Plastic and Reconstructive Surgery

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الهيئة السعودية للتخصصات الصحية
Saudi Commission for Health Specialties

In The Name of Allah

PREFACE

- The primary goal of this document is to enrich the experience of postgraduate trainees by outlining the learning objectives and competencies necessary for them to become independent and competent future practitioners.
- This curriculum may contain sections outlining training regulations; however, such regulations must be sought from the "General Bylaws of Training in Postgraduate Programs" and "Executive Policies" published by the Saudi Commission for Health Specialties (SCFHS), which can be accessed online through the official SCFHS website. In the case of discrepancies in regulation statements, the one stated in the most updated bylaws and executive policies must be considered.
- As this curriculum is subject to periodic refinement, please refer to the electronic version posted online for the most up-to-date edition at www.scfhs.org.sa

I. CONTRIBUTORS

The Specialty's Curriculum Development Committee prepared this curriculum:
• Dr. Fatema Alsubhi • Dr. Wesam Almajid • Dr. Mohammed Alothman • Dr. Ahmed Al Bahlal
Reviewed and Approved by Plastic Surgery Scientific Council Members:
• Dr. Fatema alsubhi • Dr. Ali Almalaq • Dr. Wesam Almajid • Dr. Turki ALturaiki • Dr. Httan Aljaali • Dr. Rasha Baaqeel
Advisory Committee Members (Curriculum Review Committee members):
• Dr. Mai Alajaji, Msc.MedEd, PhD • Dr. Nouf Alrumaihi, MBBS, Msc.MedEd., PMP
Approved by the Head of the Curriculum Review Committee:
• Dr. Ali Alyahya, MD, MME, FRCSC
If this is an updated version, please list the contributor list(s) of the previous version.
• Dr. Abdulaziz Jarman • Dr. Abdullah Al Namlah • Dr. Ghazi Al Thubaiti • Dr. Abdulaziz Salah Abaalkhail

II. COPYRIGHT STATEMENTS

We also acknowledge that the CanMEDS framework is a copyright of the Royal College of Physicians and Surgeons of Canada and that many of the competencies described have been acquired from their resources. Please refer to: Frank, J. R., Snell, L., Sherbino, J., & Boucher, A. (2015). CanMEDS 2015 Physician Competency Framework Series I. Ottawa: Royal College of Physicians and Surgeons of Canada.

Correspondence: Saudi Commission for Health Specialties P.O. Box: 94656 Postal Code: 11614 Contact Center: 920019393

E-mail: Curricula@scfhs.org.sa

Website: www.scfhs.org.sa

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III. TABLE OF CONTENTS

IV. INTRODUCTION

1. Context of Practice

Plastic surgery is a multifaceted surgical subspecialty that distinguishes itself from other surgical disciplines by its broad scope, not being confined to a single organ system. It demands technical precision and an inherently creative approach with two main components: reconstructive and Aesthetic surgery.

Reconstructive surgery focuses on repairing defects to restore function and form, whereas aesthetic surgery aims to enhance or improve the appearance of the face and body.

Plastic surgeons treat pathologies ranging from hand anomalies to craniofacial injuries, burns, trauma, and cancers. Each case presents unique anatomical and functional challenges that require customized surgical strategies and multidisciplinary collaboration.

In the Kingdom, the most encountered plastic surgery cases include:

1. Hand and upper extremity trauma
2. Burns
3. Cleft lip and palate
4. Peripheral nerve surgery, e.g., carpal tunnel surgery
5. Post-massive weight loss reconstruction
6. Soft tissue reconstruction: breast, head, and neck cancer
7. Breast plastic surgery
8. Cosmetic surgery

The Saudi Plastic and Reconstructive Surgery Residency Program plays a vital role in advancing medical education and healthcare within the Kingdom of

Saudi Arabia. This comprehensive program is designed to equip aspiring surgeons with the essential skills and knowledge required to perform complex reconstructive and aesthetic procedures. By maintaining rigorous training standards and integrating the latest medical advancements, the residency program ensures that graduates are proficient in addressing a wide range of surgical challenges. This not only enhances the quality of patient care but also contributes to the development of the healthcare system in Saudi Arabia, fostering innovation and elevating the standards of surgical practice in the region. With its strong emphasis on research, hands-on training, and ethical medical practice, the program prepares residents to become leaders in the field, ultimately improving the overall well-being of the community.

The Saudi Plastic and Reconstructive Surgery Residency Program spans six years of supervised residency training, encompassing the full spectrum of plastic surgery and its subfields. The comprehensive training curriculum covers:

1. Total Burn care
2. Hand and upper extremity surgery
3. Pediatric plastic surgery
4. Craniofacial surgery
5. Reconstructive surgery and microsurgery
6. Aesthetic surgery

2. Goals and Responsibilities of Curriculum Implementation

The Plastic and Reconstructive Surgery Residency Program aims to guide trainees toward achieving competency in Plastic Surgery, which will contribute to advancing the field of plastic surgery. Competency in plastic surgery involves a combination of fundamental knowledge, surgical judgment, technical skills, ethics, and interpersonal abilities to ensure successful patient relationships and effective problem-solving.

It also aims to promote engagement in research activities to advance the field and encourage innovations in surgical techniques and patient care practices.

This objective necessitates considerable effort and coordination from all individuals involved in the postgraduate training. Trainees must demonstrate proactive engagement and possess the following attributes: a comprehensive grasp of learning objectives, self-directed learning abilities, problem-solving skills, willingness to apply learning through reflective practice based on feedback and formative assessment, and self-awareness and readiness to seek support when needed. The program director plays a pivotal role in ensuring the effective implementation of this curriculum. Additionally, members of the training committee, notably the program administrator and chief resident, significantly influenced program implementation. Trainees should be encouraged to share their responsibilities in implementing the curriculum.

3. What is new in this edition?

- Revised rotation schedules to better align with updated competency requirements.
- Adjusted rotation durations to ensure comprehensive training that meets the latest competency standards.
- Enhanced assessment and evaluation tools and criteria to reflect current best practices and accurately measure resident proficiency.

