. Noncarious cervical lesions. <i>J Dent.</i> 1994;22:195-207. 6. Horowitz HS. Indexes for measuring dental fluorosis. <i>J Public Health Dent.</i> 1986;46:179-183. 7. Sabokseir A, Golkari A, Sheiham A. Distinguishing between enamel fluorosis and other enamel defects in permanent teeth of children. <i>PeerJ</i> 2016;4:e1745.	12. Isaksson H, Birkhed D, Wendt LK, et al. Prevalence of dental erosion and association with lifestyle factors in Swedish 20-year-olds. <i>Acta Odontol Scand.</i> 2014;72:448-457. 13. Grippo JO. Abrasions: a new classification of hard tissue lesions of teeth. <i>J Esthet Dent.</i> 1991;3:14-19. 14. Santos APP, Oliveira BH, Nadanovsky P. Effects of low and standard fluoride toothpastes on caries and fluorosis: systematic review and meta-analysis. <i>Caries Res.</i> 2013;47:382-390. 15. Pandey P, Ansari AA, Moda P, et al. Enamel microabrasion for aesthetic management of dental fluorosis. <i>BMJ Case Rep.</i> 2013;2013:pii: bcr2013010517.	R1

		<p>8. Clarkson J. Review of terminology, classifications, and indices of developmental defects of enamel. <i>Adv Dent Res.</i> 1989;3:104-109.</p> <p>9. Akpata ES. Therapeutic management of dental fluorosis: A critical review of literature. <i>Saudi J Oral Sci.</i> 2014;1:3-13.</p> <p>10. McCloskey RJ. A technique for removal of fluorosis stains. <i>J Am Dent Assoc.</i> 1984;109:63-64.</p> <p>11. Wang A, Lussi A. Assessment and management of dental erosion. <i>Dent Clin North Am.</i> 2010;54:565-578.</p>		
4	Dental amalgam and toxicity	<p>1. Summitt JB, Howell ML, Burgess JO, et al. Effect of grooves on resistance form of conservative Class 2 amalgams. <i>Oper Dent.</i> 1992;17:50-56.</p> <p>2. Wahl MJ, Swift EJ Jr. Critical appraisal: dental amalgam update—part I: clinical efficacy. <i>J Esthet Restor Dent.</i> 2013;25:360-364.</p> <p>3. Darvell BW. Development of strength in dental silver amalgam. <i>Dent Mater.</i> 2012;28:e207-17.</p> <p>4. Wahl MJ. Amalgam - resurrection and redemption. Part 1: The clinical and legal mythology of anti-amalgam. <i>Quintessence Int.</i> 2001;32:525-535.</p>	<p>9. Sfikas PM. Can a dentist ethically remove serviceable amalgam restorations? <i>J Am Dent Assoc.</i> 1996;127:685-687.</p> <p>10. Soussa E, Shalaby Y, Maria AM, et al. Evaluation of oral tissue response and blood levels of mercury released from dental amalgam in rats. <i>Arch Oral Biol.</i> 2013;58:981-988.</p>	R1

		<p>5. Wahl MJ. Amalgam - resurrection and redemption. Part 2: The medical mythology of anti-amalgam. <i>Quintessence Int.</i> 2001;32:696-710.</p> <p>6. Bernhoff RA. Mercury toxicity and treatment: a review of the literature. <i>J Environ Public Health.</i> 2012;2012:460508.</p> <p>7. Colson DG. A safe protocol for amalgam removal. <i>J Environ Public Health.</i> 2012;2012:517391.</p> <p>8. Uçar Y, Brantley WA. Biocompatibility of dental amalgams. <i>Int J Dent.</i> 2011;2011:981595.</p>		
ENDODONTIC				
#	Topic	Assigned literature to be discussed in sessions	Home reading	Year
1	Pulpal and periradicular testing and diagnosis	<p>Classification system AAE consensus conference recommended diagnostic terminology. <i>J Endod.</i> 2009;35:1634.</p> <p>Diagnostic tests Thermal and electrical tests</p> <ol style="list-style-type: none"> Petersson K, Söderström C, Kiani-Anaraki M, et al. Evaluation of the ability of thermal and electrical tests to register pulp vitality. <i>Endod Dent Traumatol.</i> 1999;15:127-131. Lin J, Chandler N, Purton D, et al. Appropriate electrode placement site for electric pulp testing first molar teeth. <i>J Endod.</i> 2007;33:1296-1298. Myers JW. Demonstration of a possible source of error with an electric pulp tester. <i>J Endod.</i> 1998;24:199-200. Miller SO, Johnson JD, Allemang JD, et al. Cold testing through full-coverage restorations. <i>J Endod.</i> 2004;30:695-700. 		R1

		<p>5. Wilson BL, Broberg C, Baumgartner JC, et al. Safety of electronic apex locators and pulp testers in patients with implanted cardiac pacemakers or cardioverter/defibrillators. <i>J Endod.</i> 2006;32:847-852.</p> <p>6. Tidwell E, Witherspoon DE, Gutmann JL, et al. Thermal sensitivity of endodontically treated teeth. <i>Int Endod J.</i> 1999;32:138-145.</p> <p>Correlation with histology</p> <p>1. Seltzer S, Bender IB, Ziontz M. The dynamics of pulp inflammation: Correlations between diagnostic data and actual histologic findings in the pulp. <i>Oral Surg Oral Med Oral Pathol.</i> 1963;16:969-977.</p> <p>2. Bender IB. Pulpal pain diagnosis-a review. <i>J Endod.</i> 2000;26:175-179.</p> <p>Vitality tests</p> <p>Gopikrishna V, Tinagupta K, Kandaswamy D. Comparison of electrical, thermal, and pulse oximetry methods for assessing pulp vitality in recently traumatized teeth. <i>J Endod.</i> 2007;33:531-535.</p> <p>Sinus tract</p> <p>1. Baumgartner JC, Picket AB, Muller JT. Microscopic examination of oral sinus tracts and their associated periapical lesions. <i>J Endod.</i> 1984;10:146-152.</p> <p>2. Gupta R, Hasselgren G. Prevalence of odontogenic sinus tracts in patients referred for endodontic therapy. <i>J Endod.</i> 2003;29:798-800.</p> <p>Cracks and incomplete crown fractures</p> <p>1. Udoye CI, Jafarzadeh H. Cracked tooth syndrome: Characteristics and distribution among adults in a Nigerian teaching hospital. <i>J Endod.</i> 2009;35:334-336.</p>		
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		<p>Supplementary reading</p> <ol style="list-style-type: none"> 1. Lin J, Chandler NP. Electric pulp testing: A review. <i>Int Endod J.</i> 2008;41:365-374. 2. Jafarzadeh H, Abbott PV. Review of pulp sensibility tests. Part I: General information and thermal tests. <i>Int Endod J.</i> 2010;43:738-762. 3. Jafarzadeh H, Abbott PV. Review of pulp sensibility tests. Part II: Electric pulp tests and test cavities. <i>Int Endod J.</i> 2010;43:945-958. 		
2	Pulp anatomy and morphology	<p><u>Classification systems and implications of pulp morphology on endodontic procedures</u></p> <ol style="list-style-type: none"> 1. Weine FS, Healey HJ, Gerstein H, et al. Canal configuration in the mesiobuccal root of the maxillary first molar and its endodontic significance. <i>Oral Surg Oral Med Oral Pathol.</i> 1969;28:419-425. 2. Schneider SW. A comparison of canal preparations in straight and curved root canals. <i>Oral Surg Oral Med Oral Pathol.</i> 1971;32:271-275. 3. Cleghorn BM, Christie WH, Dong CC. Root and root canal morphology of the human permanent maxillary first molar: A literature review. <i>J Endod.</i> 2006;32:813-821. 4. de Pablo OV, Estevez R, Péix Sánchez M, et al. Root anatomy and canal configuration of the permanent mandibular first molar: A systematic review. <i>J Endod.</i> 2010;36:1919-1931. 5. Vertucci FJ. Root canal morphology and its relationship to endodontic procedures. <i>Endod Topics.</i> 2005;10:3-29. 6. Schroeder KP, Walton RE, Rivera EM. Straight line access and coronal flaring: effect on canal length. <i>J Endod.</i> 2002;28:474-476. 7. Krasner P, Rankow HJ. Anatomy of the pulp-chamber floor. <i>J Endod.</i> 2004;30:5-16. 		R1

		<p><u>Lateral/accessory canals</u> De Deus QD. Frequency, location, and direction of the lateral, secondary, and accessory canals. <i>J Endod.</i> 1975;1:361-366.</p> <p><u>Apical anatomy</u></p> <ol style="list-style-type: none"> 1. Dummer PM, McGinn JH, Rees DG. The position and topography of the apical constriction and apical foramen. <i>Int Endod J.</i> 1984;17: 192-198. 2. Martos J, Lubian C, Silveira LF, et al. Morphologic analysis of the root apex in human teeth. <i>J Endod.</i> 2010;36:664-667. 		
3	Endodontic radiography and CBCT	<p><u>Correlation of periapical radiographs with histology</u></p> <ol style="list-style-type: none"> 1. Brynolf I. A histological and roentgenological study of the periapical region of upper incisors. <i>Odontologisk Revy.</i> 1967;18 Suppl 11:1. 2. Green TL, Walton RE, Taylor JK, et al. Radiographic and histologic periapical findings of root canal treated teeth in cadaver. <i>Oral Surg Oral Med Oral Pathol Oral Radiol Endod.</i> 1997;83:707-11 <p><u>Variables affecting radiographic interpretation</u></p> <ol style="list-style-type: none"> 1. Forsberg J, Halse A. Radiographic simulation of a periapical lesion comparing the paralleling and the bisecting-angle techniques. <i>Int Endod J.</i> 1994;27:133-138. 2. Orafi I, Worthington HV, Qualtrough AJ, et al. The impact of different viewing conditions on radiological file and working length measurement. <i>Int Endod J.</i> 2010;43:600-607. 3. Lally T, Geist JR, Yu Q, et al. Evaluation of four commercial viewing devices for radiographic perceptibility and working length determination. <i>J Endod.</i> 2015;41:1120-1124. 		R1

		<p><u>Critical articles</u></p> <ol style="list-style-type: none"> 1. Orstavik D, Kerekes K, Eriksen HM. The periapical index: A scoring system for radiographic assessment of apical periodontitis. <i>Endod Dent Traumatol.</i> 1986;2:20-34. 2. Kaffe I, Gratt BM. Variations in the radiographic interpretation of the periapical dental region. <i>J Endod.</i> 1988;14:330-335. <p><u>Cone-beam computed tomography</u></p> <ol style="list-style-type: none"> a) Systematic reviews <ol style="list-style-type: none"> 1. Petersson A, Axelsson S, Davidson T, et al. Radiological diagnosis of periapical bone tissue lesions in endodontics: A systematic review. <i>Int Endod J.</i> 2012;45:783-801. 2. Kruse C, Spin-Neto R1, Wenzel A, et al. Cone-beam computed tomography and periapical lesions: A systematic review analyzing studies on diagnostic efficacy by a hierarchical model. <i>Int Endod J.</i> 2015;48:815-828. 3. Rosen E, Taschieri S, Del Fabbro M, et al. The diagnostic efficacy of CBCT in endodontics: A systematic review and analysis by a hierarchical model of efficacy. <i>J Endod.</i> 2015;41:1008-1014. b) Clinical studies that evaluate the accuracy of CBCT <ol style="list-style-type: none"> 1. de Paula-Silva FW, Wu MK, Leonardo MR, et al. Accuracy of periapical radiography and cone-beam computed tomography scans in diagnosing apical periodontitis using histopathological findings as a gold standard. <i>J Endod.</i> 2009;35:1009-1012. 		
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		<ol style="list-style-type: none"> 2. López FU, Kopper PM, Cucco C, et al. Accuracy of cone-beam computed tomography and periapical radiography in apical periodontitis diagnosis. <i>J Endod.</i> 2014;40:2057-2060. 3. Bornstein MM, Bingisser AC, Reichart PA, et al. Comparison between radiographic (2-dimensional and 3-dimensional) and histologic findings of periapical lesions treated with apical surgery. <i>J Endod.</i> 2015;41:804-811. 4. Patel S, Wilson R, Dawood A, et al. The detection of periapical pathosis using periapical radiography and cone beam computed tomography – Part 1: pre-operative status. <i>Int Endod J.</i> 2012;45:702-710. 5. Patel S, Wilson R, Dawood A, et al. The detection of periapical pathosis using digital periapical radiography and cone beam computed tomography – Part 2: a 1-year post-treatment follow-up. <i>Int Endod J.</i> 2012;45:711-723. 6. Pope O, Sathorn C, Parashos P. A comparative investigation of cone-beam computed tomography and periapical radiography in the diagnosis of a healthy periapex. <i>J Endod.</i> 2014;40:360-365. 7. Davies A, Mannocci F, Mitchell P, et al. The detection of periapical pathoses in root filled teeth using single and parallax periapical radiographs versus cone beam computed tomography – a clinical study. <i>Int Endod J.</i> 2015;48:582-592. 		
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		<p><u>Supplementary reading</u></p> <ol style="list-style-type: none"> 1. Patel S, Dawood A, Mannocci F, et al. Detection of periapical bone defects in human jaws using cone beam computed tomography and intraoral radiography. <i>Int Endod J.</i> 2009;42:507-515. 2. Ricucci D, Lin LM, Spångberg LS. Wound healing of apical tissues after root canal therapy: A long-term clinical, radiographic, and histopathologic observation study. <i>Oral Surg Oral Med Oral Pathol Oral Radiol Endod.</i> 2009;108:609-621. 3. Michetti J, Maret D, Mallet JP, et al. Validation of cone beam computed tomography as a tool to explore root canal anatomy. <i>J Endod.</i> 2010;36:1187-1190. 		
4	Root canal instrumentation	<p><u>Working length determination</u></p> <ol style="list-style-type: none"> 1. Brunton PA, Abdeen D, MacFarlane TV. The effect of an apex locator on exposure to radiation during endodontic therapy. <i>J Endod.</i> 2002;28:524-526. 2. Williams CB, Joyce AP, Roberts S. A comparison between <i>in vivo</i> radiographic working length determination and measurement after extraction. <i>J Endod.</i> 2006;32:624-627. 3. Kim E, Marmo M, Lee CY, et al. An <i>in vivo</i> comparison of working length determination by only Root ZX apex locator versus combining Root ZX apex locator with radiographs using a new impression technique. <i>Oral Surg Oral Med Oral Pathol Oral Radiol Endod.</i> 2008;105:e79-83. 4. Gordon MP, Chandler NP. Electronic apex locators. <i>Int Endod J.</i> 2004;37:425-437. <p><u>Orifice enlargement & apical gauging</u></p> <ol style="list-style-type: none"> 1. Stabholz A, Rotstein I, Torabinejad M. Effect of pre-flaring on tactile detection of the apical constriction. <i>J Endod.</i> 1995;21:92-94. 		R1

		<ol style="list-style-type: none"> 2. Ibarrola JL, Chapman BL, Howard JH, et al. Effect of preflaring on Root ZX apex locators. <i>J Endod.</i> 1999;25:625-626. 3. Wu MK, Barkis D, Roris A, et al. Does the first file to bind correspond to the diameter of the canal in the apical region? <i>Int Endod J.</i> 2002;35:264-267. 4. Paqué F, Zehnder M, Marending M. Apical fit of initial K-files in maxillary molars assessed by micro-computed tomography. <i>Int Endod J.</i> 2010;43:328-335. <p><u>Instrumentation techniques</u></p> <ol style="list-style-type: none"> 1. Schilder H. Cleaning and shaping the root canal. <i>Dent Clin North Am.</i> 1974;18:269-296. 2. Abou-Rass M, Frank AL, Glick DH. The anti-curvature filing method to prepare the curved root canal. <i>J Am Dent Assoc.</i> 1980;101:792-794. 3. Goerig AC, Michelich RJ, Schultz HH. Instrumentation of root canals in molar using the step-down technique. <i>J Endod.</i> 1982;8: 550-554. 4. Morgan LF, Montgomery S. An evaluation of the crown-down pressure less technique. <i>J Endod.</i> 1984;10:491-498. 5. Roane JB, Sabala CL, Duncanson MG Jr. The "balanced force" concept for instrumentation of curved canals. <i>J Endod.</i> 1985;11:203-211. 6. Torabinejad M. Passive step-back technique. <i>Oral Surg Oral Med Oral Pathol.</i> 1994;77:398-401. <p><u>Comparison of instrumentation techniques and concepts</u></p> <ol style="list-style-type: none"> 1. Luiten DJ, Morgan LA, Baugartner JC, et al. A comparison of four instrumentation techniques on apical canal transportation. <i>J Endod.</i> 1995;21:26-32. 		
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		<ol style="list-style-type: none"> 2. al-Omari MA, Dummer PM. Canal blockage and debris extrusion with eight preparation techniques. <i>J Endod.</i> 1995;21:154-158. 3. Siqueira JF Jr, Araújo MC, Garcia PF, et al. Histological evaluation of the effectiveness of five instrumentation techniques for cleaning the apical third of root canals. <i>J Endod.</i> 1997;23:499-502. 4. Wu MK, Wesselink PR. A primary observation on the preparation and obturation of oval canals. <i>Int Endod J.</i> 2001;34:137-141. 5. Peters OA, Schönenberger K, Laib A. Effects of four NiTi preparation techniques on root canal geometry assessed by micro computed tomography. <i>Int Endod J.</i> 2001;34:221-230. 6. Ponce de Leon Del Bello T, Wang N, Roane JB. Crown-down tip design and shaping. <i>J Endod.</i> 2003;29:513-518. 7. Nair PN, Henry S, Cano V, et al. Microbial status of apical root canal system of human mandibular first molars with primary apical periodontitis after "one-visit" endodontic treatment. <i>Oral Surg Oral Med Oral Pathol Oral Radiol Endod.</i> 2005;99:231-252. 8. Vera J, Arias A, Romero M. Effect of maintaining apical patency on irrigant penetration into the apical third of root canals when using passive ultrasonic irrigation: An <i>in vivo</i> study. <i>J Endod.</i> 2011;37:1276-1278. 9. Elayouti A, Dima E, Judenhofer MS, et al. Increased apical enlargement contributes to excessive dentin removal in curved root canals: A stepwise microcomputed tomography study. <i>J Endod.</i> 2011;37:1580-1584. 		
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		<p><u>Antibacterial action of instrumentation and irrigation</u></p> <ol style="list-style-type: none"> 1. Byström A, Sundqvist G. Bacteriological evaluation of the efficacy of mechanical root canal instrumentation in endodontic therapy. <i>Scand J Dent Res.</i> 1981;89:321-328. 2. Dalton BC, Orstavik D, Phillips C, et al. Bacterial reduction with nickel titanium rotary instrumentation. <i>J Endod.</i> 1998;24:763-767. 3. Shuping GB, Orstavik D, Sigurdsson A, et al. Reduction of intra-canal bacteria using nickel titanium rotary instrumentation and various medications. <i>J Endod.</i> 2000;26:751-755. 4. Mickel AK, Chogle S, Liddle J, et al. The role of apical size determination and enlargement in the reduction of intra-canal bacteria. <i>J Endod.</i> 2007;33:21-23. <p><u>Supplementary reading</u></p> <ol style="list-style-type: none"> 1. Peters OA. Current challenges and concepts in the preparation of root canal systems: A review. <i>J Endod.</i> 2004;30:559-567. 2. Hulsmann M, Peters OA, Dummer PMH. Mechanical preparation of root canals: Shaping goals, techniques and means.. <i>Endod Top.</i> 2005;10:30. 3. Jafarzadeh H, Abbott PV. Dilaceration: Review of an endodontic challenge. <i>J Endod.</i> 2007;33:1025-1030. 4. Jafarzadeh H, Abbott PV. Ledge formation: Review of a great challenge in endodontics. <i>J Endod.</i> 2007;33:1155-1162. 5. Cantatore G, Berutti E, Castalucci A. Missed anatomy: frequency and clinical impact. <i>Endod Top.</i> 2009;15:3-31. 6. Schefer E, Dammaschke T. Development and sequelae of canal transportation. <i>Endod Top.</i> 2009;15:75-90. 		
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Prosthodontics				
Fixed prosthodontic volume				
#	Topic	Assigned literature to be discussed in sessions	Home reading	Year
	Controversy between cast and prefabricated dowel	<ol style="list-style-type: none"> 1. Jung SH, Min KS, Chang HS, Microleakage and fracture patterns of teeth restored with different posts under dynamic loading. <i>J Prosthet Dent.</i> 2007;98:270-276. 2. Varvara G, Perinetti G, Di Iorio D, et al. In vitro evaluation of fracture resistance and failure mode of internally restored endodontically treated maxillary incisors with differing heights of residual dentin. <i>J Prosthet Dent.</i> 2007;98:365-372. 		R1
	Amalgam coronal/radicular restoration	<ol style="list-style-type: none"> 1. Kane JJ, Burgess JO, Summitt JB. Fracture resistance of amalgam coronal-radicular restorations. <i>J Prosthet Dent.</i> 1990;63:607-613. 2. Nayyar A, Walton RE, Leonard LA. An amalgam corona-radicular dowel and core technique for endodontically treated posterior teeth. <i>J Prosthet Dent.</i> 1980;43:511-515. 		R1
	Apical seal	<ol style="list-style-type: none"> 1. Haddix JE, Mattison GD, Shulman CA, et al. Post preparation techniques and their effect on the apical seal. <i>J Prosthet Dent.</i> 1990;64:515-519. 2. Mattison GD, Delivanis PD, Thacker RW Jr, et al. Effect of post preparation on the apical seal. <i>J Prosthet Dent.</i> 1984;51:785-789. 3. Neagle RL. The effect of dowel preparation on the apical seal of endodontically treated teeth. <i>Oral Surg Oral Med Oral Pathol.</i> 1969;28:739-745. 		R1
	Cast dowel or direct post/core	Heydecke G, Peters MC. The restoration of endodontically treated, single-rooted teeth with cast or direct posts and cores: A systematic review. <i>J Prosthet Dent.</i> 2002;87:380-386.		R1