V. ABBREVIATIONS USED IN THIS DOCUMENT

Abbreviation	Description
SCFHS	Saudi Commission of Health Specialties
SNAPPS	Summarize, Narrow, Analyze, Prope, Plan, Select
CBE	*Competency-based education*
R1	1ST year of residency
R2	2nd year of residency
R3	3rd year of residency
R4	4th year of residency
R5	5th year of residency
R6	6th year of residency
OMFS	Oral maxillofacial Surgery
CPD	Continuous Professional Development
ENT	Ear, Nose, Throat
OSCE	Objective Structured Clinical Examination
OSPE	Objective Structured Practical Examination

Abbreviation	Description
WBA/WPBA	Work Based Assessment/Workplace-Based Assessment
Mini-CEX	Mini-Clinical Evaluation Exercise
DOPS	Direct Observation of Procedural Skills
CBD	Case-Based Discussion
CBE	Competency-Based Education
ITER	In-Training Evaluation Report

VI. PROGRAM ENTRY REQUIREMENTS

Admission and registration requirements are governed by the Executive Policies of the Saudi Commission for Health Specialties (SCFHS). Please refer to the official SCFHS website: www.scfhs.org.sa.

VII. LEARNING AND COMPETENCIES

1. Introduction to Learning Outcomes and Competency-Based Education

Training should be guided by well-defined "*learning objectives*" driven by targeted "*learning outcomes*" of a particular program to serve specific specialty needs. Learning outcomes reflect professional "*competencies*" and tasks aimed to be "*entrusted*" to trainees upon graduation. This ensures that graduates meet the expected demands of the healthcare system and patient care in their specialty. *Competency-based education* (CBE) is an approach to "adult learning" based on the achievement of predefined, fine-grained, and well-paced learning objectives driven by complex professional competencies.

Professional competencies related to healthcare are usually complex and contain a mixture of multiple learning domains (knowledge, skills, and attitudes). CBE is expected to change traditional methods of postgraduate education. For instance, the time of training, although a precious resource, should not be considered a proxy for competence (e.g., the time of rotation in certain hospital areas is not the primary marker of competence achievement). Furthermore, CBE emphasizes the critical role of informed judgment of the learner's competency progress and the quality of the training, which is based on a staged and formative assessment driven by multiple workplace-based observations. Several CBE models have been developed for postgraduate education in healthcare (e.g., CanMEDS by the Royal College of Physicians and Surgeons of Canada (RCPSC), the CBME-Competency model by the Accreditation Council for Graduate Medical Education (ACGME), Tomorrow's Doctor in the UK,

and multiple others). The following concepts enhance the implementation of CBE in the curriculum:

- **Competency:** Competency is a cognitive construct that assesses the potential to perform efficiently in a given situation based on a professional standard. Professional roles (e.g., medical experts, health advocates, communicators, leaders, scholars, collaborators, and professionals) define competency roles to make them amenable to learning and assessment.
- **Milestones**: Milestones are the stages of the developmental journey throughout the competency continuum. Throughout their learning journey, trainees from junior to senior levels are assisted in transforming from (novice/supervised) to (master/unsupervised) practitioners. This should not mask the role of supervisory/regulatory bodies toward the malpractice of independent practitioners. Milestones are expected to enhance the learning process by pacing training/assessment to match the developmental levels of trainees (junior versus senior) and improve development from one level to another.
- **Learning-Domains:** Whenever possible, efforts should be directed to annotate learning outcomes with the corresponding domain (K=Knowledge, S=Skills, and A=Attitude). You may have more than one annotation for a given learning outcome.
- **Content-area Categorization:** It is advisable to categorize learning outcomes into broad content areas related to the profession's practice, such as diagnostic versus therapeutic, simple versus complex, and urgent versus chronic.
- **Trainees** are expected to progress from novices to mastery of specific professional competencies. The SCFHS endorses the CanMEDS to articulate professional competencies. This curriculum applies the principles of competency–based medical education. The "CanMEDS 2015/ACGME 2018 framework" has been adopted in this section.

ACGME reference and link: https://www.acgme.org/Portals/0/MilestonesGuidebook.pdf

This reference is an example of a general outline of CanMEDS competencies (Frank JR, Snell L, Sherbino J, editors. CanMEDS 2015 Physician Competency Framework. Ottawa: Royal College of Physicians and Surgeons of Canada; 2015)

2. Program Duration

The six-year program begins with two core years in surgical principles, featuring variable rotations of four weeks to three months. The next two years (R3/4) focus on junior plastic surgery, followed by senior plastic surgery in the last two years, with six-month rotations across various plastic surgery subspecialties.

3. Program Rotations

Year	Mandatory Core Rotations*	Duration Blocks*	Electives	Duration Blocks*
R1 Junior	General Surgery	8weeks	OMFS	4 weeks
	Burn Surgery	12 weeks	Pediatric Surgery	4 weeks
	Vascular Surgery	12 weeks	Dermatology	4 weeks
	Emergency Medicine	6 weeks	ENT	4 weeks
	Electives	6 weeks	Anesthesia	4 weeks
	Annual leave	4 weeks	Research	4 weeks
R2 Junior	Intensive Care Unit	6 weeks	Neurosurgery	4 weeks
	General Plastic Surgery	12 weeks		
	Orthopedic Surgery	8 weeks		
	Oral Maxillofacial Surgery	4 weeks		
	Radiology	4 weeks		
	Electives	10 weeks		
	Annual leave	4 weeks		
R3 Junior	Burn Surgery	12 weeks		
	General Plastic Surgery	12 weeks		
	Hand and peripheral nerves	24 weeks		
	Annual leave	4 weeks		

Year	Mandatory Core Rotations*	Duration Blocks*	Electives	Duration Blocks*
R4	Reconstructive surgery	24 weeks		
	Trauma	24 weeks		
	Annual leave	4 weeks		
R5 Senior	Aesthetic and Cosmetic surgery	24 weeks		
	Trauma / Reconstructive surgery	24 weeks		
	Annual leave	4weeks		
R6 Senior	Craniofacial Surgery / Pediatric Surgery	24 weeks		
	Microsurgery	24 weeks		
	Annual leave	4 weeks		

- Each block is four weeks long.
- Vacations: In accordance with SCFHS regulations, the training hospital's policy, and with the program director's approval, residents are granted four weeks of annual leave plus Eid and public holidays.

4. Mapping of learning objectives and competency roles to program rotations:

Specific learning objectives

CanMEDS physician competency framework Goals: Upon completion of training, a resident is expected to be a competent specialist in plastic surgery, capable of assuming a consultant's role in the specialty. The resident must acquire a working knowledge of the theoretical basis of the specialty, including its foundations in the basic medical sciences and research. Residents must demonstrate the requisite knowledge, skills, and attitudes for effective patient-centered care and service to a diverse population. In all aspects of specialist practice, the graduate must be able to professionally address issues of gender, sexual orientation, age, culture, ethnicity, and ethics.

Junior Plastic Surgery Resident (R3 and R4) The overall objective of this stage is to expose the resident to all fields of plastic surgery. During the first two years (R3 and R4), the resident will be supervised when performing simple and less complicated procedures and allowed to participate in major plastic procedures. The resident will rotate for six rotation blocks in the approved centers of the regional program. The resident can rotate in the exact center more than once, based on the program's requirements and the program director's decision. Depending on the individual center policy, the plastic surgery R3 and R4 residents may take calls as senior or junior residents.

Senior Plastic Surgery Resident (R5 and R6). At this stage, the resident should acquire the skills and knowledge to become a competent plastic surgeon at graduation. The resident rotates for a minimum of 6 block rotations in the approved centers of the regional program. They can, however, rotate in the exact center more than once based on the program's requirements. The rotation length can be changed to 3 blocks if the program director sees a benefit for the resident. The resident should also fulfill the role of the chief resident of the division of plastic surgery in any recognized training hospital for at least six blocks before graduation.

Rotation1: General Surgery

Key Competency Area 1: Core Principles, Wound Management

(Relevant Rotations: General Plastic Surgery, Burn Surgery, General Surgery, ICU, Emergency Medicine)

Junior Resident (R1–R2)

By the end of junior training, the resident should be able to:

- Explain the phases of wound healing at the cellular and molecular levels and describe how systemic factors (e.g., diabetes, malnutrition, infection) influence outcomes.
- Perform operative preparation and wound closure using appropriate aseptic technique, effective hemostasis, and atraumatic tissue handling in supervised surgical cases.
- Apply Advanced Trauma Life Support (ATLS) principles in initial trauma evaluation and stabilization.
- Safely administer local anesthesia and conscious sedation, recognize indications, contraindications, and potential complications.
- Perform structured wound assessment and management, integrating both operative and non-operative methods.

- Perform wound debridement and closure, including layered suturing, under supervision.
- Harvest and apply split-thickness and full-thickness skin grafts, selecting appropriate donor and recipient sites and ensuring proper graft take.
- Describe the indications and design principles of random- and axial-pattern local flaps, and assist in tissue expansion and basic reconstructive procedures involving muscle and composite flaps.
- Explain transplant biology, microsurgical principles, and tissue perfusion relevant to reconstruction.
- Apply medical (non-operative) wound management, including infection control, modern dressings, and negative-pressure therapy.
- Safely operate dermatomes, surgical drills, dermabraders, and liposuction devices under supervision, adhering to manufacturer guidelines and institutional safety protocols
- Recognize the indications and limitations of energy-based devices used in plastic surgery (e.g., electrocautery, laser, ultrasound, radiofrequency).
- Utilize biomaterials appropriately, including autografts, allografts, and xenografts.
- Independently perform wound closure techniques that optimize aesthetic alignment and functional preservation, demonstrating appropriate scar placement, tension control, and tissue viability.
- Identify and describe common benign and malignant skin lesions, including basal cell carcinoma, squamous cell carcinoma, melanoma, and benign soft-tissue tumors.
- Assist in biopsy, excision, and reconstruction of simple cutaneous and subcutaneous lesions under supervision.

- Explain and implement postoperative care principles, including wound monitoring, infection prevention strategies, and early recognition of complications under supervision.

Senior Resident (R5–R6)

By the end of senior training, the resident should be able to:

- Formulate comprehensive reconstructive plans for complex wounds, integrating grafts, local, regional, distant, and free-flap options.
- Perform as primary surgeon for moderate to complex flap reconstructions (e.g., rhomboid, Limberg, parascapular, rotation, advancement) based on defect characteristics.
- Apply advanced reconstructive algorithms using the reconstructive ladder concept, considering patient factors and defect complexity.
- Execute the harvest and inset of muscle, myocutaneous, and composite flaps, demonstrating precise anatomic dissection and vascular preservation.
- Participate in or perform microvascular tissue transfer under supervision.
- Identify indications of flap selection, anastomotic technique, and postoperative monitoring.
- Manage complex wound problems, including chronic infection, radiation injury, and osteomyelitis, coordinating care with multidisciplinary teams.
- Perform excision and reconstruction of cutaneous malignancies and soft-tissue tumors, applying oncologic and reconstructive principles.
- Recognize and manage postoperative complications such as partial flap loss, infection, venous congestion, and delayed healing.
- Formulate operative strategies, adjust surgical plans intraoperatively when indicated, and oversee perioperative wound management to optimize outcomes.

- Advocate for evidence-based and patient-specific wound management, ensuring functional restoration and aesthetic excellence.

Key Competency Area 2: Hand and Upper Extremity Surgery

(Relevant Rotations: Hand & Peripheral Nerves, Orthopedic Surgery)

Junior Resident (R3)

By the end of the rotation, the resident should be able to:

- Describe and apply the Detailed anatomy and physiology of the hand and upper extremities, including vascular, musculoskeletal, neural, and cutaneous structures in the context of clinical assessment and operative planning.
- Diagnose common hand disorders such as carpal tunnel syndrome, trigger finger, Dupuytren's disease, common rheumatic diseases, and benign or malignant soft-tissue and bony tumors through comprehensive history-taking and focused examination.
- Interpret standard radiographs, CT scans, and MRI scans of the hand and wrist to identify fractures, dislocations, arthritic changes, and space-occupying lesions.
- Perform, under supervision, basic hand procedures, including but not limited to :
    - Open carpal tunnel release
    - Trigger finger release
    - Repair of uncomplicated extensor and flexor tendon lacerations as well as nerve repair
    - Tenolysis and tendon repair in straightforward cases

- Describe and apply incision and drainage techniques for hand and upper extremity infections, including the management of paronychia, felon, and deep-space infections.
- Develop and communicate a basic postoperative rehabilitation plan in collaboration with a hand therapist, emphasizing early motion and the prevention of stiffness.
- Select and interpret appropriate imaging and objective diagnostic tests for patients with hand pathology and integrate findings into clinical management planning.
- Recognize the principles of late reconstruction of upper limb deformities, including but not limited to:
    - Tendon transfers for wrist, hand, and upper limb function
    - Thumb reconstruction techniques
    - Bone grafting for non-union and defect reconstruction
    - Reconstruction of scars and soft-tissue defects
    - Principles of nerve grafting, decompression, and management of complex regional pain syndrome
- Participate in preoperative planning discussions and multidisciplinary care conferences involving orthopedics, rehabilitation, and occupational therapy.

Senior Resident (R5–R6)

By the end of senior training, the resident should be able to:

- Independently diagnose and plan surgical management for complex hand and upper extremity conditions by integrating clinical findings with imaging and electrophysiological data.