	Coronal seal	Heling I, Gorfil C, Slutzky H, et al. Endodontic failure caused by inadequate restorative procedures: review and treatment recommendations. <i>J Prosthet Dent.</i> 2002;87:674-678.		R1
	Dentin-root complex/ foundation restorations	Morgano SM, Brackett SE. Foundation restorations in fixed prosthodontics: Current knowledge and future needs. <i>J Prosthet Dent.</i> 1999;82:643-657.		R1
	Endodontic dowel/post design session 2	<ol style="list-style-type: none"> 1. Fernandes AS, Shetty S, Coutinho I. Factors determining post selection: A literature review. <i>J Prosthet Dent.</i> 2003;90:556-562. 2. Sorensen JA, Martinoff JT. Clinically significant factors in dowel design. <i>J Prosthet Dent.</i> 1984;52:28-35. 		R1
	Ferrule effect	<ol style="list-style-type: none"> 1. Sorensen JA, Engelman MJ. Ferrule design and fracture resistance endodontically treated teeth. <i>J Prosthet Dent.</i> 1990;63:529-536. 2. Juloski J1, Radovic I, Goracci C, et al. The ferrule effect: a literature review. <i>J Endod.</i> 2012;38:11-19. 		R1
	Intracoronar reinforcement/coronal coverage	<ol style="list-style-type: none"> 1. Sorensen JA, Martinoff JT. Intracoronar reinforcement and coronal coverage: A study of endodontically treated teeth. <i>J Prosthet Dent.</i> 1984;51:780-784. 2. Sorensen JA, Martinoff JT. Endodontically treated teeth as abutments. <i>J Prosthet Dent.</i> 1985;53:631-636. 		R1
	Managing endodontically treated teeth	<ol style="list-style-type: none"> 1. Morgano SM. Restoration of pulpless teeth: Application of traditional principles in present and future contexts. <i>J Prosthet Dent.</i> 1996;75:375-380. 2. Schwartz RS, Robbins JW. Post placement and restoration of endodontically treated teeth: A literature review. <i>J Endod.</i> 2004;30:289-301. 		R1
	Tooth preparation, finish line and margin configuration	<ol style="list-style-type: none"> 1. Goodacre CJ, Campagni WV, Aquilino SA. Tooth preparations for complete crowns: An art form based on scientific principles. <i>J Prosthet Dent.</i> 2001;85:363-376. 		R1

		<ol style="list-style-type: none"> 2. Gardner FM. Margin of complete crown – literature review. <i>J Prosthet Dent.</i> 1982;48:396-400. 3. Gavelis JR, Morency JD, Riley ED, et al. The effect of various finish line preparation on the marginal seal and occlusal seat of full crown preparation. <i>J Prosthet Dent.</i> 1981;45:138-145. 4. Hunter AJ, Hunter AR. Gingival crown margin configurations: a review and discussion. Part 1: terminology and width. <i>J Prosthet Dent.</i> 1990;64: 548-552. 5. Gardner FM, Tillman-McCombs KW, Gaston ML, et al. In vitro failure of metal collar margins compared with porcelain facial margin of metal ceramic crowns. <i>J Prosthet Dent.</i> 1997;78:1-4. 6. Prince J, Donovan T. The esthetic metal-ceramic margin: a comparison of techniques. <i>J Prosthet Dent.</i> 1983;50:185-192. 		
Removable partial denture volume session 2				
	Bar clasp retainers	<ol style="list-style-type: none"> 1. Roach FE. Principles and essentials of bar clasp partial denture. <i>J Am Dent Assoc.</i> 1930;17:124-138. 2. Demer WJ. An analysis of mesial rest-I-bar clasp designs. <i>J Prosthet Dent.</i> 1976;36:243-253. 3. Krol AJ. Clasp design for extension-base removable partial denture. <i>J Prosthet Dent.</i> 1973;29:408-415. 		R1
	Design philosophy	<ol style="list-style-type: none"> 1. Becker CM1, Kaiser DA, Goldfogel MH. Evolution of removable partial denture design. <i>J Prosthodont.</i> 1994;3:158-166. 2. McCracken WL. Contemporary partial denture design. <i>J Prosthet Dent.</i> 1958;8:407-417. 		R1
	Indirect retainer	<ol style="list-style-type: none"> 1. Avanti WE. Indirect retention in partial denture design. <i>J Prosthet Dent.</i> 1996;16:1103-1110. 		R1

		2. Frank RP, Nicholls JI. An investigation of the effectiveness of indirect retainers. <i>J Prosthet Dent.</i> 1977;38:494-506.	
	Major and minor connectors	<ol style="list-style-type: none"> 1. Henderson D. Major connectors for mandibular removable partial dentures: design and function. <i>J Prosthet Dent.</i> 1973;30(4 Pt 2): 532-548. 2. Campbell LD. Subjective reactions to major connector designs for removable partial dentures. <i>J Prosthet Dent.</i> 1977;37:507-516. 3. LaVere AM, Krol AJ. Selection of a major connector for the extension-base removable partial dentures. <i>J Prosthet Dent.</i> 2005;94:207-208. 	R1
	Mouth preparations, surveying, surveyed crowns	<ol style="list-style-type: none"> 1. Bezzon OL, Mattos MG, Ribeiro RF. Surveying removable partial dentures: the importance of guiding planes and path of insertion for stability. <i>J Prosthet Dent.</i> 1997;78:412-418. 2. Chandler HT, Brudvik JS, Fisher WT. Surveyed crowns. <i>J Prosthet Dent.</i> 1973;30:775-780. 3. Wagner AG, Forgue EG. A study of four methods recording the path of insertion of removable partial dentures. <i>J Prosthet Dent.</i> 1976;35:267-272. 	R1
	Rest and rest seats	<ol style="list-style-type: none"> 1. Cecconi BT. Effect of rest design on transmission of forces to abutment teeth. <i>J Prosthet Dent.</i> 1974;32:141-151. 2. Jones RM, Goodacre CJ, Brown DT, et al. Dentin exposure and decay incidence when removable partial denture rest seats are prepared in tooth structure. <i>Int J Prosthodont.</i> 1992;5:227-236. 	R1
	Work authorizations	Henderson D. Writing work authorizations for removable partial dentures. <i>J Prosthet Dent.</i> 1966;16: 696-706.	R1

	Wrought wire direct retainers	<ol style="list-style-type: none"> 1. Frank RP, Nicholls JI. A study of the flexibility of wrought wire clasps. <i>J Prosthet Dent.</i> 1981;45:259-267. 2. Frank RP, Brudvik JS, Nicholls JI. A comparison of the flexibility of wrought wire and cast circumferential clasps. <i>J Prosthet Dent.</i> 1983;49:471-476. 		R1
	Special considerations for direct retainers	<ol style="list-style-type: none"> 1. McArthur DR. Canines as removable partial denture abutments Part II: Rest and undercut location for retainers. <i>J Prosthet Dent.</i> 1986;56:445-450. 2. Eliason CM. RPA clasp design for distal extension removable partial dentures. <i>J Prosthet Dent.</i> 1983;49:25-27. 2. Grasso JE. A new removable partial denture clasp assembly. <i>J Prosthet Dent.</i> 1980;43:618-621. 		R1
		Complete denture volume		R1
	Bone physiology	<ol style="list-style-type: none"> 1. Atwood DA. Clinical, cephalometric, and densitometric study of reduction of residual ridges. <i>J Prosthet Dent.</i> 1971;26:280-295. 2. Tallgren A. The continuing reduction of the residual alveolar ridges in complete denture wearers: A mixed-longitudinal study covering 25 years. <i>J Prosthet Dent.</i> 1972;27:120-132. 		R1
	Complete denture impression	Jayaraman S, Singh BP, Ramanathan B, et al. Fabrication of complete/partial dentures (different final impression techniques and materials) for treating edentulous patients. <i>Cochrane Database Syst Rev.</i> 2016;6:CD012256.		R1
	Examination and treatment planning	House MM. The relationship of oral examination to dental diagnosis <i>J Prosthet Dent.</i> 1958;8:208-219.		R1
	Denture retention-stability-support	<ol style="list-style-type: none"> 1. Jacobson TE, Krol EJ. A contemporary review of the factors involved in complete denture retention, stability and support Part 1: Retention. <i>J Prosthet Dent.</i> 1983;49:5-15. 		R1

		<ol style="list-style-type: none"> 2. Jacobson TE, Krol EJ. A contemporary review of the factors involved in complete denture retention, stability and support Part 2: Stability. <i>J Prosthet Dent.</i> 1983;49:165-172. 3. Jacobson TE, Krol EJ. A contemporary review of the factors involved in complete denture retention, stability and support Part 3: Support. <i>J Prosthet Dent.</i> 1983;49:306-313. 		
	Hanau Quint	<ol style="list-style-type: none"> 1. Levin B. A reevaluation of Hanau's laws of articulation and the Hanau Quint. <i>J Prosthet Dent.</i> 1978;39:254-258. 2. Trapozzano VR. Laws of articulation. <i>J Prosthet Dent.</i> 1963;13:34-44. 		R1
	Neutral zone concept	Beresin VE, Schiesser FJ. The neutral zone in complete dentures. <i>J Prosthet Dent.</i> 1976;36:356-367.		R1
	Post palatal seal	<ol style="list-style-type: none"> 1. Avant WE. A comparison of the retention of complete denture bases having different types of posterior palatal seal. <i>J Prosthet Dent.</i> 1973;29:484-493. 2. Hardy IR. Posterior border seal - Its rationale and importance. <i>J Prosthet Dent.</i> 1958;8:386-397. 		R1
	Classification and review of complete denture anatomy	Swerdlow H. Vertical dimension literature review. <i>J Prosthet Dent.</i> 1965;15:241-247		R1
	1. Jaw relation (variable rest position)	Tallgren A. Changes in adult face height due to aging, wear and loss of teeth and prosthetic treatment. A roentgen cephalometric study mainly on Finnish women. <i>Am J Orthod Dentofacial Orthop.</i> 1959;45:310-311.		R1
	2. Jaw relation (vertical dimension of occlusion)	Mullick SC, Stackhouse JA Jr, Vincent GR. A study of interocclusal record materials. <i>J Prosthet Dent.</i> 1981;46:304-307.		R1

	3. Jaw relation (recording material)	Trapozzano VR. Occlusal records. <i>J Prosthet Dent.</i> 1954;5:325.		R1
	4. Jaw relation (recording technique)	Walker RC. Comparison of jaw relation recording methods. <i>J Prosthet Dent.</i> 1962;12:685-694.		R1
	5. Jaw relation (facebow)	Brandrup-Wognsen T. The face-bow its significance and application. <i>J Prosthet Dent.</i> 1953;3:618-630.		R1
	6. Jaw relation (CR)	<ol style="list-style-type: none"> 1. Yurkstas AA, Kapur KK. Factors influencing centric relation records in edentulous mouths. <i>J Prosthet Dent.</i> 1964;14:1054-1065. 2. Shanahan TE. Physiologic jaw relation and occlusion of complete dentures. <i>J Prosthet Dent.</i> 2004;91:203-205. 3. Kapur KK, Yurkstas AA. An evaluation of centric relation records obtained by various techniques. <i>J Prosthet Dent.</i> 1957;7:770-786. 		R1
	7. Balanced occlusion	Jordan LG. Arrangement of anatomic-type artificial teeth into balanced occlusion. <i>J Prosthet Dent.</i> 1978;39:484-494.		R1
	8. Concept of denture occlusion	<ol style="list-style-type: none"> 1. Beck HO. Occlusion as related to complete removable prosthodontics. <i>J Prosthet Dent.</i> 1972;27:246-256. 2. Kapur KK. Section IV occlusal pattern and tooth arrangement. In: Lang BR, Kelsey CC, eds. Proceedings of The Complete Denture Occlusion International Prosthodontics Workshop. University of Michigan School of Dentistry, Ann Arbor, MI, USA; 1973. 		R1

	Lingualized occlusion	<ol style="list-style-type: none"> 1. Phoenix RD, Engelmeier RL. Lingualized occlusion revisited. <i>J Prosthet Dent.</i> 2010;104:342-346. 2. Becker CM, Swoope CC, Guckes AD. Lingualized occlusion for removable prosthodontics. <i>J Prosthet Dent.</i> 1977;38:601-608. 		R1
	Lingualized occlusion	<ol style="list-style-type: none"> 1. Jones PM. Monoplane occlusion of complete dentures. <i>J Am Dent Assoc.</i> 1972;85:94-100. 2. Nimmo A, Kratochvil FJ. Balancing ramps in nonanatomic complete denture occlusion. <i>J Prosthet Dent.</i> 1985;53:431-433. 		R1
Periodontics				
#	Topic	Assigned literature to be discussed in sessions	Home reading	Year
1	Classification and diagnosis of periodontal diseases/conditions	<ol style="list-style-type: none"> 1. Development of a classification of a system for periodontal diseases and conditions. Armitage <i>Periodontology, Volume 4:1-6, 1999</i> 2. Advances in periodontal disease diagnosis. Greenstein <i>International Journal of Periodontics and Restorative Dentistry, Volume 5:351-375, 1990</i> 3. A new classification scheme for periodontal and peri - implant diseases and conditions – introduction and key changes from the 1999 classification. Caton Armitage Berglundh Chapple Jepsen Kornman Mealey Papapanou Sanz Tonetti <i>Journal of Periodontology, Volume 89:S1-S8, 2018</i> 4. Periodontal health. Lang Bartold <i>Journal of Periodontology, Volume 45:S9-S16, 2018</i> 5. Acute periodontal lesions (periodontal abscesses and necrotizing periodontal diseases) and endo - periodontal lesions. Herrera Retamal-Valdes Alonso Feres <i>Journal of Periodontology, Volume 45:S78-S94, 2018</i> 		R1

		6. Dental prostheses and tooth - related factors. Ercoli Caton <i>Journal of Periodontology</i> , Volume 45:S223-S236		
2	Rationale and goals of periodontal therapy	1. The rationale for periodontal therapy. Caffesse Mota Morrison <i>Periodontol</i> , Volume9:7-13, 2000 2. Tooth mobility and periodontal disease. Giargia Lindhe <i>Journal of Clinical Periodontology</i> , Volume 24(11):785-795		R1
3	Prognosis versus actual outcome	1. Commentary: prognosis revisited: a system for assigning periodontal prognosis. <i>J Periodontol</i> , 2007 Nov;78(11):2063-71. 2. Prognosis versus actual outcome: a long-term survey of 100 treated periodontal patients under maintenance care. McGuire <i>Journal of Periodontology</i> , Volume 62(1):51-58 3. Prognosis versus actual outcome. II. The effectiveness of clinical parameters in developing an accurate prognosis. McGuire Nunn, <i>Journal of Periodontology</i> , Volume 67(7):658-665 4. Prognosis versus actual outcome. III. The effectiveness of clinical parameters in accurately predicting tooth survival. McGuire Nunn <i>Journal of Periodontology</i> , Volume 67(7):666-674		R1

Residency 2

#	Topic	Assigned literature to be discussed in session	Home reading	R2
RESTORATIVE				
9	Esthetic considerations in diagnosis and treatment planning	<ol style="list-style-type: none"> 1. Spear FM, Kokich VG. A multidisciplinary approach to esthetic dentistry. <i>Dent Clin North Am.</i> 2007;51:487-505. 2. Ahmad I. Anterior dental aesthetics: dental perspective. <i>Br Dent J.</i> 2005;199: 135-141. 3. Ahmad I. Anterior dental aesthetics: facial perspective. <i>Br Dent J.</i> 2005;199:15-21. 4. Ahmad I. Anterior dental aesthetics: gingival perspective. <i>Br Dent J.</i> 2005;199: 195-202. 5. Bagheri R, Burrow MF, Tyas MJ. Surface characteristics of aesthetic restorative materials– an SEM study. <i>J Oral Rehabil.</i> 2007;34:68-76. 6. van Zyl I, Geissberger M. Simulated shape design: Helping patients decide their esthetic ideal. <i>J Am Dent Assoc.</i> 2001;13:1105-1109. 7. Davis NC. Smile design. <i>Dent Clin North Am.</i> 2007;51:299-318, vii. 	<ol style="list-style-type: none"> 8. Özcan M, Pekkan G. Effect of different adhesion strategies on bond strength of resin composite to composite-dentin complex. <i>Oper Dent.</i> 2013;38:63-72. 9. Ali Fayyad M, Jamani KD, Agrabawi J. Geometric and mathematical proportions and their relations to maxillary anterior teeth. <i>J Contemp Dent Pract.</i> 2006;7:62-70. 10. Al-Johany SS, Alqahtani AS, Alqahtani FY, et al. Evaluation of different esthetic smile criteria. <i>Int J Prosthodont.</i> 2011;24:64-70. 11. Basting RT, da Trindade Rde C, Flório FM. Comparative study of smile analysis by subjective and computerized methods. <i>Oper Dent.</i> 2006;31: 652-659. 	R2

10	Color and dental shade guides	<ol style="list-style-type: none"> 1. Azer SS, Ayash GM, Johnston WM, et al. Effect of esthetic core shades on the final color of IPS Empress all-ceramic crowns. <i>J Prosthet Dent.</i> 2006;96:397-401. 2. Meireles SS, Demarco FF, dos Santos Ida S, et al. Validation and reliability of visual assessment with a shade guide for tooth-color classification. <i>Oper Dent.</i> 2008;33:121-126. 3. Joiner A. Tooth colour: a review of the literature. <i>J Dent.</i> 2004;32 Suppl 1:3-12. 4. Lee YK, Lu H, Powers JM. Changes in opalescence and fluorescence properties of resin composites after accelerated aging. <i>Dent Mater.</i> 2006;22:653-660. 5. Kamishima N, Ikeda T, Sano H. Color and translucency of resin composites for layering techniques. <i>Dent Mater J.</i> 2005;24:428-432. 6. Joiner A, Hopkinson I, Deng Y, et al. A review of tooth colour and whiteness. <i>J Dent.</i> 2008;36 Suppl 1:S2-7. 7. Paravina RD. Color in dentistry: match me, match me not. <i>J Esthet Restor Dent.</i> 2009;21:133-139. 	<ol style="list-style-type: none"> 8. Yuasa N. Reproduction of natural vivid appearance in porcelain restorations. Part 2: The essence of the internal staining technique. In: Duarte S, ed. <i>Quintessence of Dental Technology 2011.</i> Quintessence Publishing Co Ltd, Batavia, IL, USA: 2011 9. da Silva T, de Oliveira H, Severino D, et al. Direct spectrometry: a new alternative for measuring the fluorescence of composite resins and dental tissues. <i>Oper Dent.</i> 2014;39:407-415. 10. Yilmaz C, Korkmaz T, Demirköprülü H, et al. Color stability of glazed and polished dental porcelains. <i>J Prosthodont.</i> 2008;17:20-24. 	R2
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11	Indirect tooth-colored restorations	<ol style="list-style-type: none"> 1. Meyer A Jr, Cardoso LC, Araujo E, et al. Ceramic inlays and onlays: clinical procedures for predictable results. <i>J Esthet Restor Dent.</i> 2003;15:338-351. 2. Hickel R, Peschke A, Tyas M, et al. FDI World Dental Federation: clinical criteria for the evaluation of direct and indirect restorations—update and clinical examples. <i>Clin Oral Investig.</i> 2010;14:349-366. 3. Fron Chabouis H, Smail Faugeron V, Attal JP. Clinical efficacy of composite versus ceramic inlays and onlays: a systematic review. <i>Dent Mater.</i> 2013;29:1209-1218. 4. Morimoto S, Rebello de Sampaio FB, Braga MM, et al. Survival rate of resin and ceramic inlays, onlays, and meta-analysis. <i>J Dent Res.</i> 2016;95:985-994. 5. Beier US, Kapferer I, Burtscher D, et al. Clinical performance of all ceramic inlay and onlay restorations in posterior teeth. <i>Int J Prosthodont.</i> 2012;25:395-402. 	<ol style="list-style-type: none"> 7. Jiang W, Bo H, Yongchun G, et al. Stress distribution in molars restored with inlays or onlays with or without endodontic treatment: a three-dimensional finite element analysis. <i>J Prosthet Dent.</i> 2010;103:6-12. 8. Blatz M. The clinical long-term success of ceramic restorations--Part I: Inlays and onlays. <i>Pract Proced Aesthet Dent.</i> 2004;16:622. 	R2
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		<p>6. Guess PC, Vagkopoulou T, Zhang Y, et al. Marginal and internal fit of heat pressed versus CAD/CAM fabricated all ceramic onlays after exposure to thermo-mechanical fatigue. <i>J Dent.</i> 2014;42:199-209.</p>	
5	Root canal irrigation	<p><u>Microbiological action of irrigants</u></p> <ol style="list-style-type: none"> 1. Byström A, Sundqvist G. Bacteriological evaluation of the effect of 0.5 % sodium hypochlorite in endodontic therapy. <i>Oral Surg Oral Med Oral Pathol.</i> 1983;55:307-312. 2. Bystrom A, Sundqvist G. The antibacterial action of sodium hypochlorite and EDTA in 60 cases of endodontic therapy. <i>Int Endod J.</i> 1985;18:35-40. 3. Siqueira JF Jr, Rôças IN, Favieri A, et al. Chemomechanical reduction of the bacterial population in the root canal after instrumentation and irrigation with 1%, 2.5%, and 5.25% sodium hypochlorite. <i>J Endod.</i> 2000;26: 331-334. <p><u>Cleaning action of irrigants</u></p> <ol style="list-style-type: none"> 1. Chow TW. Mechanical effectiveness of root canal irrigation. <i>J Endod.</i> 1983;9: 475-479. 	R2

		<p>2. Khademi A, Yazdizadeh M, Feizianfard M. Determination of the minimum instrumentation size for penetration of irrigants to the apical third of root canal systems. <i>J Endod.</i> 2006;32:417-420.</p> <p>3. Paqué F, Laib A, Gautschi H, et al. Hard-tissue debris accumulation analysis by high-resolution computed tomography scans. <i>J Endod.</i> 2009;35:1044-1047.</p> <p>4. Endal U, Shen Y, Knut A, et al. A high-resolution computed tomographic study of changes in root canal isthmus area by instrumentation and root filling. <i>J Endod.</i> 2011;37:223-227.</p> <p><u>Tissue-dissolving action of NaOCl</u></p> <p>1. Moorer WR, Wesselink PR. Factors promoting the tissue dissolving capability of sodium hypochlorite. <i>Int Endod J.</i> 1982;15:187-196.</p> <p>2. Stojicic S, Zivkovic S, Qian W, et al. Tissue dissolution by sodium hypochlorite: Effect of concentration, temperature, agitation, and surfactant. <i>J Endod.</i> 2010;36:1558-1562.</p>		
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		<p><u>Smear layer</u></p> <ol style="list-style-type: none"> 1. Sim TP, Knowles JC, Ng YL, et al. Effect of sodium hypochlorite on mechanical properties of dentine and tooth surface strain. <i>Int Endod J.</i> 2001;34:120-132. 2. Shahravan A, Haghdoost AA, Adl A, et al. Effect of smear layer on sealing ability of canal obturation: A systematic review and meta-analysis. <i>J Endod.</i> 2007;33:96-105. 3. Paqué F, Boessler C, Zehnder M. Accumulated hard tissue debris levels in mesial roots of mandibular molars after sequential irrigation steps. <i>Int Endod J.</i> 2011;44:148-153. <p><u>Chlorhexidine</u></p> <ol style="list-style-type: none"> 1. Zamany A, Safavi K, Spångberg LS. The effect of chlorhexidine as an endodontic disinfectant. <i>Oral Surg Oral Med Oral Pathol Oral Radiol Endod.</i> 2003;96:578-581. 2. Rasimick BJ, Nekich M, Hladek MM, et al. Interaction between chlorhexidine digluconate and EDTA. <i>J Endod.</i> 2008;34:1521-1523. 3. Nowicki JB, Sem DS. An <i>in vitro</i> spectroscopic analysis to determine the chemical composition of the precipitate formed by mixing sodium hypochlorite and chlorhexidine. <i>J Endod.</i> 2011;37: 983-988. 		
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		<p><u>MTAD</u></p> <ol style="list-style-type: none"> 1. Torabinejad M, Khademi AA, Babagoli J, et al. A new solution for the removal of the smear layer. <i>J Endod.</i> 2003;29:170-175. 2. Malkhassian G, Manzur AJ, Legner M, et al. Antibacterial efficacy of MTAD final rinse and two percent chlorhexidine gel medication in teeth with apical periodontitis: A randomized double-blinded clinical trial. <i>J Endod.</i> 2009;35:1483-1490. <p><u>Ultrasonics</u></p> <ol style="list-style-type: none"> 1. Sjögren U, Sundqvist G. Bacteriologic evaluation of ultrasonic root canal instrumentation. <i>Oral Surg Oral Med Oral Pathol.</i> 1987;63:366-370. 2. Ahmad M, Pitt Ford TR, Crum LA. Ultrasonic debridement of root canals: An insight into the mechanisms involved. <i>J Endod.</i> 1987;13:93-101. 3. Ahmad M, Pitt Ford TJ, Crum LA. Ultrasonic debridement of root canals: Acoustic streaming and its possible role. <i>J Endod.</i> 1987;13:490-499. 4. Ahmad M, Pitt Ford TR, Crum LA, et al. Ultrasonic debridement of root canals: Acoustic cavitation and its relevance. <i>J Endod.</i> 1988;14:486-493. 		
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		<p><u>Development in irrigation</u></p> <ol style="list-style-type: none"> 1. de Groot SD, Verhaagen B, Versluis M, et al. Laser-activated irrigation within root canals: Cleaning efficacy and flow visualization. <i>Int Endod J.</i> 2009;42:1077-1083. 2. Desai P, Himel V. Comparative safety of various intra-canal irrigation systems. <i>J Endod.</i> 2009;35: 545-549. 3. de Gregorio C, Estevez R, Cisneros R, et al. Effect of EDTA, sonic, and ultrasonic activation on the penetration of sodium hypochlorite into simulated lateral canals: An <i>in vitro</i> study. <i>J Endod.</i> 2009;35:891-895. 4. Mitchell RP, Baumgartner JC, Sedgley CM. Apical extrusion of sodium hypochlorite using different root canal irrigation systems. <i>J Endod.</i> 2011;37:1677-1681. <p><u>Calcium hydroxide</u></p> <ol style="list-style-type: none"> 1. Sjögren U, Figdor D, Spångberg L, et al. The antimicrobial effect of calcium hydroxide as a short-term intracanal dressing. <i>Int Endod J.</i> 1991;24:119-125. 2. Sathorn C, Parashos P, Messer H. Antibacterial efficacy of calcium hydroxide intra-canal dressing: A systematic review and meta-analysis. <i>Int Endod J.</i> 2007;40: 2-10. 		
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6	Intra-canal medications	<p>3. Sjögren U, Figdor D, Persson S, et al. Influence of infection at the time of root filling on the outcome of endodontic treatment of teeth with apical periodontitis. <i>Int Endod J</i>. 1997;30:297-306.</p> <p>4. Trope M, Delano EO, Orstavik D. Endodontic treatment of teeth with apical periodontitis: Single vs. multi-visit treatment. <i>J Endod</i>. 1999;25:345-350.</p> <p>5. Foster KH, Kulild JC, Weller RN. Effect of smear layer removal on the diffusion of calcium hydroxide through radicular dentin. <i>J Endod</i>. 1993;19:136-140.</p> <p><u>Intra-canal medicaments and pain/flare up</u></p> <p>1. Walton RE, Holton IF Jr, Michelich R. Calcium hydroxide as an intra-canal medication: Effect on post-treatment pain. <i>J Endod</i>. 2003;29:627-629.</p> <p>2. Ehrmann EH, Messer HH, Adams GG. The relationship of intra-canal medicaments to post-operative pain in endodontics. <i>Int Endod J</i>. 2003;36:868-875.</p> <p>3. Ehrmann EH, Messer HH, Clark RM. Flare-ups in endodontics and their relationship to various medicaments. <i>Aust Endod J</i>. 2007;33:119-130.</p>		R2
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	<p><u>Other intra-canal medicaments</u></p> <ol style="list-style-type: none"> 1. Bystrom A, Claesson R, Sundqvist G. The antibacterial effect of camphorated paramonochlorophenol, camphorated phenol and calcium hydroxide in the treatment of infected root canals. <i>Endod Dent Traumatol.</i> 1985;1:170-175. 2. Manzur A, González AM, Pozos A, et al. Bacterial quantification in teeth with apical periodontitis related to instrumentation and different intra-canal medications: A randomized clinical trial. <i>J Endod.</i> 2007;33:114-118. 3. Wang CS, Arnold RR, Trope M, et al. Clinical efficiency of 2% chlorhexidine gel in reducing intra-canal bacteria. <i>J Endod.</i> 2007;33:1283-1289. <p><u>Supplementary reading</u></p> <ol style="list-style-type: none"> 1. Chong BS, Pitt Ford TR. The role of intra-canal medication in root canal treatment. <i>Int Endod J.</i> 1992;25:97-106. 2. Siqueira JF Jr, Lopes HP. Mechanisms of antimicrobial activity of calcium hydroxide: A critical review. <i>Int Endod J.</i> 1999;32:361-369. 3. Mohammadi Z, Dummer PM. Properties and applications of calcium hydroxide in endodontics and dental traumatology. <i>Int Endod J.</i> 2011;44: 697-730. 		
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7	Root canal obturation	<p><u>Functions of root filling</u></p> <ol style="list-style-type: none"> 1. Sabeti MA, Nekofar M, Motahary P, et al. Healing of apical periodontitis after endodontic treatment with and without obturation in dogs. <i>J Endod.</i> 2006;32:628-633. 2. Shipper G, Ørstavik D, Teixeira FB, et al. An evaluation of microbial leakage in roots filled with a thermoplastic synthetic polymer-based root canal filling material (Resilon). <i>J Endod.</i> 2004;30:342-347. <p><u>Properties of sealers</u></p> <ol style="list-style-type: none"> 1. Grossman LI. Physical properties of root canal cements. <i>J Endod.</i> 1976;2:166-175. 2. Lee KW, Williams MC, Camps JJ. Adhesion of endodontic sealers to dentin and gutta-percha. <i>J Endod.</i> 2002;28:684-688. 3. Mokeem-Saleh A, Hammad M, Silikas N, et al. A laboratory evaluation of the physical and mechanical properties of selected root canal sealers. <i>Int Endod J.</i> 2010;43:882-888. <p><u>Sealers and smear layer</u></p> <ol style="list-style-type: none"> 1. Kokkas AB, Boutsioukis ACh, Vassiliadis LP. The influence of the smear layer on dentinal tubule penetration depth by three different root canal sealers: an <i>in vitro</i> study. <i>J Endod.</i> 2004;30:100-102. 		R2
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		<p>2. Saleh IM, Ruyter IE, Haapasalo M, et al. Survival of <i>Enterococcus faecalis</i> in infected dentinal tubules after root canal filling with different root canal sealers <i>in vitro</i>. <i>Int Endod J</i>. 2004;37:193-198.</p> <p><u>Obturation techniques</u></p> <p>1. Juhlin JJ, Walton RE, Dovgan JS. Adaptation of Thermafil components to canal walls. <i>J Endod</i>. 1993;19:130-135.</p> <p>2. Wu MK, Kast'áková A, Wesselink PR. Quality of cold and warm gutta-percha fillings in oval canals in mandibular premolars. <i>Int Endod J</i>. 2001;34:485-491.</p> <p>3. Guess GM, Edwards KR, Yang ML, et al. Analysis of continuous-wave obturation using a single-cone and hybrid technique. <i>J Endod</i>. 2003;29:509-512.</p> <p>4. Collins J, Walker MP, Kulild J, et al. A comparison of three gutta-percha obturation techniques to replicate canal irregularities. <i>J Endod</i>. 2006;32:762-765.</p> <p>5. Hammad M, Qualtrough A, Silikas N. Evaluation of root canal obturation: A three-dimensional <i>in vitro</i> study. <i>J Endod</i>. 2009;35:541-544.</p>		
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	<p><u>Heat transfer to filling materials and external root surface</u></p> <ol style="list-style-type: none"> 1. Smith RS, Weller RN, Loushine RJ, et al. Effect of varying the depth of heat application on the adaptability of gutta-percha during warm vertical compaction. <i>J Endod.</i> 2000;26: 668-672. 2. Zhou X, Chen Y, Wei X, et al. Heat transfers to periodontal tissues and gutta-percha during thermoplasticized root canal obturation in a finite element analysis model. <i>Oral Surg Oral Med Oral Pathol Oral Radiol Endod.</i> 2010;110: 257-263. <p><u>Decontamination of gutta percha and Resilon</u></p> <ol style="list-style-type: none"> 1. Ozalp N, Okte Z, Ozcelik B. The rapid sterilization of gutta-percha cones with sodium hypochlorite and gluteraldehyde. <i>J Endod.</i> 2006;32: 1202-1204. 2. Royal MJ, Williamson AE, Drake DR. Comparison of 5.25% sodium hypochlorite, MTAD, and 2% chlorhexidine in the rapid disinfection of polycaprolactone-based root canal filling material. <i>J Endod.</i> 2007;33:42-44. <p><u>Outcome in relation to obturation</u></p> <ol style="list-style-type: none"> 1. Chu CH, Lo EC, Cheung GS. Outcome of root canal treatment using Thermafil and cold lateral condensation filling techniques. <i>Int Endod J.</i> 2005;38:179-185. 		
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		<p>2. Peng L, Ye L, Tan H, et al. Outcome of root canal obturation by warm gutta-percha versus cold lateral condensation: A meta-analysis. <i>J Endod.</i> 2007;33: 106-109.</p> <p>3. Sari S, Duruturk L. Radiographic evaluation of periapical healing of permanent teeth with periapical lesions after extrusion of AH Plus sealer. <i>Oral Surg Oral Med Oral Pathol Oral Radiol Endod.</i> 2007;104:e54-59.</p> <p>4. Zmener O, Pameijer CH. Clinical and radiographic evaluation of a resin-based root canal sealer: An eight-year update. <i>J Endod.</i> 2010;36: 1311-1314.</p> <p><u>Incidence of dentinal defect after canal filling</u> Shemesh H, Bier CA, Wu MK, et al. The effects of canal preparation and filling on the incidence of dentinal defects. <i>Int Endod J.</i> 2009;42:208-213.</p> <p><u>Supplementary reading</u></p> <p>1. Schilder H. Filling root canals in three dimensions. <i>J Endod.</i> 2006;32:281-290.</p> <p>2. Ørstavik D. Materials used for root canal obturation: Technical, biological and clinical testing. <i>Endod Top.</i> 2005;12:25-38.</p> <p>3. Dahl JE. Toxicity of endodontic filling materials. <i>Endod Top.</i> 2005;12:39-43.</p>		
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		<p>4. Bogen G, Kuttler S. Mineral trioxide aggregate obturation: A review and case series. <i>J Endod.</i> 2009;35: 777-790.</p>	
8	Temporization in endodontics	<p>1. Widerman FH, Eames WB, Serene TP. The physical and biological properties of Cavit. <i>J Am Dent Assoc.</i> 1971;82:378-382.</p> <p>2. Anderson RW, Powell BJ, Pashley DH. Microleakage of three temporary endodontic restorations. <i>J Endod.</i> 1988;14:497-501.</p> <p>3. Pai SF, Yang SF, Sue WL, et al. Microleakage between endodontic temporary restorative materials placed at different times. <i>J Endod.</i> 1999;25:453-456.</p> <p>4. Balto H. An assessment of microbial coronal leakage of temporary filling materials in endodontically treated teeth. <i>J Endod.</i> 2002;28:762-764.</p> <p>5. Lai YY, Pai L, Chen CP. Marginal leakage of different temporary restorations in standardized complex endodontic access preparations. <i>J Endod.</i> 2007;33:875-878.</p> <p>6. Chailertvanitkul P, Abbott PV, Riley TV, et al. Bacterial and dye penetration through interim restorations used during endodontic treatment of molar teeth. <i>J Endod.</i> 2009;35: 1017-1022.</p>	R2