- Perform as the primary surgeon for complex procedures, including:
    - Peripheral nerve repair, grafting, and neurolysis
    - Tendon transfers for radial, ulnar, or median nerve palsies
    - Internal fixation of hand and wrist fractures and fracture-dislocations
    - Ligament reconstruction and joint stabilization procedures
- Manage complicated hand infections, compartment syndromes, and delayed presentations requiring staged reconstruction.
- Formulate and execute comprehensive management of brachial plexus injuries, incorporating nerve repair, grafting, transfers, and postoperative rehabilitation strategies.
- Appropriate techniques for the management of chronic upper extremity problems such as nonunion, Kienböck's disease, and degenerative joint disorders.
- Perform revascularization, replantation, and complex microsurgical procedures of the upper extremities under supervision, including thumb reconstruction and composite tissue transfer.
- Manage acute mutilating hand injuries and prioritize skeletal stabilization, vascular repair, and soft tissue coverage according to reconstructive principles.
- Lead operative planning and coordinate multidisciplinary rehabilitation programs involving hand therapists and occupational specialists.
- Independently plan operative strategy, prioritize procedural steps, select appropriate techniques, and implement measures to minimize complications in cases of moderate or greater complexity.
- Apply evidence-based principles in upper extremity surgery, advocating for functional restoration and long-term rehabilitation outcomes.

Key Competency Area 3: Craniofacial, Head & Neck Surgery

(Relevant Rotations: Craniofacial Surgery, Oral and Maxillofacial Surgery)

Junior Resident (R1–R2)

By the end of junior training, the resident should be able to:

- Describe the detailed surgical anatomy of the head and neck, including vascular, neural, skeletal, and soft-tissue structures, with emphasis on the facial nerve course and the facial aesthetic units.
- Identify congenital and acquired craniofacial deformities involving the scalp, skull, forehead, periorbital region, cheeks, nose, lips, ears, and mandible.
- Apply Advanced Trauma Life Support (ATLS) principles in the assessment and initial management of maxillofacial and craniofacial trauma, including airway stabilization, hemorrhage control, and injury prioritization.
- Assist in the primary repair of facial soft-tissue injuries, performing layered closure and optimizing wound alignment under supervision.
- Assess head and neck defects and propose appropriate reconstructive options based on defect characteristics and patient factors under supervision.
- Recognize and describe the presentation and management of:
    - Vascular and lymphatic malformations of the head and neck
    - Craniosynostosis (unisutural and multisuture)
    - Common craniofacial syndromes (Crouzon, Apert, Saethre-Chotzen, Pfeiffer, and Carpenter)
    - Major pediatric craniofacial conditions such as Pierre Robin sequence, Treacher Collins syndrome, hemifacial microsomia, Binder, Romberg, Möbius, Down, Beckwith-Wiedemann, Gorlin, neurofibromatosis, fibrous dysplasia, and Klippel-Feil syndrome.

- Participate in the perioperative management of craniofacial patients, including airway protection, fluid management, and postoperative wound care.
- Contribute to preoperative planning and intraoperative positioning, demonstrating awareness of anesthesia, airway, and multidisciplinary coordination.

Senior Resident (R5)

By the end of senior training, the resident should be able to:

- Apply a comprehensive ATLS-based approach to maxillofacial trauma, including airway management, cervical spine protection, and coordination of care for associated injuries.
- Perform reduction and internal fixation of facial fractures, including mandible, zygoma, orbital floor, and Le Fort I fractures.
- Plan and perform reconstruction of composite head and neck defects following trauma or oncologic resection, integrating functional restoration and aesthetic balance.
- Interpret and analyze CT and MRI imaging to guide surgical planning for facial fractures, craniosynostosis, and skeletal asymmetry.
- Perform soft-tissue reconstruction of the scalp, cheeks, and nose using grafts, local/regional flaps, or free tissue transfer, ensuring optimal contours and function.
- Conduct ear, eyelid, lip, and nasal reconstructions, including cleft secondary correction, basic rhinoplasty, and tip revision techniques.
- Manage facial nerve injuries, performing nerve grafting, static sling, or dynamic reanimation as indicated.
- Perform mandibular reconstruction using bone grafts and regional or free flaps (e.g., fibula, iliac crest), restoring both continuity and occlusion.

- Select and apply the appropriate fixation systems and reconstructive materials (resorbable or titanium) for craniofacial skeletal repair.
- Participate in the multidisciplinary management of congenital craniofacial anomalies in collaboration with neurosurgery, ENT, orthodontics, and speech therapy teams.
- Execute precise surgical techniques in managing complex soft-tissue and skeletal defects of the head and neck, achieving optimal aesthetic and functional outcomes.
- Independently develop operative strategies, coordinate interdisciplinary communication, and supervise the perioperative management of complex craniofacial cases under consultant supervision.

Key Competency Area 4: Breast Surgery

(Relevant Rotations: General Plastic & Reconstructive Surgery, Microsurgery)

Junior Resident (R1–R2)

By the end of junior training, the resident should be able to:

- Describe the surgical anatomy of the breast and chest wall, including vascular and lymphatic drainage, innervation, and support structures.
- Recognize and discuss congenital and developmental breast/chest deformities, including aplasia, hypoplasia, macromastia, asymmetry, gynecomastia, and chest wall anomalies.
- Identify and describe benign and malignant breast conditions in both sexes, including premalignant disease, genetic predisposition, and the effects of radiation on reconstruction.
- Explain the principles and indications for breast reconstruction (implant-based, pedicled, and free flaps) and aesthetic surgery (reduction, augmentation, and mastopexy).

- Describe the basic science and safety of silicone implants, tissue expanders, and acellular dermal matrices.
- Assist in mastectomy and immediate reconstruction procedures, including tissue expander placement and closure, under supervision.

Senior Resident (R5–R6)

By the end of senior training, the resident should be able to:

- Formulate individualized reconstructive plans for congenital, traumatic, or oncologic breast defects.
- Perform as the primary surgeon for autologous breast reconstruction (e.g., DIEP, PAP, TDAP flaps), including microsurgical anastomosis, fat grafting, and contralateral balancing.
- Manage the full course of implant-based reconstruction, from expander insertion to implant exchange and revision.
- Perform aesthetic breast procedures (augmentation, reduction, mastopexy) with sound judgment in patient selection, marking, and symmetry.
- Apply appropriate fixation systems and reconstructive materials (resorbable or titanium) for breast and chest wall reconstruction.
- Participate in multidisciplinary management with oncology, radiology, and general surgery teams for oncologic and reconstructive cases.