		<p>7. ElAyouti A, Serry MI, Geis-Gerstorfer J, et al. Influence of cusp coverage on the fracture resistance of premolars with endodontic access cavities. <i>Int Endod J.</i> 2011;44:543-549.</p> <p>8. Pakdeethai S, Abuzar M, Parashos P. Fracture patterns of glass-ionomer cement overlays versus stainless steel bands during endodontic treatment: An <i>ex-vivo</i> study. <i>Int Endod J.</i> 2013;46:1115-1124.</p> <p><u>Supplementary readings</u></p> <p>1. Naoum HJ, Chandler NP. Temporization for endodontics. <i>Int Endod J.</i> 2002;35:964-978.</p> <p>2. Rödíg T, Hülsmann M. Restorative materials for the temporary seal of the endodontic access. <i>ENDO</i>, 2008;2:117-130.</p>		
PROSTHODONTICS				
Fixed prosthodontic volume				
#	Topic	Assigned literature to be discussed in session	Home reading	Year
	All-ceramic materials	<p>1. Raigrodski AJ, Chiche GJ. The safety and efficacy of anterior ceramic fixed partial dentures: A review of the literature. <i>J Prosthet Dent.</i> 2001;86:520-525.</p> <p>2. Raigrodski AJ. Contemporary materials and technologies for all-ceramic fixed partial dentures: A review of the literature. <i>J Prosthet Dent.</i> 2004;92:557-562.</p> <p>3. Thompson JY, Stoner B, Piascik J. Ceramics for restorative dentistry: Critical aspects for fracture and fatigue resistance. <i>Mat Sci Eng C-Bio S.</i> 2007;27:565-569.</p>		R2

		<ol style="list-style-type: none"> 4. Conrad HJ, Seong WJ, Pesun IJ. Current ceramic materials and systems with clinical recommendations: a systematic review. <i>J Prosthet Dent.</i> 2007;98:389-404. 5. Griggs JA. Recent advances in materials for all-ceramic restorations. <i>Dent Clin North Am.</i> 2007;51:713. 6. Mörmann WH, Bindl A. All-ceramic, chair-side computer-aided design/computer-aided machining restorations. <i>Dent Clin North Am.</i> 2002;46:405-426. 7. Gracis S, Thompson VP, Ferencz JL, et al. New classification system for all-ceramic and ceramic-like restorative materials. <i>Int J Prosthodont.</i> 2015;28:227-235. 8. McLaren EA. Ceramics in dentistry—Part I: Classes of materials. Available from: https://www.aegisdentalnetwork.com/id/2009/10/many-different-types-of-ceramic-systems-have-been-introduced-in-recent-years-for-all-types-of-indirect-restorations. 9. Datla SR. Dental ceramics: Part II – Recent advances in dental ceramics. <i>American Journal of Materials Engineering and Technology.</i> 2015;3:19-26. 		
	Cantilevers	<ol style="list-style-type: none"> 1. Himmel R, Pilo R, Assif D, et al. The cantilever fixed partial denture - A literature review. <i>J Prosthet Dent.</i> 1992;67:484-487. 2. Lang NP, Pjetursson BE, Tan K, et al. A systematic review of the survival and complication rates of fixed partial dentures (FPDs) after an observation period of at least 5 years IV. Cantilever or extension FPDs. <i>Clin Oral Implants Res.</i> 2004;15: 643-653. 3. Laurell L, Lundgren D, Falk H, et al. Long-term prognosis of extensive polyunit cantilevered fixed partial denture. <i>J Prosthet Dent.</i> 1991;66:545-552. 		R2
	Casting alloys	<ol style="list-style-type: none"> 1. Wataha JC. Alloys for prosthodontic restoration. <i>J Prosthet Dent.</i> 2002;87: 351-363. 2. Givan DA. Precious metal in dentistry. <i>Dent Clin North Am.</i> 2007;51:591-601. 3. Roach M. Base metal alloys used for dental restorations and implants. <i>Dent Clin North Am.</i> 2007;51:603-627. 		R2

<p>Management of worn dentition Session 2</p>	<ol style="list-style-type: none"> 1. Hattab FN, Yassin OM. Etiology and diagnosis of tooth wear: A literature review and presentation of selected cases. <i>Int J Prosthodont.</i> 2000;13: 101-107. 2. Lee WC, Eakle WS. Stress induced cervical lesion review of advances in the past 10 years. <i>J Prosthet Dent.</i> 1996;75:487-494. 3. Turner A, Missirlan DM. Restoration of the extremely worn dentition. <i>J Prosthet Dent.</i> 1984;35:467-474. 4. Verrett RG. Analyzing the etiology of an extremely worn dentition. <i>J Prosthodont.</i> 2001;10:224-233. 		<p>R2</p>
<p>Margin distortion in metal ceramic restorations</p>	<p>Shillingburg H Jr, Hobo S, Fisher DW. Preparation design and margin distortion in porcelain-fused-to-metal restorations. <i>J Prosthet Dent.</i> 1973;89:276-284.</p>		<p>R2</p>
<p>Occlusion</p>	<ol style="list-style-type: none"> 1. DuVall NB, Rogers PM. Application of the functionally generated path technique to restore mandibular molars in bilateral group function occlusion. <i>J Prosthodont.</i> 2012;22:226-232. 2. Panek H, Matthews-Brzozowska T, Nowakowska D, et al. Dynamic occlusions in natural permanent dentition. <i>Quintessence Int.</i> 2008;39:337-342. 3. Thornton et al. Anterior guidance: Group function/canine guidance. A literature review. <i>J Prosthet Dent.</i> 1990;64: 479-482. 4. Pokorny PH, Wiens JP, Litvak H. Occlusion for fixed prosthodontics: A historical perspective of the gnathological influence. <i>J Prosthet Dent.</i> 2004;99:299-313. 		<p>R2</p>
<p>Special topics</p>	<ol style="list-style-type: none"> 1. Grossmann Y, Sadan A. The prosthodontic concept of crown-to-root ratio: A review of the literature. <i>J Prosthet Dent.</i> 2005;93:559-562. 2. Kayser AF. Limited treatment goals-shortened dental arches. <i>Periodontol 2000.</i> 1994;4:7-14. 3. Rich B, Goldstein GR. New paradigms in prosthodontic treatment planning: A literature review. <i>J Prosthet Dent.</i> 2002;88:208-214. 		<p>R2</p>

Splinting	<ol style="list-style-type: none"> 1. El Charkawi HG, el Wakad MT. Effect of splinting on load distribution of extracoronal with distal extension prosthesis in vitro. <i>J Prosthet Dent.</i> 1996;76: 2. Jacobi R. Effect of abutment mobility, site, and angle of impact on retention of fixed partial dentures. <i>J Prosthet Dent.</i> 1985;54:315-320. 		R2
Longitudinal studies	<ol style="list-style-type: none"> 1. Goodacre CJ, Bernal G, Rungcharassaeng K, et al. Clinical complications in fixed prosthodontics. <i>J Prosthet Dent.</i> 2003;90:31-41. 2. Pjetursson BE, Brägger U, Lang NP, et al. Comparison of survival and complication rates of tooth supported fixed dental prostheses (FDPs) and implant supported FDPs and single crowns (SCs). <i>Clin Oral Implant Res.</i> 2007;18 Suppl 3:97-113. 		R2
Complete denture volume Session 3			
Denture esthetics	<ol style="list-style-type: none"> 1. Frush JP. Introduction to dentogenic restorations. <i>J Prosthet Dent.</i> 1955;5:586-595. 2. Frush JP. The dynesthetic interpretation of the dentogenic concept. <i>J Prosthet Dent.</i> 1958;8: 558-581. 		R2
Tissue conditioner material	Gonzalez JB. Use of tissue conditioners and resilient liners. <i>Dent J North Am.</i> 1977;21:249-259.		R2
Overdenture	<ol style="list-style-type: none"> 1. Crum RJ, Rooney GE Jr. Alveolar bone loss in over dentures: a 5-year study. <i>J Prosthet Dent.</i> 1978;40: 610-613. 2. Morrow RM, Feldmann EE, Rudd KD, et al. Tooth supported complete dentures: an approach to preventive prosthodontics. <i>J Prosthet Dent.</i> 1969;21:513-522. 3. Toolson LB, Smith DE. A five year longitudinal study of patients treated with overdentures. <i>J Prosthet Dent.</i> 1983;49:749-756. 		R2

	Gagging	<ol style="list-style-type: none"> 1. Conny DJ, Tedesco LA. The gagging problem in prosthodontics treatment. Part I: Description and causes. <i>J Prosthet Dent.</i> 1983;49:601-606. 2. Conny DJ, Tedesco LA. The gagging problem in prosthodontics treatment. Part II: patient management. <i>J Prosthet Dent.</i> 1983;49:757-761. 		R2
	Immediate denture	<ol style="list-style-type: none"> 1. Campagna SJ. An impression technique for immediate dentures. <i>J Prosthet Dent.</i> 1968;20:196-203. 2. Demer WJ. Minimizing problems in placement of immediate dentures. <i>J Prosthet Dent.</i> 1972;27:275-284. 3. Heartwell CM, Salisbury FW. Immediate complete dentures: an evaluation. <i>J Prosthet Dent.</i> 1965;15:615-624. 4. LaVere, Krol JA. Immediate dentures service. <i>J Prosthet Dent.</i> 1973;29:10-15. 		R2
	Speech	<ol style="list-style-type: none"> 1. Pound E. Utilizing speech to simplify a personalized denture service. <i>J Prosthet Dent.</i> 1970;24:586-600. 2. Rothman R. Phonetic considerations in denture prosthesis. <i>J Prosthet Dent.</i> 1961;11:214-223. 		R2
	General esthetics	<ol style="list-style-type: none"> 1. Levin EI. Dental esthetics and the golden proportion. <i>J Prosthet Dent.</i> 1978;40:244-252. 2. Lombardi RE. The principles of visual perception and their clinical application to denture esthetics. <i>J Prosthet Dent.</i> 1973;29:358-382. 3. Mavroskoufis F, Ritchie GM. The face form as a guide for the selection of maxillary central incisors. <i>J Prosthet Dent.</i> 1980;43:501-505. 4. Roraff AR. Arranging artificial teeth according to anatomic landmarks. <i>J Prosthet Dent.</i> 1977;38:120-130. 		R2
	Troubleshooting	<p>Morstad AT, Peterson AD. Post insertion denture problems. <i>J Prosthet Dent.</i> 1968;19:126-132.</p>		R2

OCCLUSION			
Articulator I	<ol style="list-style-type: none"> 1. Curtis DA, Wachtel HC. Limitation of semiadjustable articulators. Part II: straight line articulators with provision for immediate side shift. <i>J Prosthet Dent.</i> 1987;58:569-573. 2. Wachtel HC, Curtis DA. Limitation of semiadjustable articulators. Part I: straight line articulators without setting for immediate side shift. <i>J Prosthet Dent.</i> 1987;58:438-442. 3. Bellanti ND. The significance of articulator capabilities part I. adjustable vs. semiadjustable articulators, <i>J Prosthet Dent.</i> 1973;29:269-275. 4. Bellanti ND. The significance of articulator capabilities part II. The prevalence of immediate side shift. <i>J Prosthet Dent.</i> 1979;42:255-256. 5. Hobo S, Shillingburg HT Jr, Whitsett LD. Articulator selection for restorative dentistry. <i>J Prosthet Dent.</i> 1976;36:35-43. 6. Becker CM, Kaiser DA. Evolution of occlusion and occlusal instrument. <i>J Prosthodont.</i> 1993;2:33-43. 7. Rihani A. Classification of articulators. <i>J Prosthet Dent.</i> 1980;43:344-347. 8. Weinberg LA. Evaluation of basic articulators and their concepts, part II. Arbitrary, positional, semiadjustable articulators. <i>J Prosthet Dent.</i> 1963;13:645-663. 		R2
Facebow	<ol style="list-style-type: none"> 1. Lauritzen AG, Bodner GH Variation in location of arbitrary and true hinge axis points. 1961;11:224-229. 2. Schallhorn RG. A study of the arbitrary center and the kinematic center of rotation for face-bow mountings. <i>J Prosthet Dent.</i> 1957;7:162-169. 		R2
Mandibular transverse hinge access	<ol style="list-style-type: none"> 1. Weinberg. The transverse hinge axis: real or imaginary. <i>J Prosthet Dent.</i> 1959;9: 2. Weinberg. An evaluation of the face-bow mounting. <i>J Prosthet Dent.</i> 1961;11: 		R2

<p>Posterior determinant of occlusion</p>	<ol style="list-style-type: none"> 1. Lundeen HC, Shryock EF, Gibbs CH. An evaluation of the mandibular border movements: their character and significance. <i>J Prosthet Dent.</i> 1978;40:442-452. 2. Payne JA. Condylar determinants in a patient population: electronic pantograph assessment. <i>J Oral Rehabil.</i> 1997;24:157-163. 3. Price RB, Kolling JN, Clayton JA. Effects of changes in articulator_{SEP} occlusal tracings. Part I: Condylar inclination and progressive side shift settings. <i>J Prosthet Dent.</i> 1991;65:237-243. 4. Price RB, Kolling JN, Clayton JA. Effects of changes in articulator_{SEP} occlusal tracings. Part II: Immediate side shift, intercondylar distance, and rear and top wall settings. <i>J Prosthet Dent.</i> 1991;65:377-382. 		R2
Implant prosthodontic volume			
<p>Clinical guideline for implant dentistry</p>	<ol style="list-style-type: none"> 1. Becker W. Immediate implant placement: treatment planning and surgical steps for successful outcomes. <i>Br Dent J.</i> 2006;201:199-205. 2. Jivraj S. Treatment planning for the edentulous maxilla. <i>Br Dent J.</i> 2006;201:261-279. 3. Jivraj S. An interdisciplinary approach to treatment planning in implant dentistry. <i>Br Dent J.</i> 2006;201:11-17. 4. Jivraj S. Transitioning patients from teeth to implants. <i>Br Dent J.</i> 2006;201:699-708. 5. Rose TP, Jivraj S, Chee W. The role of orthodontic in implant dentistry. <i>Br Dent J.</i> 2006;201:753-764. 6. Jivraj S. Treatment planning of implants in posterior quadrants. <i>Br Dent J.</i> 2006;201:13-23. 7. Jivraj S, Chee W. Treatment planning of implants in the aesthetic zone. <i>Br Dent J.</i> 2006;201:77-89. 		R2

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	Endodontics versus implant	<ol style="list-style-type: none"> 1. Derhalli M, Mounce RE. Clinical decision making regarding endodontics versus implants. <i>Compend Contin Educ Dent.</i> 2011;32:24-6, 28-30, 2. Kinsel RP, Lamb RE, Ho D. A treatment dilemma of the furcated molar: root resection versus single-tooth implant restoration. A literature review. <i>Int J Oral Maxillofac Implants.</i> 1998;13:322-332. 3. Torabinejad M, Anderson P, Bader J, et al. Outcome of root canal treatment and restoration, implant-supported single crowns, fixed dentures, and extraction without replacement: a systematic review. <i>J Prosthet Dent.</i> 2007;98:285-311. 4. Iqbal MK, Kim S. For teeth requiring endodontic treatment, what are differences in outcomes of restored endodontically treated teeth compared to implant-supported restorations? <i>Int J Oral Maxillofac Implants.</i> 2007;22 Suppl:96-116. 5. Zitzmann NU, Krastl G, Hecker H, et al. Endodontics or implants? A review of decisive criteria and guidelines for single tooth restorations and full arch reconstructions. <i>Int Endod J.</i> 2009;42:757-774. 		R2
	History and osseointegration	<ol style="list-style-type: none"> 1. Davies JE. Mechanisms of endosseous integration. <i>Int J Prosthodont.</i> 1998;11:391-401. 2. Schenk RK, Buser D. Osseointegration: a reality. <i>Periodontol 2000.</i> 1998;17:22-35. 3. Brånemark PI. Osseointegration and its experimental background. <i>J Prosthet Dent.</i> 1983;50:399-410. 		R2

Implant design, components, and systems	<ol style="list-style-type: none"> 1. Binon PP. Implants and components: entering the new millennium. <i>Int J Oral Maxillofac Implants.</i> 2000;15:76-94. 2. Sykaras et al. Implant materials, designs, and surface topographies: their effect on osseointegration. <i>Int J Oral Maxillofac Implants.</i> 2000;15:675-690. 3. English C. An overview of implant hardware. <i>J Am Dent Assoc.</i> 1990;121(3):360, 364, 366 		R2
Implant diameter and size	<ol style="list-style-type: none"> 1. Lee JH, Frias V, Lee KW, et al. Effect of implant size and shape on implant success rates: A literature review. <i>J Prosthet Dent.</i> 2005;94:377-381. 2. Baggi L, Cappelloni I, Di Girolamo M, et al. The influence of implant diameter and length on stress distribution of osseointegrated implants related to crestal bone geometry: A three-dimensional finite element analysis. <i>J Prosthet Dent.</i> 2008;100:422-431. 		R2
Implant position and crestal bone remodeling	<ol style="list-style-type: none"> 1. Davarpanah M, Martinez H, Tecucianu JF. Apical-coronal implant position: recent surgical proposals. Technical note. <i>Int J Oral Maxillofac Implants.</i> 2000;15:865-872. 2. Hartman GA, Cochran DL. Initial implant position determines the magnitude of crestal bone remodeling. <i>J Periodontol.</i> 2004;75:572-577. 		R2
Implant treatment planning I	<ol style="list-style-type: none"> 1. Misch CE, Goodacre CJ, Finley JM, et al. Consensus Conference Panel Report: Crown-Height space guidelines for implant dentistry—Part 1. <i>Implant Dent.</i> 2005;14:312-318. 2. Misch CE, Goodacre CJ, Finley JM, et al. Consensus Conference Panel Report: Crown-Height Space Guidelines for Implant Dentistry—Part 2. <i>Implant Dent.</i> 2006;15:113-121. 		R2

		<ol style="list-style-type: none"> 3. Gotfredsen K. Treatment concepts for partially dentate patients. In: Lang N.P., Karring T., Lindhe J., editors. <i>Proceedings of the 3rd European Workshop on Periodontology</i>. Quintessence; Berlin: 1999. pp. 408-420. 4. Mordohai N, Reshad M, Jivraj S, et al. Factors that affect individual tooth prognosis and choices in contemporary treatment planning. <i>Dent J</i>. 2007;202:63-72. 	
	Implant treatment planning II	<ol style="list-style-type: none"> 1. Ahuja S, Cagna DR. Classification and management of restorative space in edentulous implant overdenture patients. <i>Prosthet Dent</i>. 2011;105:332-337. 2. Drago C, Carpentieri J. Treatment of maxillary jaws with dental implants: guidelines for treatment. <i>J Prosthodont</i>. 2011;20:336-347. 3. Fitzpatrick B. Standard of care for the edentulous mandible: A systematic review. <i>J Prosthet Dent</i>. 2006;95:71-78. 4. Eckert SE, Carr AB. Implant-retained maxillary overdentures. <i>Dent Clin North Am</i>. 2004;48:585-601. 	R2
	Prosthodontics considerations	<ol style="list-style-type: none"> 1. Taylor TD, Agar JR, Vogiatzi T. Implant prosthodontics: current perspective and future directions. <i>Int J Oral Maxillofac Implants</i>. 2000;15:66-75. 2. Goodacre CJ, Kan JY, Rungcharassaeng K. Clinical complications of osseointegrated implants. <i>J Prosthet Dent</i>. 1999;81:537-52. 3. Taylor TD. Prosthodontic problems and limitations associated with osseointegration. <i>J Prosthet Dent</i>. 1998;79:74-78. 	R2
	Screw vs cement retained	<ol style="list-style-type: none"> 1. Chee W, Jivraj S. Screw versus cemented implant supported restorations. <i>Br Dent J</i>. 2006;201:501-507. 	R2

		<ol style="list-style-type: none"> 2. Nissan J, Narobai D, Gross O, et al. Long term outcome of cemented versus screw-retained implant-supported partial restorations. <i>Int J Oral Maxillofac Implants</i>. 2011;26:1102-1107. 3. Lee A, Okayasu K, Wang HL. Screw-versus cement-retained implant restorations: current concepts. <i>Implant Dent</i>. 2010;19:8-15. 		
	Success and survival and failure	<ol style="list-style-type: none"> 1. Albrektsson T, Zarb G, Worthington P, et al. The long-term efficacy of currently used dental implants: a review and proposed criteria of success. <i>Int J Oral Maxillofac Implants</i>. 1986;1:11-25. 2. Moy PK, Medina D, Shetty V, et al. Dental implant failure rates and associated risk factors. <i>Int J Oral Maxillofac Implants</i>. 2005;20:569-577. 3. Misch CE, Perel ML, Wang HL, et al. Implant success, survival, and failure: The International Congress of Oral Implantologists (ICOI) Pisa Consensus Conference. <i>Implant Dent</i>. 2008;17:5-15. 4. Yi YJ, Lee JY, et al. Comparative clinical study of three-unit fixed partial prostheses supported by two or three implants. <i>Int J Oral Maxillofac Implants</i>. 2013;28:1110-1115. 		R2
MCP				
#	Topic	Assigned literature to be discussed in sessions	Home reading	Year
1	Med-Comp (Cardiovascular disease)	Wilson W, Taubert KA, Gevitz M, et al. Prevention of Infective Endocarditis: Guidelines from the American Heart Association – A Guideline from the American Heart Association Rheumatic Fever, Endocarditis and Kawasaki Disease Committee, Council on Cardiovascular Disease in Young, and	Review Council. Antibiotic Prophylaxis for Dental Patients at Risk for Infection.	R2

		the Council on Clinical Cardiology, Council on cardiovascular Surgery and Anesthesia, and the Quality of Care and Outcomes Research Interdisciplinary Working Group. <i>J Am Dent Assoc.</i> 2007;138(6):739-45, 747-60. Erratum in: <i>J Am Assoc.</i> 2008;139(3):253	Am Acad Pediatr Dent. 2014;40: 386-391	
2	Med-Comp (Cardiovascular disease)	Firriolo FJ, Hupp WS. Beyond warfarin: The new generation of oral anticoagulants and their implications for the management of dental patients. <i>Oral Surg Oral Med Oral Pathol Oral Radiol.</i> 2012;113:431-441	Aframian D, Lalla R, Peterson D. Management of dental patients taking common hemostasis altering medications. <i>Oral Surg Oral Med Oral Pathol Oral Radiol Endod.</i> 2007;103:45	R2
3	Med-Comp (Infectious diseases)	Cleveland JL, Gray SK, Harte JA, et al. Transmission of blood-borne pathogens in US dental health care settings: 2016 update. <i>J Am Dent Assoc.</i> 2016;147:729-738.	Ramich T, Eickholz P, Wicker S. Work-related infections in dentistry: risk perception and preventive measures. <i>Clin Oral Investig.</i> 2017;21:2473- 2479.	R2
4	Med-Comp (Infectious Disease)	Williams L. Hepatitis C: a serious public health concern. <i>Gen Dent.</i> 2017;65:10-11.	Smith AJ, Cameron SO, Bagg J, et al. Management of needlestick injuries in general dental practice. <i>Br Dent J.</i> 2001;23: 12-15.	R2

5	Med-Comp (Infectious disease)	Robbins MR. Recent recommendations for management of human immunodeficiency virus-positive patients. <i>Dent Clin North Am.</i> 2017;61:365-387.	Ptton LL, Glick M Editors. Clinician's Guide to Treatment of HIV infected Patients, 3 rd Edition 2001. The American Academy of Oral Medicine	R2
6	Med-Comp (Genitourinary disease)	Vesterinen MV, Ruokonen H, Leivo T, et al. Oral health and dental treatment of patients with renal disease. <i>Quintessence Int.</i> 2007;38:211-219.	Cervero AJ, Bagan JV, Soriano YJ, et al. Dental management in renal failure: patient on dialysis. <i>Med Oral Patol Oral Cir Bucal.</i> 2008;13:E419 -E426	R2
7	Med-Comp (Gastrointestinal Disease)	Pamplona MC, Munoz MM, Sarrion-Perez MG. Dental considerations in patients with liver disease. <i>J Clin Exp Dent.</i> 2011;3:e127-e134	Golla K, Epstein JB, Cabay RJ. Liver disease: current perspectives on medical and dental management. <i>Oral Surg Oral Med Oral Pathol Oral Radiol Endod.</i> 2004;98:516-521	R2
Periodontics				
#	Topic	Assigned literature to be discussed in sessions	Home reading	Year
4	Management of furcation-involved teeth	1. Carnevale G. Management of furcation involvement <i>Periodontology</i> 2000. 1991;9:69-89.		R2

		<ol style="list-style-type: none"> 2. Kastenbaum F. The restoration of the sectioned molar. <i>Int J Periodontics Restorative Dent.</i> 1986;6:9-35. 3. Hürzeler MB, Strub JR. Combined therapy for teeth with furcation involvement used as abutments for fixed restorations. <i>Int J Prosthodont.</i> 1990;3:470-476. 4. Carnevale G. A retrospective analysis of the periodontal-prosthetic treatment of molars with interradicular lesions. <i>Int J Periodontics Restorative Dent.</i> 1991;3:189-205. 		
5	Role of guided tissue regeneration	<ol style="list-style-type: none"> 1. Quinones C, Caffesse R. Current status of guided periodontal tissue regeneration. <i>Periodontology 2000.</i> 1995;9:55-68. 2. Cortellini P, Bowers G. Periodontal regeneration of intrabony defects. <i>Int J Periodontics Restorative Dent.</i> 1995;15:128-145. 3. Machtei EE. Successful regeneration of mandibular class II furcation defects: An evidence-based approach. <i>Int J Periodontics Restorative Dent.</i> 1995;15:146-167. 		
6	Periodontal Considerations during Fixed Prosthodontics Procedures I	<ol style="list-style-type: none"> 1. Becker CM. Current theories of crown contour, margin placement, and pontic design. <i>J Prosthet Dent.</i> 2005;93:107-115. 2. Goodacre CJ. Gingival esthetics. <i>J Prosthet Dent.</i> 1990;64:1-12. 3. Ferencz JL. Maintaining and enhancing gingival architecture in fixed prosthodontics. <i>J Prosthet Dent.</i> 1991;65:650-657. 		R2
IMPLANT				
#	Topic	Assigned literature to be discussed in sessions	Home reading	Year
1	Scientific background and osseointegration	<ol style="list-style-type: none"> 1. Jemt T, Lekholm U, Adell R. Osseointegrated implants in the treatment of partially edentulous patients: a preliminary study on 876 consecutively placed fixtures. <i>Int J Oral Maxillofac Implants.</i> 1989;4: 211-217. 		R2

		<ol style="list-style-type: none"> 2. Bosshardt DD, Chappuis V, Buser D. Osseointegration of titanium, titanium alloy and zirconia dental implants: current knowledge and open questions. <i>Periodontol</i> 2000. 2017;73:22-40. 3. Wennerberg A, Albrektsson T, Andersson B. Bone tissue response to commercially pure titanium implants blasted with fine and coarse particles of aluminum oxide. <i>Int J Oral Maxillofac Implants</i>. 1996;11: 38-45. 		
2	Implant design and surface treatment	<ol style="list-style-type: none"> 1. Jones AA, Cochran DL. Consequences of implant design. <i>Dent Clin North Am</i>. 2006;50:339-360. 2. Teughels W, Van Assche N, Sliepen I, et al. Effect of material characteristics and/or surface topography on biofilm development. <i>Clin Oral Implants Res</i>. 2006;17 Suppl 2:68-81. 3. Wennerberg A, Albrektsson T. Effects of titanium surface topography on bone integration: a systematic review. <i>Clin Oral Implants Res</i>. 2009;20 Suppl 4:172-184. 4. Wennerberg A, Albrektsson T. On implant surfaces: a review of current knowledge and opinions. <i>Int J Oral Maxillofac Implants</i>. 2010;25:63-74. 		R2
3	Treatment planning	<ol style="list-style-type: none"> 1. Diz P, Scully C, Sanz M. Dental implants in the medically compromised patient. <i>J Dent</i>. 2013;41:195-206. 2. Chrcanovic BR, Albrektsson T, Wennerberg A. Dental implants inserted in male versus female patients: a systematic review and meta-analysis. <i>J Oral Rehabil</i>. 2015;42:709-722. 3. Esposito M, Grusovin MG, Loli V, et al. Does antibiotic prophylaxis at implant placement decrease early implant failures. A Cochrane systematic review. <i>Eur J Oral Implantol</i>. 2010;3:101–110. 		R3

		4. Schimmel M, Müller F, Suter V, Buser D. Implants for elderly patients. <i>Periodontology</i> 2000. 2017;73:228-240.	
4	Guided surgery	<ol style="list-style-type: none"> 1. D'haese J, Ackhurst J, Wismeijer D, et al. Current state of the art of computer-guided implant surgery. <i>Periodontol</i> 2000. 2017;73:121-133. 2. Joda T, Ferrari M, Gallucci GO, et al. Digital technology in fixed implant prosthodontics. <i>Periodontol</i> 2000. 2017;73:178-192. 3. Laleman I, Bernard L, Vercruyssen M, et al. Guided implant surgery in the edentulous maxilla: a systematic review. <i>Int J Oral Maxillofac Implants</i>. 2016;31 Suppl:s103-117. 	R2
5	Implant loading	<ol style="list-style-type: none"> 1. Kohen J, Matalon S, Block J, et al. Effect of implant insertion and loading protocol on long-term stability and crestal bone loss: A comparative study. <i>J Prosthet Dent</i>. 2016;115:697-702. 2. Papaspyridakos P, Chen CJ, Chuang SK, et al. Implant loading protocols for edentulous patients with fixed prostheses: a systematic review and meta-analysis. <i>Int J Oral Maxillofac Implants</i>. 2014;29 Suppl:256-270. 3. Benic GI, Mir-Mari J, Hämmerle CH. Loading protocols for single-implant crowns: a systematic review and meta-analysis. <i>Int J Oral Maxillofac Implants</i>. 2014;29 Suppl:222-38. 4. Sanz-Sanchez I, Sanz-Martin I, Figuera E, et al. Clinical efficacy of immediate implant loading protocols compared to conventional loading depending on the type of the restoration: a systematic review. <i>Clin Oral Implant Res</i>. 2015;26:964-979. 	R2

#	Topic	Assigned literature to be discussed in sessions	Home reading	R3
RESTORATIVE				
12	Conservative treatments for discolored teeth	<ol style="list-style-type: none"> 1. McCloskey R.J. A technique for removal of fluorosis stains. <i>J Am Dent Assoc.</i> 1984 Jul;109(1):63-4. 2. Croll TP. Enamel microabrasion for removal of superficial dysmineralization and decalcification defects. <i>J Am Dent Assoc.</i> 1990;120:411-415. 3. Nathanson D. Vital tooth bleaching: sensitivity and pulpal considerations. <i>J Am Dent Assoc.</i> 1997;128:41S-44S. 4. Hatanaka GR, Abi-Rached Fde O, Almeida-Júnior AA, et al. Effect of carbamide peroxide bleaching gel on composite resin flexural strength and microhardness. <i>Braz Dent J.</i> 2013;24:263-266. 5. Ontiveros JC. In-office vital bleaching with adjunct light. <i>Dent Clin North Am.</i> 2011; 55:241-253. 6. Friedman S. Internal bleaching: long-term outcomes and complications. <i>J Am Dent Assoc.</i> 1997;128 Suppl:51S-55S. 7. Feiz A, Barekatin B, Khalesi S, et al. Effect of several bleaching agents on teeth stained with a resin-based sealer. <i>Int Endod J.</i> 2014;47:3-9. 8. Plotino G, Buono L, Grande NM, et al. Nonvital tooth bleaching: a review of the literature and clinical procedures. <i>J Endod.</i> 2008;34:394-407. 	<ol style="list-style-type: none"> 9. Barghi N. Making a clinical decision for vital tooth bleaching: at-home or in-office? <i>Compend Contin Educ Dent.</i> 1998;19:831-838. 10. Al-Harbi A, Ardu S, Bortolotto T, et al. Effect of extended application time on the efficacy of an in-office hydrogen peroxide bleaching agent: an in vitro study. <i>Eur J Esthet Dent.</i> 2013;8:226-236. 11. Balan B, Madanda Uthaiiah C, Narayanan S, et al. Microabrasion: an effective method for improvement of esthetics in dentistry. <i>Case Rep Dent.</i> 2013;2013:951589. 12. Baratieri LN, Ritter AV, Monteiro S Jr, et al. Nonvital tooth bleaching: guidelines for the clinician. <i>Quintessence Int.</i> 1995;26:597-608. 13. Basson RA, Grobler SR, Kotze TJ, et al. Guidelines for the selection of tooth whitening products amongst those available on the market. <i>SADJ.</i> 2013;68:122-129. 	R3

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16	Restoration failures and replacements	<p>1. Bernardo M, Luis H, Martin MD, et al. Survival and reasons for failure of amalgam versus composite posterior restorations placed in a randomized clinical trial. <i>J Am Dent Assoc.</i> 2007;138:775-83.</p> <p>2. Blum IR, Jagger DC, Wilson NH. Defective dental restorations: to repair or not to repair? Part 1: direct composite restorations. <i>Dent Update.</i> 2011 Mar;38(2):78-80, 82-4.</p> <p>3. Browning WD, Dennison JB. A survey of failure modes in composite resin restorations. <i>Oper Dent.</i> 1996 Jul-Aug;21(4):160-6.</p> <p>4. Cehreli SB, Arhun N, Celik C. Amalgam repair: quantitative evaluation of amalgam-resin and resin-tooth interfaces with different surface treatments. <i>Oper Dent.</i> 2010 May-Jun;35(3):337-44.</p> <p>5. Gordan VV1, Riley JL 3rd, Worley DC, et al. Restorative material and other tooth-specific variables associated with the decision to repair or replace defective restorations: findings from The Dental PBRN. <i>J Dent.</i> 2012 May;40(5):397-405.</p> <p>6. Hickel R, Manhart J. Longevity of restorations in posterior teeth and reasons for failure. <i>J Adhes Dent.</i> 2001;3:45-64.</p>		

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ENDODONTIC				
#	Topic	Assigned literature to be discussed in sessions	Home reading	Year
9	Endodontic treatment outcomes			3

10	Endodontic retreatment			3
11	Vital pulp therapy			3
12	Traumatic dental Injuries			3
PROSTHODONTICS/IMPLANT				
#	Topic	Assigned literature to be discussed in session	Home reading	Year
Biomaterials				
Clinical perspectives				R3
	1. Implants in growing patients	<ol style="list-style-type: none"> Oesterle LJ, Cronin RJ Jr. Adult growth, aging, and the single-tooth implant. <i>Int J Oral Maxillofac Implants.</i> 2000;15(2):252-60. Westwood RM, Duncan JM. Implants in adolescents: a literature review and case reports. <i>Int J Oral Maxillofac Implants.</i> 1996;11(6): 750-5. Cronin RJ Jr, Oesterle LJ, Ranly DM. Mandibular implants and the growing patient. <i>Int J Oral Maxillofac Implants.</i> 1994 Jan-Feb;9(1):55-62. Oesterle LJ, Cronin RJ Jr, Ranly DM. Maxillary implants and the growing patient. <i>Int J Oral Maxillofac Implants.</i> 1993;8(4):377-87. 		R3
	1. Implant impression	<ol style="list-style-type: none"> Wegner K, Weskott K, Zengin M, et al. Effects of implant system, impression technique, and impression material on accuracy of the working cast. <i>Int J Oral Maxillofac Implants.</i> 2013 Jul-Aug;28(4):989-95. 		R3

		<ol style="list-style-type: none"> 2. Akalin ZF, Ozkan YK, Ekerim A. Effects of implant angulation, impression material, and variation in arch curvature width on implant transfer model accuracy. <i>Int J Oral Maxillofac Implants</i>. 2013 Jan-Feb;28(1):149-57. 3. Kaneko T, Yamagishi K, Horie N, et al. A novel open-tray impression technique for fabrication of a provisional prosthesis on immediate load implants in a completely edentulous arch. <i>Int J Oral Maxillofac Implants</i>. 2013 Mar-Apr;28(2):556-62. 		
	<p>Implant mucosa interface</p>	<ol style="list-style-type: none"> 1. Hermann JS, Buser D, Schenk RK, et al. Biologic Width around one- and two-piece titanium implants. <i>Clin Oral Implants Res</i>. 2001 Dec;12(6):559-71. (A histometric evaluation of unloaded non-submerged and submerged implant in the canine mandible) 2. Lindhe J, Berglundh T. The interface between the mucosa and the implant. <i>Periodontol 2000</i>. 1998;17:47-54. 3. Rompen E, Domken O, Degidi M, et al. The effect of material characteristics, of surface topography and of implant components and connections on soft tissue integration: a literature review. <i>Clin Oral Implants Res</i>. 2006 Oct;17 Suppl 2:55-67. 4. Weber HP, Cochran DL. The soft tissue response to osseointegrated dental implants. <i>J Prosthet Dent</i>. 1998 Jan;79(1):79-89. 		<p>R3</p>

		5. Klotz MW, Taylor TD, Goldberg AJ. Wear at the titanium-zirconia implant-abutment interface: a pilot study. <i>Int J Oral Maxillofac Implants</i> . 2011 Sep-Oct;26(5):970-5.	
	Biomechanics	<ol style="list-style-type: none"> 1. Romanos GE, Gupta B, Eckert SE. Distal cantilevers and implant dentistry. <i>Int J Oral Maxillofac Implants</i>. 201;27:1131-6. 2. Duyck J, Van Oosterwyck H, Vander Sloten J, et al. Magnitude and distribution of occlusal forces on oral implants supporting fixed prostheses: an in vivo study. <i>Clin Oral Implants Res</i>. 2000 Oct;11(5):465-75. 3. Rodriguez AM, Aquilino SA, Lund PS, et al. Evaluation of strain at the terminal abutment site of a fixed mandibular implant prosthesis during cantilever loading. <i>J Prosthodont</i>. 1993 Jun;2(2):93-102. 4. Rodriguez AM, Aquilino SA, Lund PS. Cantilever and implant biomechanics: a review of the literature. Part 1. <i>J Prosthodont</i>. 1994;3(1):41-6. 5. Rodriguez AM, Aquilino SA, Lund PS. Cantilever and implant biomechanics: a review of the literature, Part 2. <i>J Prosthodont</i>. 1994;3:114-8. 6. Weinberg LA. Therapeutic biomechanics concepts and clinical procedures to reduce implant loading. Part II: therapeutic differential loading. <i>J Oral Implantol</i>. 2001;27(6):302-10. 	R3