Key Competency Area 5: Aesthetic Surgery

(Relevant Rotation: Aesthetic & Cosmetic Surgery)

Senior Resident (R6)

By the end of training, the resident should be able to:

- Evaluate patients seeking aesthetic surgery, including psychosocial assessment, motivation analysis, and management of expectations.

- Perform as the primary surgeon for core aesthetic procedures such as blepharoplasty, rhytidectomy, rhinoplasty, abdominoplasty, and liposuction under appropriate supervision.
- Plan and perform aesthetic breast procedures, including augmentation, mastopexy, combined augmentation-mastopexy, cosmetic reduction, and nipple–areolar complex modifications.
- Perform body-contouring procedures, including panniculectomy, abdominoplasty, belt lipectomy, brachioplasty, and liposuction/lipoinjection, integrating regenerative techniques where applicable.
- Apply facial rejuvenation techniques, including brow lift, blepharoplasty, and facelift, as well as facial recontouring using implants, bone modification, and autologous fat grafting.
- Administer non-surgical aesthetic treatments, including:
    - Botulinum toxin injections
    - Dermal and soft-tissue filler injections
    - Skin-resurfacing technologies (chemical peels, dermabrasion, and laser/light-based systems)
- Independently recognize, diagnose, and implement appropriate management strategies for surgical and non-surgical aesthetic procedure complications, adhering to evidence-based safety standards.
- Obtain and document comprehensive informed consent, detailing risks, benefits, alternatives, and realistic outcomes specific to aesthetic procedures.
- Ensure continuity of care, including adequate follow-up, postoperative monitoring, and management of revisions when necessary.

- Recognize the limitations of personal competence, seek timely supervision or consultation when indicated, and prioritize patient safety in clinical decision-making
- Collaborate effectively with other health professionals (e.g., dermatology, psychology, and anesthesia) to ensure optimal aesthetic and functional outcomes.
- Maintain detailed and accurate documentation of procedures and outcomes for audit, education, and quality improvement purposes.

Key Competency Area 6: Burn and Trauma Management

(Relevant Rotations: Burn Surgery, Emergency Medicine, ICU)

Junior Resident (R1)

By the end of junior training, the resident should be able to:

- Assess and resuscitate patients with burns and trauma using ATLS principles, ensuring airway, breathing, and circulation stabilization.
- Estimate burn extent and depth and calculate fluid requirements using resuscitation formulas, including nutritional and caloric needs for major burn cases.
- Interpret imaging studies (radiographs, CT, MRI, radionuclide scans, bronchoscopy) relevant to burn and trauma evaluation.
- Manage fluid and electrolyte balance and provide respiratory support in patients with inhalation injury.
- Recognize and initiate management of special burn types, including:
    - Chemical burns – safe decontamination, neutralization principles, and prevention of secondary injury.
    - Electrical burns – cardiac monitoring, recognition of deep tissue injury, and compartment syndrome management.

- Cold injuries – rewarming protocols and prevention of secondary ischemic damage.

- Apply nonsurgical burn management using topical antimicrobials, advanced dressings, and appropriate topical and systemic therapies.
- Perform escharotomy and fasciotomy for circumferential burns and electrical injury-related compartment syndromes.
- Assist in tangential and full-thickness excisions and perform skin grafting procedures, including:
  - Split-thickness and full-thickness autografts
  - Allografts and xenografts
  - Basic flap coverage (local, regional, distant) under supervision
- Participate in early wound care, infection prevention, and nutritional support for patients with acute burns.
- Collaborate with physiotherapy and occupational therapy teams to initiate early rehabilitation, splinting, and scar prevention.
- Assess late burn deformities and propose appropriate reconstructive strategies, including contracture release and tissue expansion, under supervision.

Senior Resident (R4–R6)

By the end of senior training, the resident should be able to:

- Lead the multidisciplinary management of critically ill patients with burns in the ICU, coordinating resuscitation, wound care, and critical support measures.
- Formulate comprehensive treatment plans for complex thermal, chemical, and electrical burns, integrating surgical and nonsurgical strategies from admission through rehabilitation.

- Perform as primary surgeon for tangential excision, full-thickness excision, and advanced reconstruction using grafts and flaps for extensive burns and high-voltage electrical injuries.
- Manage complications of chemical and electrical burns, including myoglobinuria, cardiac arrhythmias, and deep muscle necrosis, ensuring timely surgical and medical interventions.
- Plan and perform late burn reconstruction, including contracture release, scar revision, tissue expansion, and regional or free flap reconstruction for functional and aesthetic restoration.
- Coordinate complex reconstruction in patients with combined burns and polytrauma or pan-facial injuries, prioritizing airway, function, and cosmesis.
- Oversee rehabilitation and scar management, working closely with physiotherapy, occupational therapy, and psychosocial teams.
- Supervise and mentor junior residents in acute burn care, wound management, and surgical techniques.

Key Competency Area 7: Microsurgery and Lower Extremity Reconstruction

(Relevant Rotations: Microsurgery, General Plastic & Reconstructive Surgery, General Surgery)

Junior Resident (R1–R2)

By the end of junior training, the resident should be able to:

- Describe the anatomy and physiology of the lower extremities, including vascular, lymphatic, neural, and musculoskeletal structures relevant to reconstruction.

- Perform supervised microvascular end-to-end anastomoses on simulation or animal models, achieving confirmed vessel patency prior to clinical application.
- Recognize and outline the management of diabetic foot pathology, emphasizing wound assessment, infection control, and off-loading principles.
- Identify peripheral vascular and lymphatic diseases affecting the lower limb and describe their implications for reconstruction.
- Assist in debridement and local flap coverage for lower-extremity wounds under supervision.
- Explain the principles of lower extremity reconstruction following trauma, chronic infection, or tumor resection, with attention paid to soft tissue coverage and vascular integrity.
- Participate in the multidisciplinary management of patients with lower extremity trauma, diabetic wounds, or vascular compromise along with orthopedic, vascular, and rehabilitation teams.

Senior Resident (R5–R6)

By the end of senior training, the resident should be able to:

- Perform as the primary surgeon for free-tissue transfer procedures, achieving high anastomotic patency and flap survival rates.
- Plan and execute microsurgical reconstruction for complex lower-extremity defects, including trauma, tumor resection, chronic osteomyelitis, and diabetic limb salvage.
- Manage postoperative free-flap monitoring, recognizing and addressing early signs of vascular compromise.
- Apply the principles of limb salvage, integrating vascular status, bone stability, and soft-tissue coverage in reconstruction planning.