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	2. Passive fit	<ol style="list-style-type: none"> 1. Assif D, Marshak B, Schmidt A. Accuracy of implant impression techniques. <i>Int J Oral Maxillofac Implants.</i> 1996 Mar-Apr;11(2):216-22. 2. Phillips K, Nicholls J, Ma T, et al. The accuracy of three implant impression techniques: A three-dimensional analysis. <i>Int J Oral Maxillofac Implants.</i> 1994;9:533-540. 3. Riedy SJ, Lang BR, Lang BE. Fit of implant frameworks fabricated by different techniques. <i>J Prosthet Dent.</i> 1997 Dec;78(6):596-604. 4. Wee AG, Aquilino SA, Schneider RL. Strategies to achieve fit in implant prosthodontics: A review of the literature. <i>Int J Prosthodont.</i> 1999 Mar-Apr;12(2):167-78. 	R3
	Complications	<ol style="list-style-type: none"> 1. Goodacre CJ, Bernal G, Rungcharassaeng K, et al. Clinical complications with implants and implant prostheses. <i>J Prosthet Dent.</i> 2003 Aug;90(2):121-32. 	R3

		<ol style="list-style-type: none"> 2. Misch K, Wang HL. Implant surgery complications: Etiology and treatment. <i>Implant Dent.</i> 2008 Jun;17(2):159-68. 3. Jemt T. In vivo measurements of precision of fit involving implant-supported prosthesis in the edentulous jaw. <i>Int J Oral Maxillofac Implants.</i> 1996 Mar-Apr;11(2):151-8. 4. Jemt T, Book K. Prosthesis misfit and marginal bone loss in edentulous implant patients. <i>Int J Oral Maxillofac Implants.</i> 1996 Sep-Oct;11(5):620-5. 5. Kan JY, Rungcharassaeng K, Bohsali K, et al. Clinical methods for evaluating implant framework fit. <i>J Prosthet Dent.</i> 1999 Jan;81(1):7-13. 		
	3. Immediate loading and placement	<ol style="list-style-type: none"> 6. Chen ST, Buser D. Clinical and esthetic outcomes of implants placed in post-extraction sites. <i>Int J Oral Maxillofac Implants.</i> 2009;24 Suppl:186-217. 7. Weber HP, Morton D, Gallucci GO, et al. Consensus statements and recommended clinical procedures regarding loading protocols. <i>Int J Oral Maxillofac Implants.</i> 2009; 24 Suppl:180-3. 8. Morton D, Jaffin R, Weber HP. Immediate restoration and loading of dental implants: clinical considerations and protocols. <i>Int J Oral Maxillofac Implants.</i> 2004;19 Suppl:103-8 		R3
	4. Mini implants	Estafanous E, Stanford C, Oates M, et al. "Mini implants": Do we have data? <i>Int J Oral Maxillofac Implants.</i> 2011;26		R3
	5. Short and zygomatic implants	<ol style="list-style-type: none"> 1. Leopardi A. Fixed restorative options for the edentulous maxilla. <i>Functional Esthetics and Restorative Dentistry.</i> 2008;2:44-56. 		R3

		2. Brånemark PI1, Gröndahl K, Ohnrell LO, et al. Zygoma fixture in the management of advanced atrophy of the maxilla: technique and long-term results. <i>Scand J Plast Reconstr Surg Hand Surg.</i> 2004;38(2):70-85.		
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	7. Implant-supported overdentures	<ol style="list-style-type: none"> 1. Lehmann KM, Kämmerer PW, Karbach J, et al. Long term effect of overdenture bar design on peri implant tissues. <i>Int J Oral Maxillofac Implants.</i> 2013 Jul-Aug;28(4):1126-31 2. Akça K, Çavuşoğlu Y, Sağırkaya E, et al. Early loaded one stage implants retaining mandibular overdentures by two different mechanisms: 5-year results. <i>Int J Oral Maxillofac Implants.</i> 2013 May-Jun;28(3):824-30. 		R3

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	8. All-on-four	<p>1. Yilmaz B, Suarez C, McGlumphy E. Correction of misfit in a maxillary immediate metal resin implant fixed complete prosthesis placed with flapless surgery on four implants. <i>Int J Oral Maxillofac Implants</i>. 2011;26:e23-8.</p> <p>2. Liu FC, Su WC, You CH, et al. All-on-4 concept implantation for mandibular rehabilitation of an edentulous patient with Parkinson disease: A clinical report. <i>J Prosthet Dent</i>. 2015 Dec;114(6):745-50.</p>		R3
	9. Bisphosphonates and antibiotic prophylaxis	<p>Esposito M, Grusovin MG, Loli V, et al. Does antibiotic prophylaxis at implant placement decrease early implant failures? A Cochrane systematic review. <i>Eur J Oral Implantol</i>. 2010;3(2):101-10.</p>		R3
		<p>2. Madrid C, Sanz M. What impact do systemically administrated bisphosphonates have on oral implant therapy? A systematic review. <i>Clin Oral Implants Res</i>. 2009 Sep;20 Suppl 4:87-95.</p>		

	10. Peri-implant soft tissue and papilla	<ol style="list-style-type: none"> 1. Choquet V, Hermans M, Adriaenssens P, et al. Clinical and radiographic evaluation of the papilla level adjacent to single tooth dental implant. A retrospective study in the maxillary anterior region. <i>J Periodontol.</i> 2001 Oct;72(10):1364-71. 2. Glauser R, Zembic A, Hämmerle CH. A systematic review of marginal soft tissue at implants subjected to immediate loading or immediate restoration. <i>Clin Oral Implants Res.</i> 2006 Oct;17 Suppl 2:82-92. 3. Ryser MR, Block MS, Mercante DE. Correlation of papilla to crestal bone levels around single tooth implants in immediate or delayed crown protocols. <i>J Oral Maxillofac Surg.</i> 2005;63:1184-1195. 4. Small PN, Tarnow DP. Gingival recession around dental implants: a 1-year longitudinal prospective study. <i>Int J Oral Maxillofac Implants.</i> 2000 Jul-Aug;15(4):527-32. 5. Tarnow D, Elian N, Fletcher P, et al. Vertical distance from the crest of bone to the height of interproximal dental papilla between adjacent implants. <i>J Periodontol.</i> 2003 Dec;74(12):1785-8. 6. Pradeep AR, Karthikeyan BV. Peri-implant papilla reconstruction: Realities and limitations. <i>J Periodontol.</i> 2006 Mar;77(3):534-44. 7. Tarnow DP, Cho SC, Wallace SS. The effect of inter-implant distance on the height of inter-implant bone crest. <i>J Periodontol.</i> 2000 Apr;71(4):546-9. 		R3
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Implant occlusion				
	<p>11. Principles of implant occlusion</p>	<p>12. Occlusion in implant dentistry. A review of the literature of prosthetic determinants and current concepts Gross, M. D. (2008). <i>Australian dental journal</i>, 53(s1).</p>		

		<p>13. Occlusal considerations in implant therapy: clinical guidelines with biomechanical rationale Kim, Y., Oh, T. J., Misch, C. E., & Wang, H. L. (2005). <i>Clinical oral implants research</i>, 16(1), 26-35.</p> <p>14. Guidelines for occlusion strategy in implant-borne prostheses. A review Rilo, B., Silva, J. L., Mora, M. J., & Santana, U. (2008). <i>International dental journal</i>, 58(3), 139-145.</p> <p>15. Implant occlusion: biomechanical considerations for implant-supported prostheses Chen, Y. Y., Kuan, C. L., & Wang, Y. B. (2008). <i>The Journal of dental science</i>, 3(2), 65-74.</p> <p>16. Dental occlusion: modern concepts and their application in implant prosthodontics Carlsson, G. E. (2009). <i>Odontology</i>, 97(1), 8-17.</p> <p>17. Dental implants in patients with bruxing habits Lobbezoo, F., Brouwers, J. E. I. G., Cune, M. S., & Naeije, M. (2006). <i>Journal of oral rehabilitation</i>, 33(2), 152-159.</p> <p>18. Occlusal stability in implant prosthodontics-Clinical factors to consider before implant placement Design, P. (2001). <i>Journal of Canadian Dental Association</i>, 67(9), 522-6.</p> <p>19. The influence of functional forces on the biomechanics of implant-supported prostheses-A review Şahin, S., Çehreli, M. C., & Yalçın, E. (2002). <i>Journal of dentistry</i>, 30(7), 271-282.</p>	<p>R3</p>
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Clinical perspectives			
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	Cements and adhesives	<p>1. New Developments in Dental Adhesion Perdigao, J. (2007). <i>Dental Clinics of North America</i>, 51(2), 333-357.</p>	R3

		2. Cements for Use in Esthetic Dentistry Pegoraro, T. A., da Silva, N. R., & Carvalho, R. M. (2007). Dental Clinics of North America, 51(2), 453-471.	
	23. Perspectives of Anterior Dental Esthetics	<ol style="list-style-type: none"> 1. Anterior dental aesthetics: Facial perspective Ahmad, I. (2005). British dental journal, 199(1), 15-21. 2. Anterior dental aesthetics: Dentofacial perspective Ahmad, I. (2005). British dental journal, 199(2), 81-88. 3. Anterior dental aesthetics: Dental perspective Ahmad, I. (2005). British dental journal, 199(3), 135-141. 4. Anterior dental aesthetics: Gingival perspective Ahmad, I. (2005). British dental journal, 199(4), 195-202. 	R3
Esthetic biomaterial			
	1. Biomechanical properties	<ol style="list-style-type: none"> 1. Fracture load and mode of failure of ceramic veneers with different Preparations Castelnuovo, J., Tjan, A. H., Phillips, K., Nicholls, J. I., Kois, J. C., of Washington, U., & of Dentistry, S. (2000). The Journal of prosthetic dentistry, 83(2), 171-180. 2. Fracture resistance and deflection of pulpless anterior teeth restored with composite or porcelain veneers D'arcangelo, C., De Angelis, F., Vadini, M., D'amario, M., & Caputi, S. (2010). Journal of Endodontics, 36(1), 153-156. 3. Unstable cracking (chipping) of veneering porcelain on all-ceramic dental crowns and fixed partial dentures Swain, M. V. (2009). Acta Biomaterialia, 5(5), 1668-1677. 	R3

	24. Shade and Color	<p>42. Clinical steps to predictable color management in aesthetic restorative dentistry Chu, S. J. (2007). <i>Dental Clinics of North America</i>, 51(2), 473-485.</p> <p>43. Relative translucency of six all-ceramic systems. Part I: Core materials Heffernan, M. J., Aquilino, S. A., Diaz-Arnold, A. M., Haselton, D. R., Stanford, C. M., & Vargas, M. A. (2002). <i>The Journal of prosthetic dentistry</i>, 88(1), 4-9.</p> <p>44. Relative translucency of six all-ceramic systems. Part II: core and veneer materials Heffernan, M. J., Aquilino, S. A., Diaz-Arnold, A. M., Haselton, D. R., Stanford, C. M., & Vargas, M. A. (2002). <i>The journal of prosthetic dentistry</i>, 88(1), 10-15.</p> <p>45. Spectrophotometric evaluation of the optical influence of different metal alloys and porcelains in the metal-ceramic complex Kourtis, S. G., Tripodakis, A. P., & Doukoudakis, A. A. (2004). <i>The journal of prosthetic Dentistry</i>, 92(5), 477-485.</p> <p>46. Color matching in dentistry. Part I. The three-dimensional nature of color Sproull, R. C. (2001). <i>Journal of Prosthetic Dentistry</i>, 86(5), 453-457.</p> <p>47. Color matching in dentistry. Part II. Practical applications of the organization of color Sproull, R. C. (2001). <i>Journal of Prosthetic Dentistry</i>, 86(5), 458-464.</p> <p>48. Color matching in dentistry. Part III. Color control Sproull, R. C. (1974). <i>The Journal of prosthetic dentistry</i>, 31(2), 146-154.</p>		R3
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		<p>49. The effect of ceramic thickness and number of firings on the color of ceramic systems: An in vitro study Uludag, B., Usumez, A., Sahin, V., Eser, K., & Ercoban, E. (2007). <i>The Journal of prosthetic dentistry</i>, 97(1), 25-31.</p> <p>50. Tooth Colour: A Review of the Literature Joiner, A. (2004). <i>Journal of dentistry</i>, 32, 3-12.</p>		
Restorative perspectives				
	Adhesive Restorations and Composite	<p>1. Aesthetic anterior composite restoration: A guide to direct placement LeSage, B. P. (2007). <i>Dental Clinics of North America</i>, 51(2), 359-378.</p> <p>2. Clinical approach to anterior adhesive restorations using resin composite veneers. Mangani, F., Cerutti, A., Putignano, A., Bollero, R., & Madini, L. (2007). <i>European Journal of Esthetic Dentistry</i>, 2(2).</p>		R3
	Anterior guidance	<p>1. Anterior guidance-The key to successful occlusal Treatment Broderson, S. P. (1978). <i>The Journal of prosthetic dentistry</i>, 39(4), 396-400.</p> <p>2. Group function or canine protection Jemt, T., Lundquist, S., & Hedegard, B. (1982). <i>The Journal of prosthetic dentistry</i>, 48(6), 719-724.</p> <p>3. Influence of group function and canine guidance on electromyographic activity of elevator muscles Manns, A., Chan, C., & Miralles, R. (1987). <i>The Journal of prosthetic dentistry</i>, 57(4), 494-501.</p>		R3

		4. Anterior guidance: Its effect on electromyographic activity of the temporal and masseter muscles Williamson, E. H., & Lundquist, D. O. (1983). <i>The Journal of Prosthetic Dentistry</i> , 49(6), 816-823.	
	25. Anterior guidance Vs posterior determinants	51. Effect of canine guidance on the working condylar path Hobo, S., & Takayama, H. (1989). <i>International Journal of Prosthodontics</i> , 2(1). 52. Reevaluation of Hanau's laws of articulation and the Hanau Quint Levin, B. (1978). <i>The Journal of prosthetic dentistry</i> , 39(3), 254-258. 53. Evaluation of the relationship between anterior and posterior functionally disclusive angles. Part II: Study of a population Pelletier, L. B., & Campbell, S. D. (1990). <i>The Journal of prosthetic dentistry</i> , 63(5), 536-540.	R3
	26. Occlusal concepts and philosophies	54. Evolution of occlusion and occlusal instruments Becker, C. M., & Kaiser, D. A. (1993). <i>Journal of Prosthodontics</i> , 2(1), 33-43. 55. Occlusion for fixed prosthodontics: A historical perspective of the gnathological influence Pokorny, P. H., Wiens, J. P., & Litvak, H. (2008). <i>The Journal of prosthetic dentistry</i> , 99(4), 299-313. 56. Occlusal variations for reconstructing the natural dentition Schwartz, H. (1986). <i>The Journal of prosthetic dentistry</i> , 55(1), 101-105.	R3

	<p>Prevalence of TMD associated with occlusal variables</p>	<p>57. Sixty-eight years of experimental occlusal interference studies: What have we learned? Clark, G. T., Tsukiyama, Y., Baba, K., & Watanabe, T. (1999). <i>The Journal of prosthetic dentistry</i>, 82(6), 704-713.</p> <p>58. No association between incisal tooth wear and temporomandibular disorders John, M. T., Frank, H., Lobbezoo, F., Drangsholt, M., & Dette, K. E. (2002). <i>The Journal of prosthetic dentistry</i>, 87(2), 197-203.</p> <p>59. Prevalence of dental occlusal variables and intraarticular temporomandibular disorders: Molar relationship, lateral guidance, and nonworking side contacts Kahn, J., Tallents, R. H., Katzberg, R. W., Ross, M. E., & Murphy, W. C. (1999). <i>The Journal of prosthetic dentistry</i>, 82(4), 410-415.</p> <p>60. The association between wear facets, bruxism, and severity of facial pain in patients with temporomandibular disorders Pergamalian, A., Rudy, T. E., Zaki, H. S., & Greco, C. M. (2003). <i>The Journal of prosthetic dentistry</i>, 90(2), 194-200.</p> <p>61. Quantification and validation of predictive values of occlusal variables in temporomandibular disorders using a multifactorial analysis Pullinger, A. G., & Seligman, D. A. (2000). <i>The Journal of prosthetic dentistry</i>, 83(1), 66-75.</p>		R3
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		<p>62. Orofacial pain and occlusion: Is there a link? An overview of current concepts and the clinical implications Racich, M. J. (2005). The Journal of prosthetic dentistry, 93(2), 189-196.</p> <p>63. Prevalence of missing posterior teeth and intraarticular temporomandibular disorders Tallents, R. H., Macher, D. J., Kyrkanides, S., Katzberg, R. W., & Moss, M. E. (2002). The Journal of prosthetic dentistry, 87(1), 45-50.</p> <p>64. An evidence-based assessment of occlusal adjustment as a treatment for temporomandibular disorders Tsukiyama, Y., Baba, K., & Clark, G. T. (2001). The Journal of prosthetic dentistry, 86(1), 57-66.</p>		
MCP				
#	Topic	Assigned literature to be discussed in session	Home reading	Year
8	Med-Comp (Organ transplant)	Radmand R1, Schilsky M, Jakab S, Khalaf M, Falace DA. Pre-liver transplant protocols in dentistry. Oral Surg Oral Med Oral Pathol Oral Radiol. 2013 Apr;115(4):426-30	Clozza E, Segelnick SL, Sigal SH, Rovner DN, Weinberg MA. Periodontal Management of a Patient Undergoing Liver Transplantation. Int J Periodontics Restorative Dent. 2016 Mar-Apr;36(2):263-73	R3
9	Med-Comp (Organ transplant)	Guggenheimer J, Egtesad B, Stock D. Dental Management of Solid Organ Transplant patient. Oral Surg Oral Med Oral Pathol Oral Radiol Endo 2003;383-389	Fatahzadeh M. The dentist's role in the prevention and management of necrotizing stomatitis in the immunosuppressed. Quintessence Int. 2018;49(5):399-405	R3

10	Med-Comp (Head and Neck Oncology)	Nabil S, Samman N. Risk factors for osteoradionecrosis after head and neck radiation: systemic review. Oral Surg Oral Med Oral Pathol Oral Radiol 2012;113:54-69	McGuire, D.B., Fulton, J.S., Park, J. et al. System review of basic oral care for the management of oral mucositis in cancer patient. Support Care Cancer 2013;21: 3165-3177	R3
11	Med-Comp (Head and Neck Oncology)	De Moor RJ, Stassen IG, Van't Veldt Y, Torbeyns D, Hommez GM. Two-year clinical performance of glass-ionomer and resin composite restorations in xerostomic head and neck irradiated cancer patients. Clin Oral Investig 2011;15:31-38	Yesilyurt C, Bulucu B, Sezen O, Bulut G, Celik D. Bond strengths of two conventional glass-ionomer cements to irradiated and non-irradiated dentin. Dent Mater J 2008;27:695-701	R3
12	Med-Comp (Head and Neck Oncology)	Elad, S., Raber-Durlacher, J.E., Brennan, M.T. et al. Basic oral care for hematology–oncology patients and hematopoietic stem cell transplantation recipients: a position paper from the joint task force of the Multinational Association of Supportive Care in Cancer/International Society of Oral Oncology (MASCC/ISOO) and the European Society for Blood and Marrow Transplantation (EBMT), Support Care Cancer (2015) 23: 223	Hong, C.H.L., Hu, S., Haverman, T. et al. A systematic review of dental disease management in cancer patients, Support Care Cancer (2018) 26: 155	R3
13	Med-Comp (Hematologic Disease)	López BC, Esteve CG, Pérez MG. Dental treatment considerations in the chemotherapy patient. J Clin Exp Dent. 2011;3(1):e31-42	McGuire, D.B., Fulton, J.S., Park, J. et al. System review of basic oral care for the management of oral mucositis in cancer patient. Support Care Cancer 2013;21: 3165-3177	R3
14	Med-Comp (Medication related Osteonecrosis of the Jaw)	AAOMS Position Paper. Medications-Related Osteonecrosis of the Jaw-2014 Update.	King R1, Tanna N2, Patel V3. Medication-related osteonecrosis of the jaw unrelated to bisphosphonates and denosumab-a review. Oral Surg Oral Med Oral Pathol Oral Radiol. 2019 Apr;127(4):289-299	R3
15	Special Care Dentistry	Dougall A, Fiske J. Access To Special Care Dentistry, Part 6. Special Care Dentistry Services for Young People. Brit Dent J 2008;205:235-249	Dougall A, Fiske J. Access To Special Care Dentistry, Part 1. Access. Brit Dent J 2008;204:605-616	R3

16	Special Care Dentistry	Dougall A, Fiske J. Access To Special Care Dentistry, Part 7. Special Care Dentistry Service: Seamless Care for People in their Middle years (Part 1). <i>Brit Dent J</i> 2008;205:305-317	Dougall A, Fiske J. Access To Special Care Dentistry, Part 2. Communication. <i>Brit Dent J</i> 2008;205:11-21	R3
17	Special Care Dentistry	Dougall A, Fiske J. Access To Special Care Dentistry, Part 8. Special Care Dentistry Service: Seamless Care for People in their Middle years (Part 2). <i>Brit Dent J</i> 2008;205:359-371.	Dougall A, Fiske J. Access To Special Care Dentistry, Part 3. Consent and Capacity. <i>Brit Dent J</i> 2008;205:71-81	R3
18	Special Care Dentistry	Dougall A, Fiske J. Access To Special Care Dentistry, Part 9. Special Care Dentistry Service: Seamless Care for Older People. <i>Brit Dent J</i> 2008;205:421-434.	Dougall A, Fiske J. Access To Special Care Dentistry, Part 4. Education. <i>Brit Dent J</i> 2008;205:119-130	R3
19	Special Care Dentistry		Dougall A, Fiske J. Access To Special Care Dentistry, Part 5. Safety. <i>Brit Dent J</i> 2008;205:177-190	R3
Periodontics				
#	Topic	Assigned Literature to be discussed in session	Home reading	Year
7	Periodontal Considerations during Fixed Prosthodontics Procedures II	<ol style="list-style-type: none"> 1. Impression considerations in the maxillary anterior region Gerald Chiche <i>Compending Continuing Education Dentistry, Volume 1, 3:318</i> 2. Mastering the art of tissue management during provisionalization and biologic final impressions Harold Shavell <i>International Journal of Periodontics and Restorative Dentistry, Volume 3:25, 1988</i> 3. Gingival enhancement in Fixed Prosthodontics, Part 1: Clinical findings John Sorensen <i>Journal of Prosthetic Dentistry, Volume 65:100, 1991</i> 		R3

		<p>4. Gingival enhancement in Fixed Prosthodontics, Part 2: Microbiologic findings Thomas Flemmig <i>Journal of Prosthetic dentistry, Volume 65:365, 1991</i></p> <p>5. Gingival enhancement in Fixed Prosthodontics, Part 3: Anamnestic findings John Sorensen <i>Journal of Prosthetic Dentistry, Volume 65:500, 1991</i></p>			
8	The effects of RPDs or Cantilever extensions on the Periodontium	<p>1. Clinical Evaluation of patients 8 to 9 years after placement of RPDs Chantler J. <i>Journal of Prosthetic Dentistry, Volume 51:736, 1984</i></p> <p>2. Periodontal reactions related to RPDs. A review of the literature Bergman B. <i>Journal of Prosthetic Dentistry, Volume 58:454, 1987</i></p> <p>3. Periodontal conditions following treatment with distally extending cantilever bridges or removable partial dentures in elderly patients: A 5-year study Isidor F. <i>Journal of Periodontology, Volume 61:21, 1990</i></p> <p>4. The influence of end abutment and cantilever fixed partial dentures on periodontal health Stelzel M. <i>International Journal of Periodontics and Restorative Dentistry, Volume 17(4):369, 1997</i></p>			R3

IMPLANT					
#	Topic	Assigned Literature to be discussed in session			Year
6	Screw Vs. Cement Retained	<p>1- Long-Term Outcome of Cemented Versus Screw-Retained Implant-Supported Partial Restorations Joseph Nissan International Journal of Oral Maxillofacial Implants, Volume 26-1102-1107, 2011</p> <p>2- Clinical Performance of Screw-Versus Cement-Retained Fixed Implant-Supported Reconstructions—A Systematic Review Julia Wittneben International Journal of Oral Maxillofacial Implants, Volume 29:84-98, 2014.</p> <p>3- A Comparison Between Screw-and Cement-Retained Implant Prostheses: A Literature Review Rola Shadid, Journal of Oral Implantology, Volume 38(3):298-307, 2012.</p> <p>4- Screw- Versus Cement-Retained Implant Prostheses: A Systematic Review of Prosthodontic Maintenance and Complications Sunyoung Ma , International Journal of Prosthodontics, Volume 28: 127-145, 2015</p>			R3
7	Short Dental Implant	<p>1- Short Dental Implants: A systematic review S. Annibali , Journal of Dental Research, Volume 91(1):25-32, 2012.</p> <p>2- A systematic review of the prognosis of short (<10 mm) dental implants placed in the partially edentulous patient Gerdien Telleman , Journal of Clinical Periodontology, Volume 38:667-676, 2011.</p>			R3

		<p>3- How successful are small-diameter implants? A literature review Keyvan Sohrabi , <i>Clinical Oral Implants Research</i>, Volume 0:1-11, 2012.</p> <p>4- Long-term outcomes of short dental implants supporting single crowns in posterior region: a clinical retrospective study of 5–10 years Hong-Chang Lai , <i>Clinical Oral Implants Research</i>, Volume 00:1-8, 2012.</p>			
8	Narrow Dental Implant	<p>1- Long-term retrospective study of narrow implants for fixed dental prostheses Jung Seok Lee , <i>Clinical Oral Implants Research</i>, Volume 00:1-6, 2012.</p> <p>2- Posterior atrophic jaws rehabilitated with prostheses supported by 5 × 5 mm implants with a novel nanostructured calcium incorporated titanium surface or by longer implants in augmented bone. One-year results from a randomized controlled trial Robert Pistilli , <i>European Journal of Oral Implantology</i>, Volume 6(4):343-357, 2013.</p> <p>3- Systematic Review on Success of Narrow-Diameter Dental Implants Marc O. Klein , <i>International Journal of Oral Maxillofacial Implants</i>, Volume 29:43-54, 2014.</p>			R3
9	Tooth implant connection	<p>1. Greenstein G. Connecting teeth to implants: a critical review of the literature and presentation of practical guidelines. <i>Compendium</i> 2009;30:2-15.</p> <p>2. Chee WW. Tooth-to-implant connection: a systematic review of the literature and a case report utilizing a new connection design. <i>Clin Implant Dent Relat Res.</i> 2010;12:122-130.</p>			R3

		<p>3. Ozcelik TB. Biomechanical evaluation of tooth- and implant-supported fixed dental prostheses with various non-rigid connector positions: a finite element analysis. <i>J Prosthodontol</i>. Volume 20:16-28, 201.</p> <p>4. Pasha F. Tooth implant connection. <i>Int J Oral Implantol Clin Res</i>. 2013;4:95-98.</p>			
10	Maintenance	<p>1. Bauman GR. Clinical parameters of evaluation during implant maintenance. <i>Int J Oral Maxillofac Implants</i>. 1992;7:220-227.</p> <p>2. Pröbster L. Effect of fluoride prophylactic agents on titanium surfaces. <i>Int J Oral Maxillofac Implants</i>. 1992;7:390-394.</p> <p>3. Kuempel DR. The effects of scaling procedures on epithelial cell growth on titanium surfaces. <i>J Periodontol</i>. 1995;66:228-234.</p> <p>4. Hallmon WW. A comparative study of the effects of metallic, nonmetallic, and sonic instrumentation on titanium abutment surfaces. <i>Int J Oral Maxillofac Implants</i>. 1996;11:96-100.</p>			R3

E. Trainee-selected topics

Introduction and rationale

These practically relevant topics are selected by senior residents themselves. The aim is to provide an opportunity for senior residents to develop personally and professionally by choosing, arranging, and performing an educational activity of his/her own choice in any field of restorative dentistry.

Course description

During their final residency year, senior residents can select topics to be presented to the juniors, graduates, or other professionals in any format they choose, including lectures, case presentations, or workshops. These topics are to be presented within the core education program according to the following guidelines:

- Trainees will be given the choice to develop a list of topics alone
- Trainees can choose any topic relevant to their needs
- All topics must be planned and cannot be selected at random
- All topics must be approved by the local education committee.

Assessment

- Peer assessment
- Portfolio
- Assessment by supervisors and consultants

F. Examples of Weekly Education Activities

DAY	8:00–9:00	9:00–10:00	11:00–12:00	12:00–1:00	1:00–4:00
SUN		General dentistry clinic		lunch and prayer	General dentistry clinic
MON		General dentistry clinic			General dentistry clinic
TUES		General dentistry clinic			General dentistry clinic
WED		*General dentistry clinic/crash courses			*General dentistry clinic/crash courses
THURS		**Literature and book review / case presentation			**Literature and book review/case presentation

Note:

- *Each training center should plan treatment sessions with their respective patient as mandated
- **The schedule will be decided by the local committee or training center.

MASTER ROTATION PLAN

Level	Rotation name	Duration	Rotation name	Duration
R1	Preclinical courses Basic Science Specialty Sciences	3 Months	General clinical Multidisciplinary Case Presentation Book / Literature Review	9 Months
R2	General Clinical Multidisciplinary Case Presentation Book / Literature Review	12 Months	Medically Compromised	To be assigned 2 days per week within 3 months
R3	General Clinical Multidisciplinary Case Presentation Book / Literature Review	12 Months	Medically Compromised / Special Need	To be assigned 2 days per week within 3 months
			Oral Surgery	To be assigned 2 days per week within 3 months

PART IV

ASSESSMENT PLAN

Assessment plan is the most appropriate engine that harness the power of a curriculum and drives the entire learning process. The assessment plan of family dentistry program includes both formative and summative assessment methods. The formative assessment helps in *monitoring of the residents' learning* progress and guides them to improve learning by identifying their strengths and weaknesses. This type of assessment also helps the faculty to recognize areas for improvement in relation to the residents' performance and taking appropriate and timely measures to address their academic needs and problems immediately. Besides, formative assessments encourages the residents to develop self-assessment skills, which are vital for their professional development and lifelong learning. On the other hand, summative assessments *evaluate student learning* and monitor their progression within the program. With an increasing focus on the performance of dentists and on public demand for assurance that dentists are competent, assessment also needs to have a summative function. Summative assessments have high stakes having high point value as compared to the formative assessments and help the program in making critical decisions whether a dentist is fit to practice or not. The summative assessments may include final written, clinical and practical examinations. As Family Dentistry Program is designed to educate dentists in all aspects of dentistry in an advanced level, giving them competency to provide comprehensive treatment to patients with different dental problems catering the entire community in all walks of life. It is therefore necessary that this integration should be reflected in assessment plan and practice of the program and the assessments should be matched to the delivery methodology, content, and to the learning outcomes overall.

Purpose

The purposes of assessment during the training program are as follows:

- Support learning.
 - To evaluate the effectiveness of teaching
 - Encourage professional growth.
 - Monitor progression.
 - Judge and certify competency.
 - Evaluate the quality of the training program.
- Ensure that appropriate standards are being maintained

General principles:

- Judgment should be based on holistic profiling of a trainee rather than individual traits or instruments.
- Assessment should be continuous in nature.
- The resident and faculty must meet to review the resident's performance.
- Assessment should be strongly linked to the curriculum and content of the course.
- Assessment should be based on SMART principles. The SMART assessment are specific, measureable, aggressive, but attainable, results-oriented, and time-bound.

The assessment plan of the Family Dentistry (FD) program is formulated in accordance with the Saudi Commission's training and examination rules and regulations, which mainly included following types of assessments.

1. Formative Assessment

1.1 General Principles

The residents, as an adult learner, should strive for feedback throughout their journey of competency from Dental Expert to the professional level. *Formative assessment* (is distributed throughout the academic year aiming primarily to provide trainees with effective feedback. Input from the overall formative assessment tools will be helpful at the end of the year to make the decision of promoting each individual trainee from current-to-subsequent training level and will have the following features:

- Multisource Assessment
- Comprehensive: covering all learning domains (knowledge, skills, and attitude).
- Relevant: focusing on workplace-based observations.
- Competency-milestone oriented: reflecting residents' expected competencies that matches trainee's developmental level.

Trainees should actively seek feedback during their training. On the other hand, trainers are expected to provide timely and formative assessment. SCFHS will provide an e-portfolio system to enhance communication and analysis of data arising from formative assessment. Formative assessment is conducted towards the end of each training year throughout the program in accordance with the SCFHS executive policy of continuous assessment and annual promotion (available online).

1.2 Annual formative assessment tools

The following table summarizes the annual formative assessment tools that will be applied in this program:

KNOWLEDGE	SKILLS	ATTITUDE	LEVEL
1) Academic assignment <ul style="list-style-type: none"> – Pre Clinical Course – Book / Literature Review – Multidisciplinary Case presentation – Case-based discussion 1. End of year written examination/Part 1 2. Structured oral examination	1. Logbook 2. Direct observation of procedural skills	1. In-training evaluation report 2. Multisource (360 assessment method) 3. Patient satisfaction survey	R1
Academic Assignment <ul style="list-style-type: none"> – Book/literature review – Multidisciplinary case presentation – Case-based discussion End of Year Written Exam / PART 1 Exam Structure Oral Exam	1. Logbook 2. Direct observation of procedural skills	1. In-training Evaluation Report 2. Multisource (360 Assessment Method) 3. Patient Satisfaction Survey	R2

Academic Assignment – Book / Literature Review – Multidisciplinary Case Presentation – Case Based Discussion Structure Oral Exam	1. Log Book 2. Direct Observation of the Procedural Skills	1. In-Training Evaluation Report 2. Multisources (360 Assessment Method) 3. Patient Satisfaction Survey	R3
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1.2.1 End of year in-training report (continuous appraisal)

This evaluation report is prepared for each resident at the end of each year based on the quarterly basis, oral presentation on a regional treatment plan, and oral clinical examination, in addition to completion of the clinical requirements. These clinical requirements should be documented by an electronic tracking system on an annual basis. Evaluations will be based on achieving the minimum requirements of the procedures and clinical skills.

1.2.2 End of year in-training evaluation: formative continuous evaluation

This evaluation should fulfill the CanMEDS competencies based on the in-training evaluation, including medical expert, communicator, collaborator, leader, health advocate, and scholar. The resident's performance will be evaluated by the program director and joint staff (at least two) for the following competencies:

1. Performance of the trainee during daily work for each discipline.
2. Performance and participation in academic activities.
3. Performance of diagnostic and therapeutic procedural skills by the trainee (Direct Observation Procedural Skills (DOPS) and daily direct clinical supervision). Timely and specific feedback for the trainee after each procedure is mandatory.
4. In-Training Evaluation Report (ITER): at the end of a rotation must be completed every 3 months during the training year, and signed by at least two consultants. The program director will discuss the evaluation with the resident as necessary; thereafter, the resident should sign the form. The evaluation form will be submitted to the local Training Committee of the SCFHS within one week following the end of each 3 months.
5. The clinical requirement should be documented by an electronic tracking system (e-logbook when applicable) on an annual basis. Evaluation will be based on achievement of the minimum requirements of the procedures and clinical skills as determined by the program.

1.2.3 Regional treatment plan oral presentation

The resident will be evaluated based on an oral presentation where he/she describes a case, including history-taking, diagnostic tools used, diagnosis in each discipline, and how he/she can formulate an integrated treatment plan and identify alternative plans.

1.2.4 Oral clinical examination

This evaluation is based on presenting a completed case (must be different from the one presented in the A.1.2 section) and at least five cases related to different component specialty areas. A committee will assess the management of the case from the Family Dentistry perspective. R3 residents will not be involved in this examination (see section D) see appendix for further details regarding annual oral clinical examination.

1.2.5 – End of year written examination

The end of year examination will be limited to R1 and R2 and related to family dentistry. The number of examination items, eligibility, and passing score will be in accordance with the Commission's training and examination rules and regulations.

2. Promotion Decision Mechanism

Residents are evaluated according to the following mechanism:

<50%	50%–59.4%	60%–69.4%	≥70%
Clear Fail	Borderline fail	Borderline pass	Clear pass

- Residents should obtain a “Borderline pass” in all criteria promoted
- Resident will not be promoted if he/she gets “Clear Fail” in any of the criteria
- As an exception to the above, the training program director can recommend the resident to be promoted on the following conditions:
 - If resident gets “Borderline Fail” in 1 criterion he/she should compensate it by getting a “Clear Pass” in another criterion in order to be considered for promotion to the next level, resident will only be promoted after getting the required approval according to the executive policy of continuous assessment and annual promotion (available online).

3. Examination Methods used to Assess Performance of the Residents

Multiple assessment methods are used to capture all or most aspects of the required competencies. For knowledge, concepts, and application of knowledge ('Knows' and 'Knows How' of Miller's conceptual pyramid for clinical competence), context-based MCQ, extended matching item, and short answer questions are implemented. For 'Shows How', multi-station OSCE and performance-based assessment ('does') and DOPS are used. Alternatively, clinical work sampling and the portfolio or logbook are used.

Table. Description of rationale and checklist items applied in formative assessment:

Tool of assessment	Rationale	Check list items
Context-based MCQs and Extended Matching items	For assessment of application of knowledge and concepts	
Written assignment		
Direct observation of procedural skills	DOPS is a structured rating scale for assessing and providing feedback on practical procedures	<ol style="list-style-type: none"> 1. Demonstrates understanding of indications, relevant anatomy, and technique of procedure 2. Obtains informed consent 3. Demonstrates appropriate preparation pre-procedure 4. Demonstrates situational awareness 5. Aseptic technique 6. Technical ability 7. Seeks help where appropriate 8. Post-procedure management 9. Communication skills 10. Consideration of patient 11. Overall ability to perform procedure
Multiple source feedback (360 assessment method)	The 360-degree evaluation assesses general aspects of competence, including communication skills, clinical abilities, medical and dental knowledge, technical skills, and teaching abilities.	<ol style="list-style-type: none"> 1. Caring behaviors 2. Effective questioning and listening 3. Effective counseling 4. Demonstrates ethical behavior 5. Sensitive to age, culture, gender, and/or disability 6. Communicates well with staff 7. Works effectively as team member and leader 8. Works to improve system of care 9. Participates in therapies and patient education 10. Advocates for quality

		<p>11. Committed to self-assessment and uses feedback</p> <p>12. Teaches effectively</p>
Portfolios and Logbooks	<p>Portfolios/Logbooks should contain evidence of how trainees fulfill tasks and how their competence is progressing. Portfolios may be digital or paper-based, reporting on work done, feedback received, progress made, and plans for improving competence.</p>	<p>Should be completed for each rotation throughout the program.</p>

4. Certification of Training-Completion

In order to be eligible to set for final specialty examinations, each trainee is required to obtain "Certification of Training-Completion." Based on the training bylaws and executive policy (please refer to www.scfhs.org), trainees will be granted "Certification of Training-Completion" once the following criteria is fulfilled:

A. Final in-training evaluation report

In addition to the approval of completion of all clinical cases (15 cases minimum) and clinical requirements (resident's logbook) by the supervisory training committee, the resident's performance will be evaluated by the program director and joint staff (at least two supervisors) and approved by the chairman of the supervisory training committee accordingly (see Section A1.1).