- Perform local, regional, and free flap reconstruction of the lower extremities (e.g., anterolateral thigh, fibula, gracilis, and latissimus dorsi flaps).
- Manage reconstruction after oncologic resection or radiation, accounting for impaired wound healing.
- Participate in decision making regarding amputation versus salvage, emphasizing function, rehabilitation potential, and patient quality of life.
- Collaborate effectively with orthopedic, vascular, and rehabilitation specialists to optimize reconstructive outcomes.
- Independently plan and perform microsurgical reconstruction for complex cases, execute precise microvascular anastomosis, and supervise postoperative flap monitoring and complication management under consultant oversight.

Key Competency Area 8: Pediatric and Craniofacial Surgery

(Relevant Rotations: Pediatric Plastic Surgery, Craniofacial Surgery, Hand & Peripheral Nerve Surgery)

Junior Resident (R1–R3)

By the end of junior training, the resident should be able to:

- Describe the embryology and anatomy of the head, neck, chest wall, and upper extremities, and classify congenital anomalies according to developmental mechanisms.
- Recognize and assist in managing common congenital hand deformities, including trigger thumb, polydactyly, clinodactyly, and camptodactyly.
- Manage minor pediatric injuries, such as simple lacerations, hand fractures, tendon or nerve lacerations, infections, and minor burns under supervision.
- Identify and assist in treating simple congenital and acquired deformities, such as positional plagiocephaly, congenital torticollis, prominent ears, small nevi, and hemangiomas.

- Recognize and describe vascular and lymphatic malformations of the head and neck, their presentations, and the basic management principles.
- Describe the principles and timing of cleft lip and palate repair and recognize related functional issues (feeding, speech, and hearing).
- Describe congenital and developmental diseases of the breast and chest wall, including aplasia, hypoplasia, macromastia, constricted breast, and asymmetry.
- Participate in perioperative care and family counseling for pediatric patients with congenital or acquired deformities.

Senior Resident (R5–R6)

By the end of senior training, the resident should be able to:

- Manage uncomplicated pediatric trauma and congenital conditions in appropriate facilities, including lacerations, minor fractures, burns, and soft tissue infections.
- Explain the embryology, genetics, and classification of major craniofacial anomalies, including cleft lip and palate, craniosynostosis, and related syndromes (Crouzon, Apert, Treacher Collins, Pierre Robin sequence, and so on).
- Perform or assist in cleft lip and palate repair, alveolar bone grafting, and secondary nasal or lip revision under supervision.
- Participate in the multidisciplinary care of craniofacial patients with neurosurgery, ENT, orthodontics, speech therapy, and pediatrics.
- Diagnose and manage vascular and lymphatic malformations of the head and neck, including complex lesions and syndromic presentations.
- Manage head and neck tumors (benign and malignant) with knowledge of surgical and adjuvant management principles.

- Recognize and manage chest wall and breast developmental anomalies, including Poland syndrome, pectus deformities, and breast asymmetry reconstruction in adolescents.
- Assist in major pediatric burn and reconstructive procedures, including contracture release and grafting.
- Participate in the care of pediatric tumors and congenital or acquired soft tissue lesions requiring excision and reconstruction.

Lead multidisciplinary case discussions, communicate treatment plans clearly to families, and provide ongoing counseling for complex cases throughout the follow-up period.

Medical Expert

Definition

As medical experts, plastic surgeons integrate all CanMEDS Roles, applying medical knowledge, clinical skills, and a professional attitude to provide patient-centered care. The Medical Expert is the central physician role in the CanMEDS framework.

Key and Enabling Competencies

Plastic surgeons can:

- Function effectively as consultants, integrating all of the CanMEDS roles to provide optimal, ethical, and patient-centered medical care
- Perform a consultation effectively, including the presentation of well-documented assessments and recommendations in written and verbal form in response to a request from another health care professional, including recognition, diagnosis, management, and appropriate counseling
- Manage the perioperative and postoperative care of a patient
- Manage a patient's progress through the complexities of the healthcare system

- Identify and appropriately respond to relevant ethical issues arising in patient care
- Prioritize professional duties when faced with multiple patients and problems
- Conduct patient consultations using empathetic communication, address patient concerns, and incorporate patient values into management planning
- Recognize and respond to the ethical dimensions of medical decision-making
- Provide evidence-based expert medical opinions in professional, medico-legal, or advisory contexts, adhering to ethical, legal, and regulatory standards
- Establish and maintain clinical knowledge, skills, and attitudes appropriate to their practice
- Apply understanding of the clinical, socio-behavioral, and fundamental biomedical sciences relevant to plastic surgery

Communicator

Definition:

As communicators, plastic surgeons effectively facilitate the doctor-patient relationship and dynamic exchanges that occur before, during, and after medical encounters.

Key and Enabling Competencies

Plastic surgeons can:

- Develop rapport, trust, and ethical therapeutic relationships with patients and families

- Conduct patient and family consultations using clear, empathetic communication, addressing diagnosis, treatment options, risks, and expected outcomes
- Provide emotional support to the trauma patient, including appropriate communication during the emergency assessment, operative management, postoperative care, and long-term recovery
- Conduct empathetic preoperative consultations; acknowledge patients' emotional concerns; discuss realistic expectations, risks, and potential outcomes
- Provide family support when children have congenital or acquired conditions requiring surgical correction
- Appreciate the level of communication required between patients with burns and their families, including ethical decision-making and emotional support during end-of-life care
- Respect patient confidentiality, privacy, and autonomy
- Listen effectively
- Recognize and appropriately respond to patients' nonverbal cues (e.g., distress, anxiety, hesitation) during clinical encounters
- Facilitate a structured clinical encounter effectively
- Accurately elicit and synthesize relevant information and perspectives of patients and families, colleagues, and other professionals
- Gather information about a disease and the patient's beliefs, concerns, expectations, and illness experiences
- Seek and synthesize relevant information from other sources, such as a patient's family, caregivers, and other professionals
- Accurately convey relevant information and explanations to patients, families, colleagues, and other professionals

- Deliver information to patients and families, colleagues, and other professionals in a humane manner, in such a way that it is understandable and encourages discussion and participation in decision-making
- Communicate effectively with families, patients, peers, and healthcare team members
- Communicate appropriately with individuals indirectly involved in the delivery of healthcare, including students, volunteers, and support staff
- Respect diversity and differences, including but not limited to the impact of gender/sex, religion, and cultural beliefs on decision-making
- Encourage discussion, questions, and interaction in the encounter
- Engage patients, families, and relevant health professionals in shared decision-making to develop a care plan
- Address challenging communication issues effectively, such as obtaining informed consent, delivering bad news, and addressing anger, confusion, and misunderstanding
- Effectively convey oral and written information about a medical encounter
- Maintain clear, accurate, and appropriate records of clinical encounters and plans
- Document and disseminate information related to procedures performed and their outcomes appropriately
- Present verbal reports of clinical encounters and plans effectively
- Present medical information to the public or media about a medical issue

Collaborator

Definition:

As collaborators, plastic surgeons effectively work within a healthcare teams to achieve optimal patient care.