B. Clearance from SCFHS training affairs that ensure compliance with tuitions payment and completion of universal topics. A "Certification of Training-Completion" will be issued and approved by the supervisory training committee or its equivalent according to SCFHS policies.

2. Summative Assessment

2.1 General Principles

Summative assessment of the residents will aim primarily to make informed decisions on trainees' competency. In comparison to the formative one, summative assessment does not aim to provide constructive feedback but provides an essential benchmark to check the progress of residents and the educational program as a whole. The summative assessment will contribute largely toward improving the curriculum and overall curriculum planning.

2.2 Principles of family dentistry examination (Saudi Board Examination: Part I)

This is conducted in the form of a written examination with an MCQ format and is held at least once a year. According to the SCFHS rules, passing part-1 exam is mandatory to be eligible to be promoted from junior to senior (from R2 to R3). The number of examination items, eligibility, and passing score will be in accordance with the Commission's training and examination rules and regulations.

2.3 Final family dentistry board examination (Saudi Board Examination: Part 2)

The final Saudi Board examination comprises two parts:

2.3.1 Written examination

This examination assesses the theoretical knowledge base (including recent advances) and problem-solving capabilities of candidates in the specialty of family dentistry. It is delivered in an MCQ format and held at least once a year. The number of examination items, eligibility, and passing score will be in accordance with the Commission's training and examination rules and regulations.

2.3.2 Clinical oral examination

This examination assesses a broad range of high-level clinical skills, including gathering of data, patient management, and communication and counseling skills. The examination is held at least once a year. The examination eligibility and passing score will be in accordance with the Commission's training and examination rules and regulations.

3. Certification

Candidates passing all components of the final specialty examination will be awarded the Saudi Board in family Dentistry certificate.

Appendix

Structure Oral Examination

The oral examination is based on clinical cases presented briefly in a well-structured manner. It will usually be administered during the last week of every residency (R1, R2, R3) with its corresponding criteria. The exact time and location are subject to change. The resident will prepare pre-required comprehensive cases and must submit the case list prior to the examination. A panel of examiner from the Family Dentistry Committee will examine each resident based on the cases presented, but may also use cases to segue into related topics. Residents should be well-informed and familiar with their own cases and should have done sufficient study to have developed a sound general knowledgebase.

The purpose of the oral examination is to evaluate the residents' ability to present clinical knowledge in a well-organized, concise, and convincing manner. It allows the examiners to evaluate the resident's skill in developing and narrowing down a differential diagnosis. It is a way for the examiner to assess the ability to integrate the resident's knowledge into clinical situations. Good presentation skills are a hallmark of a good clinician and demonstrate a high level of understanding and confidence.

STRUCTURE OF THE EXAMINATION:

1. Each student will have an oral examination with a panel of Family Dentistry Examiner.
2. The resident may bring a copy of their case list but no other notes or materials to the oral examination.

3. The official examiner will ask the resident to make a brief presentation on a case and a question and answer period will follow. The question and answer period will focus on the differential diagnosis, diagnostic evaluation, scientific basis, case documentation, and treatment options and final treatment rendered.

PURPOSE:

1. To evaluate the ability of each resident to present in an organized and clear fashion of a selected required comprehensive case based on the residency level assigned.
2. To evaluate the ability of each resident to understand and discuss the comprehensive cases that they have handled during the specified residency period
3. To test the reasoning skills of the residents and the confidence to the treatment that they had rendered.

PREREQUISITE FOR STRUCTURE ORAL EXAMINATION:

R1:

Completion of the following:

- Full mouth rehabilitation – 3 comprehensive cases
- Attendance and participation in literature review, topic, and case presentation session
- Completion of minimum clinical requirement for R1

R2:

Completion of the following:

- Full mouth rehabilitation:
 - 6 comprehensive cases in addition to
 - 1 medically compromised case
 - 1 pedodontic case
- Attendance and participation in literature review, topic and case presentation session
- Completion of minimum clinical requirement for R2

R3:

Completion of the following:

- Full mouth rehabilitation:
 - 9 comprehensive cases
 - 2 special cases
 - 2 medically compromised cases
 - 3 pedodontic cases
- Attendance and participation in literature review, topic and case presentation session
- Completion of minimum clinical requirement for R3.

ORGANIZATION OF CASE LISTS:

1. Each resident will prepare a well-documented case presentation for approved specified comprehensive cases based on their residency level requirement in a specific format.
2. Comprehensive case presentation should be submitted in a soft copy saved on a USB stick at least 2 weeks prior the set schedule for testing in preparation for the Oral Examination.


GRADING:

1. The oral examination will comprise 40% of the case presentation and 60% will be based from the Question and answer from the assigned official examiner panelist.

Structure Oral Exam Clinical Case Presentation Promotional Exam	
Residency Level	Criteria
R1	Comprehensive clinical case for an adult (diagnosis and treatment plan) even if the case is not yet finished with the treatment provided
R2	Comprehensive clinical case for medically compromised adult/child (diagnosis and treatment plan) and full documentation of finished treatment
R3	Comprehensive clinical case for a patient with special needs (diagnosis and treatment) and full documentation of finished treatment

A. Assessment Forms

Multisource Assessment Form



المملكة العربية السعودية للتخصصات الصحية
Saudi Commission for Health Specialties
Saudi Board in Family Dentistry

Multi-Source Assessment (360° Feedback)

Resident's Name: _____ Residency Level: _____ Date: _____

Please fill the appropriate evaluation mark using the grading reference below:

	Unsatisfactory - 1	Below Average - 2	Average - 3	Above Average - 4	Outstanding - 5
No.	Criteria				Grade
1	Treats co-worker with respect and provides information when necessary at any time <i>(Attitude & Professionalism)</i>				
2	Attends and leaves on time, and finishes the scheduled clinical procedure on the expected time duration. <i>(Proper Time Management and Attendance)</i>				
3	Provides and request proper consultations when needed, and provides understandable verbal and written feedbacks <i>(Collaboration)</i>				
4	Documents (written in electronic) complete and proper medical/dental records and case referrals, and they are readable, and done on time for each encounter. <i>(Professionalism and collaboration)</i>				
5	Documents (written on electronic) proper consent from before procedure and manages patents in case of adverse events <i>(Communication and professionalism)</i>				
6	Overall residents confidence in handling patients, colleagues, allied healthcare, staff and clinic <i>(Professionalism)</i>				
Overall Evaluation					
<p><u>Comments:</u></p> <div style="border: 1px solid black; height: 100px; width: 100%;"></div>					
<p>Done by: _____ Initials: _____</p>					

Multi-Source Assessment (360° Feedback)
Saudi Board for Family Dentistry

FR. FD. 002.1920.msa360

B. Case Based Discussion (CBD)

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Saudi Commission for Health Specialties

Saudi Board in Family Dentistry



CASE-BASED DISCUSSION (CBD)

For complete and submitted clinical cases

Resident's Name: _____ Residency Level: _____

Training Center: _____ City: _____

Patient name or initials: _____ Medical Record: _____

Case Type: Uncomplicated Intermediate Complex

Describe Case: _____

Procedure	Unsatisfactory			Satisfactory			Superior		
	1	2	3	4	5	6	7	8	9
Medical record Documentation									
Clinical Assessment									
Investigation & referrals									
Treatment									
Follow up and Future Planning									
Professionalism									
Clinical judgment									
Leadership / Managerial Skill									
Overall Performance									

Outcome of overall resident assessment Clinically Outstanding Clinically Acceptable

Remarks:

Supervisor Signature: _____ Date: _____

C. Presentation Performance Assessment

الهيئة السعودية للتخصصات الصحية
Saudi Commission for Health Specialties
Saudi Board in Family Dentistry




Presentation Performance Assessment

Resident's Name: _____ Residency Level: _____ Date: _____

Please fill the appropriate evaluation mark using the grading reference below:

Unsatisfactory - 1	Below Average - 2	Average - 3	Above Average - 4	Outstanding - 5	
No.	Criteria				Grade
1	Introduction of self, case and topic objectives				
2	Capturing the attention of the audience				
3	Providing proper documentation				
4	Organization and preparation				
5	Exhibiting understanding of the present materials				
6	Explaining important points				
7	Eye contact with the audience				
8	Oral Presentation Skills				
9	Quality of the sides and documentation				
10	Response to questions and criticism				
Overall Evaluation					
One or two strength of the presentation			One or two weaknesses of the resentation		
1.				1.	
2.				2.	
3.				3.	
4.				4.	
5.				5.	
Instructor's Name: _____			Signature: _____		
<p>Note: Only instructor are required to write their names and sign (Summative Assessment), residents can evaluate anonymously (without writing name and signing) (Formative assessment).</p>					

D. Direct Observation of Procedural Skill (DOPS)



الهيئة السعودية للتخصصات الصحية
Saudi Commission for Health Specialties
Saudi Board in Family Dentistry

Direct Observation of Procedural Skills (DOPS)

<p>Resident: _____ Area: _____</p> <p>Code: _____ Specialty: _____</p> <p>Evaluator: _____ Specialty: _____</p> <p>Date: _____</p> <p>Family Dentistry - DOPS Procedural Detail:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="4">Name of Procedure (Specific): _____</td> </tr> <tr> <td colspan="4">Number of times procedure previously performed: _____</td> </tr> <tr> <td style="width: 25%;">Difficulty of Procedure</td> <td style="width: 25%;">Usual</td> <td style="width: 25%;">Average</td> <td style="width: 25%;">Difficult</td> </tr> <tr> <td colspan="4">Requirement Code: _____</td> </tr> <tr> <td colspan="4">Patient Name: _____</td> </tr> <tr> <td colspan="2">Patient Age: _____</td> <td colspan="2">Patient Gender: _____</td> </tr> <tr> <td colspan="4">Patient Number: _____</td> </tr> </table>	Name of Procedure (Specific): _____				Number of times procedure previously performed: _____				Difficulty of Procedure	Usual	Average	Difficult	Requirement Code: _____				Patient Name: _____				Patient Age: _____		Patient Gender: _____		Patient Number: _____				<p>Dental Procedural Setting:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Diagnosis & Planning <input type="checkbox"/> Emergency Treatment <input type="checkbox"/> Hygiene <input type="checkbox"/> Restorative Dentistry <input type="checkbox"/> Endodontics <input type="checkbox"/> Boro – Implant - Surgery <input type="checkbox"/> Prosthodontics <input type="checkbox"/> Pedodontics <input type="checkbox"/> Orthodontics
Name of Procedure (Specific): _____																													
Number of times procedure previously performed: _____																													
Difficulty of Procedure	Usual	Average	Difficult																										
Requirement Code: _____																													
Patient Name: _____																													
Patient Age: _____		Patient Gender: _____																											
Patient Number: _____																													

Procedural Skills Competencies	Below Expected Level	At Expected Level	Above Expected Level	Comments
Demonstrate knowledge of the Patient's Case				
Effective choice of Treatment Plan				
Achieves adequate Scientific support in treatment of choice.				
Express Sensible, Clear & Realistic operative management to Patient.				
Post-Operative Case Management				

Based on the performance Levels in the above chart. additional comments are as follows

Case Based Discussion (DOPS) FR- FD / 005.1920.dops

Saudi Board in Family Dentistry



PERFORMANCE LEVEL RATING	
Score 5	Outstanding Effort
Score 4	Satisfactory
Score 3	Average / Border Line
Score 2	Development Required
Score 1	Not Observed

RESIDENT REFLECTION ON ACTIVITY:	
Please assess and mark on the following areas appropriately	7. Is aware of own limitation and is open for consultation as appropriate. <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
1. Describes indications, anatomy, procedure and complications to the evaluator. <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	Disappointing Exceptional
2. Explains the procedure to the patient and obtains patients informed consent <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	Disappointing Exceptional
3. Prepares for procedure for the agreed treatment management. <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	Disappointing Exceptional
4. Demonstrates aseptic techniques and Observe infection control. <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	Disappointing Exceptional
5. Adapts procedure to accommodate patient or unexpected events or emergencies that may arise <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	Disappointing Exceptional
6. Performs the treatment competently and confidently. <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	Disappointing Exceptional
	8. Completes required patient's file documentation <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
	9. Post procedural management plan. <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
	10. Overall ability of management. <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
	Disappointing Exceptional
	Evaluators Comment: _____ _____ _____ _____
	Evaluators Name: _____
	Evaluator's Signature: _____
	Resident's Signature: _____
	Resident's Name: _____
	Residents Code: _____

E. Residency Tri Month Evaluation

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Saudi Commission for Health Specialties
Saudi Board in Family Dentistry



Residency Tri-Month Evaluation

Name: Dr. _____ Registration No.: _____ Level of Training: _____
Hospital: _____ Rotation: _____ Date: From: _____ To: _____

(Please fill up the appropriate box for each item using the number indicated for each column)

No.	Criteria	Unsatisfactory (1)	Below Average (2)	Average (3)	Above Average (4)	Outstanding (5)	Not Applicable (0)
(A) KNOWLEDGE							
1	Basic (Theoretical)						
2	Clinical (Pre-Clinical)						
(B) CLINICAL SKILLS							
3	History & Physical Examination						
4	Clinical Judgment & Decision Making						
5	Consultation Skills						
6	Performance in Emergencies						
7	Appropriate Utilization of Investigation						
8	Records & Reports						
9	Participation in Scientific Activities						
10	Participation in Research						
(C) OPERATIVE & INTERVENTIONAL SKILLS							
11	Indications & Judgment						
12	Technical Skills						
(D) PERSONALITY & ETHICS							
13	Punctuality						
14	Discipline & Reliability						
15	Attitude to Patients						
16	Attitude to Staff						
17	Ability to Supervise						

Comments:

Official
Use

Total Score = $\frac{0}{0} \times 20 =$ #DIV/0!

Director of Residency Training Program: _____ Signature: _____ Date: _____

Resident Signature (that he saw the evaluation form): _____ Date: _____

B. Trainee Support

Guidelines for Mentor:

The mentor is an assigned faculty supervisor responsible for the professional development of residents under his/her responsibility. Mentoring is the process by which a mentor provides support to the resident. Amentee is the resident under the supervision of the mentor.

The needs: Post-graduate residency training is a formal academic program for residents to develop their full potential as future specialists. This is potentially the last substantial training program before they become an independent specialist. However, unlike the undergraduate program with a well-defined structure, residency training is inherently less organized. Residents are expected to be in a clinical setting, delivering patient care. They are rotated through multiple sites and sub-specialties.

The design of the residency program, while necessary for good clinical exposure, also lacks an opportunity for developing a long-term professional relationship with a faculty member. Residents may feel lost without proper guidance. Moreover, without a long-term longitudinal relationship it is extremely difficult to identify a struggling resident. They also struggle to develop professional identity with the home program, especially when they are rotating away in other disciplines for a long duration.

Residents are expected to maintain a logbook and DOPS. This requires a robust and structured monitoring system in place with clear accountability and defined responsibility.

Nature of Relationship: Mentorship is a formal yet friendly relationship. This is a partnership between the mentor and resident (i.e. the mentee). Residents are expected to take the mentoring opportunity seriously and help the mentor to achieve the outcomes. The mentor should receive a copy of any adversarial report by other faculty members about the resident.

Goals:

- Guide residents towards personal and professional development through continuous monitoring of progress
- Early identification of struggling residents as well as high achievers
- Early detection of residents who are at risk of emotional and psychological disturbance
- Provide career guidance

Roles of the Mentor

The primary role of the mentor is to nurture a long-term professional relationship with the assigned residents. The mentor is expected to provide an 'academic home' for the residents so that they can feel comfortable in sharing their experiences, expressing their concerns, and clarifying issues in a non-threatening environment. The mentor is expected to keep sensitive information about the residents in confidence.

*SCFHS guidelines for mentoring

The mentor is also expected to make appropriate and early referral to the Program Director or Head of the Department if s/he determines a problem that would require expertise or resources that are beyond his/her capacity. Example of such a referral might include:

- Serious academic problems

- Progressive deterioration of academic performance
- Potential mental or psychological issues
- Personal problems interfering with academic duties
- Professional misconduct

However, the following are NOT expected roles of a mentor:

- Providing extra tutorials, lectures, or clinical sessions
- Providing counseling for serious mental and psychological problems
- Being involved in residents' personal matters
- Providing financial or other material support

Roles of the resident

- Submit resume at the start of the relationship
- Provide mentor with a medium (1–3 years) and longer term (3–7 years) goal
- Takes primary responsibility in maintaining the relationship
- Schedule monthly meeting with mentor in a timely manner.
- Recognize self-learning as an essential element of residency training
- Report any major events to the mentor in a timely manner

Who can be a mentor?

Any faculty member, consultant grade and above, within the residency program can be a mentor. There is no special training required.

Number of residents per mentor

As a guideline, each mentor should not have more than 4–6 residents. As much as possible, the residents should come from all years of training. This will create an opportunity for the senior residents to work as a guide for the junior residents.

Frequency and duration of engagement

The recommended minimum frequency is once every 4 weeks. Each meeting might take 30 minutes to 1 hour. It is also expected that once assigned, the mentor should continue with the same resident preferably for the entire duration of the training program, or at least for one/two year/s.

Mandatory reporting to Program Director or Head of the Department:

- Consecutive absence from three scheduled meetings without any valid reasons
- Unprofessional behavior
- Consistent underperformance in spite of counseling
- Serious psychological, emotional, or health problems that may potentially cause unsafe patient care
- Any other serious concerns by the mentor

ACKNOWLEDGMENTS

The Family Dentistry faculty was established with the cooperation of the several distinguished individuals.

Highly indebted to **Major General Dr. Abdulrahman AIGHofili**, who serves an inspiration that pioneered an idea in addressing the problems of community dental problem demands by upgrading Advanced Education in General Dentistry Program that Prince Abdulrahman

Advanced Dental Institute was originally offering. He created a committee composed of the following: **Dr Fahad Al Tassan, Dr Omar AL Dayel, Dr Saad AL Saif, Dr Nadia Alaidaroos, Dr Najat Ali, Dr Faisal Al Sineedi** in preparation with the initial documentation of the curriculum to be submitted to Saudi Commission for Health Specially for approval. He viewed Family Dentistry Program to be the result of an AEGD evolution that could address and fulfill the gap that exist between the Advanced General Dentist to all established dental specialties and could work independently performing beyond the capabilities of advanced general practitioners moreover also accomplishes cases who needs specialist's attention serving dental public community.

Immensely grateful to **Brig. Maj. Dr. Mansour Assery**, Chairman of Saudi Dental Board; for believing in the program's vision of bringing milestone to dental health education while addressing the very basic dental needs of all members of the society and also for his support and favorable response regarding the program.

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