Key and Enabling Competencies

Plastic surgeons can:

- Participate effectively and appropriately on an interprofessional health care team
- Describe the plastic surgeon's roles and responsibilities to other professionals
- Describe the roles and responsibilities of other professionals within the healthcare team
- Recognize and respect the diversity of roles, responsibilities, and competencies of other professionals in their own
- Work with others to assess, plan, provide and integrate care for individual patients (or patient groups)
- Collaborate effectively with relevant medical and surgical specialties in developing and implementing multidisciplinary management plans for patients requiring coordinated care
- Collaborate with anesthesiologists and other practitioners during the perioperative period
- Work with others to assess, plan, provide, and review other tasks, such as research problems, educational work, program review, or administrative responsibilities
- Interact effectively and professionally with:
    - Administrators and health authorities
    - Charitable and volunteer organizations
    - Educators and universities
    - Medical and legal experts
    - Multi-disciplinary and interprofessional clinics and services

    - Professional organizations and regulatory authorities
- Participate in multidisciplinary rounds
- Participate effectively in interprofessional team meetings
- Enter into cooperative relationships with other professions for the provision of quality care
- Work collaboratively with hand therapists for patients with hand problems and integrate them appropriately into hand surgery clinics if possible
- Work collaboratively with intensivists and nutritionists in the care of trauma and burn patients
- Work collaboratively with all other surgical specialists to coordinate the reconstruction of congenital, traumatic, and neoplastic defects
- Work and collaborate with nursing staff in all areas of the hospital for better care of plastic surgery patients
- Describe the principles of team dynamics
- Respect team ethics, including confidentiality, resource allocation, and professionalism
- Lead multidisciplinary team discussions, assign roles appropriately, and ensure effective communication during perioperative patient care
- Work effectively with other health professionals to prevent, negotiate, and resolve interprofessional conflict
- Communicate with colleagues and interprofessional team members in a professional, respectful, and constructive manner during clinical interactions
- Work with other professionals to prevent conflict
- Employ collaborative negotiation to resolve conflicts

- Respect differences and address misunderstandings and limitations in other professionals
- Recognize one's differences, misunderstandings, and limitations that may contribute to interprofessional tension
- Reflect on interprofessional team function

Leader

Definition:

As leaders, plastic surgeons are integral participants in healthcare organizations, organizing sustainable practices, making decisions about resource allocation, and contributing to the healthcare system's overall effectiveness.

Key and Enabling Competencies

Plastic surgeons can:

- Participate in activities that contribute to the effectiveness of their healthcare organizations and systems
- Work collaboratively with others in their organizations
- Participate in systemic quality process evaluation and improvement, such as patient safety initiatives
- Describe the structure and function of the healthcare system in relation to plastic surgery, including the role of physicians
- Describe principles of healthcare financing, including physician remuneration, budgeting, and organizational funding at the hospital, regional, provincial, and national levels, to effectively manage their practice and career

- Set priorities and manage time to balance patient care, practice requirements, outside activities, and personal life
- Utilize principles and develop skills to improve time management
- Manage a plastic surgery practice, including its finances, human resources, offices, outpatient clinics, and specialty care units
- Implement processes to ensure personal practice improvement
- Employ information technology appropriately for patient care
- Allocate finite health care resources appropriately
- Recognize the importance of just allocation of health care resources, balancing effectiveness, efficiency, and access to optimal patient care
- Manage patient flow effectively, including admissions, investigations and treatments, surgery, and discharge planning
- Apply evidence and management processes for cost-appropriate care
- Serve in administrative and leadership roles as appropriate
- Chair or participate effectively in committees and meetings
- Participate on resident, university, or hospital committees
- Lead or implement changes in health care
- Plan relevant elements of health care delivery, including operating room call schedules

Health Advocate

Definition:

As health advocates, plastic surgeons responsibly use their expertise and influence to improve the health and wellbeing of patients, communities, and populations.

Key and Enabling Competencies

Plastic surgeons can:

- Respond to individual patient health needs and issues as part of patient care
- Identify the health needs of an individual patient, including but not limited to:
- Patients requiring contour surgery:
    - Provide potential obesity counseling
    - Provide dietary counseling
    - Provide or promote exercise and lifestyle counseling
- Patients requesting facial rejuvenation surgery:
    - Advise patients regarding the proper use of sunscreen
    - Promote smoking cessation initiatives and provide support to patients trying to quit smoking
    - Provide psychological screening for patients with unrealistic expectations or patients after a life-changing event
- Patients requiring breast surgery (reduction, augmentation, or mastopexy):
    - Encourage regular self-examination
    - Promote mammography screening
    - Verify family history and other risk factors
- Pediatric patients:
    - Identify and respond appropriately in suspected cases of child maltreatment
    - Promote awareness of methods to reduce the occurrence of accidental injuries
    - Promote initiatives to prevent dog bite injuries

- Promote awareness of measures to prevent the formation of positional plagiocephaly

- Respond to the health needs of the communities that they serve
- Describe the practice communities that they serve
- Identify opportunities for advocacy, health promotion, and disease prevention in the communities that they serve and respond appropriately
- Possible approaches include, but are not limited to:
  - Teaching pediatricians about positional plagiocephaly
  - Providing information regarding excess sun exposure and the use of appropriate clothing and sunscreen
  - Promoting poster placement on anti-burn precautions at campgrounds, lawn mower precautions at community centers, and dog precautions in veterinary offices and community centers
- Identify the determinants of health for the populations that they serve
- Identify the determinants of population health, including barriers to access to care and resources
- Identify vulnerable or marginalized populations within those served and respond appropriately
- Identify populations with low socioeconomic status that may be at risk for burn injuries or child abuse
- Identify newborns at risk of deformational plagiocephaly
- Identify those with a family history of skin cancer or breast cancer
- Promote the health of individual patients, communities, and populations
- Describe an approach for implementing a change in the determinants of the health of the populations they serve
- Describe how public policy impacts the health of the populations served

- Identify points of influence in the health care system and its structure
- Describe the ethical and professional issues inherent in health advocacy, including altruism, social justice, autonomy, integrity, and idealism
- Appreciate the possibility of conflict inherent in their role as health advocates for a patient or community, similar to that of managers or gatekeepers
- Describe the role of the medical profession in advocating collectively for health and patient safety

Scholar

Definition:

As scholars, plastic surgeons demonstrate a lifelong commitment to reflective learning and the creation, dissemination, application, and translation of medical knowledge.

Key and Enabling Competencies

Plastic Surgeons can:

- Maintain and enhance professional activities through ongoing learning
- Describe the principles of maintaining competence
- Describe the principles and strategies for implementing a personal knowledge management system
- Recognize and reflect on learning issues in practice
- Access and interpret relevant evidence
- Integrate new learning into practice
- Evaluate the impact of any changes in practice
- Document the learning process

- Evaluate medical information and its sources critically and apply this appropriately to practice decisions
- Describe the principles of critical appraisal
- Critically appraise retrieved evidence to address a clinical question
- Integrate essential conclusions of appraisal into clinical care
- Facilitate the education of patients, families, students, residents, other health professionals, the public, and others as appropriate
- Describe principles of learning relevant to medical education
- Collaboratively identify the educational needs and desired educational outcomes of others
- Select effective teaching strategies and content to facilitate others' education
- Assess and reflect on a teaching encounter
- Contribute to the development, dissemination, and translation of new knowledge and practices
- Describe the principles of research and scholarly inquiry
- Describe the principles of research ethics
- Conduct a systematic search for evidence
- Select and apply appropriate methods to address a question
- Disseminate the findings of a study appropriately

Professional

Definition:

Plastic surgeons are professionals committed to the health and well-being of individuals and society through ethical practices, professionally led regulations, and high personal standards of behavior.

Key and Enabling Competencies

Plastic surgeons can:

- Exhibit appropriate professional behaviors in practice, including honesty, integrity, commitment, compassion, respect, and altruism
- Identify the three facets of professionalism: the importance of patient welfare, self-regulation, and physician autonomy
- Describe the nature of the social contract that medicine has with both patients and society
- Define what is meant by patient autonomy and how it is reflected in the practice of plastic surgery
- Recognize and appropriately respond to ethical issues encountered in practice
- Manage conflicts of interest appropriately
- Recognize the principles and limits of patient confidentiality as defined by professional practice standards and laws
- Maintain appropriate boundaries with patients
- Apply professional, legal, and ethical standards in clinical decision-making and patient care
- Assess and reflect on the importance of physician autonomy and the high professional standard of behavior expected
- Outline the nature of self-regulation and the mechanism by which the issues of professionalism are addressed
- Comply with regulatory and legal requirements in clinical practice, including documentation, licensing standards, and reporting obligations
- Report suspected cases of child maltreatment appropriately

- Maintain accurate documentation, participate in peer review processes, and respond appropriately to regulatory feedback
- Recognize and respond to others' unprofessional behavior in practice
- Participate in peer review

VIII. CONTINUUM OF LEARNING

This includes the learning that must occur at every critical stage of progression within a specialty. Trainees are encouraged to recognize the importance of lifelong Continuous Professional Development (CPD). Healthcare providers must engage in CPD to fulfill the requirements of their essential professions. The table below outlines the evolving expectations of roles as trainees progress through the junior, senior, and consultant levels of practice.

Undergraduate	R 1–2 (Junior Level)	R 3–4 (Junior Plastic)	R 5–6 (Senior Plastic)	Consultant
Non-practicing	Dependent/supervised practice	Dependent/supervised practice	Dependent/supervised practice	Independent practice/provide supervision
Obtain basic health science and foundational level knowledge of core discipline.	Obtain fundamental knowledge related to core clinical problems of the specialty.	Obtain fundamental knowledge related to the clinical problems of the specialty.	Apply knowledge to provide appropriate clinical care related to core clinical problems of the specialty.	Acquire advanced and up-to-date knowledge related to core clinical problems of the specialty.
Gain an introduction to the practice of the discipline through internship.	Apply clinical skills such as physical examination and practical procedures related to the specialty's core presenting problems and procedures.	Apply clinical skills related to the specialty's presenting problems and procedures, such as physical and practical examinations.	Analyze and interpret the findings from clinical skills to develop appropriate differential diagnoses and management plans for the patient.	Compare and evaluate challenging, contradictory findings and develop expanded differential diagnoses and management plans.

IX. TEACHING METHODS:

- The teaching process in postgraduate residency training programs is mainly based on the principles of adult learning theory. Trainees are expected to be aware of the importance of learning and to play active roles in the content and learning process. The training programs implement the adult learning concept in each feature of the activities, and the residents are responsible for their learning requirements. Formal training time includes the following teaching activities:
- Program-specific learning activities
- General learning opportunities
- Simulations

Program Learning Activities

- General academic activities
- Case-based discussions (CBDs)*
- Journal clubs**
- Consultant-led lectures
- Direct observation of procedural skills (DOPS)
- Anatomy laboratory sessions and flap dissections
- Microsurgical animal laboratory sessions
- Article reviews and seminars
- Bedside teaching involving cases in clinics, operating rooms, wards, and emergency settings
- On-site learning during volunteer missions

- Use of the One-Minute Preceptor model or SNAPPS to create clinical teaching opportunities

***Case-based Discussion: One hour each week can be used to discuss subjects of clinical significance, such as surgical marking or approaches to other problems. During this activity,** senior residents will participate in discussions under the supervision of a moderator.

****Journal club: Once per month,** we discuss several articles chosen by the senior residents and the program director. This activity aims to develop critical appraisal skills and the ability to read clinical papers.

Program- Learning Activities:

Program-specific activities are designed for trainees' teaching during their training. Trainees are required to attend these activities, and non-compliance may result in disciplinary action. It is advisable to link attendance and participation in these activities to formative assessment tools (see the formative assessment section below). Program administration should support these activities by providing protected time for trainees to attend and participate with a board-certified member to moderate sessions effectively.

A) Program Academic Half-Day:

At least 2–4 hours of formal training (academic half-day) should be reserved weekly. Formal teaching time is a planned activity with assigned tutor(s), time slots, and a venue. This excludes bedside teaching, clinic postings, and so on. The academic half-day covers core specialty topics determined and approved by the specialty's scientific council, aligned with specialty-defined competencies and teaching methods. These core topics will ensure critical clinical problems of the specialty are thoroughly taught.

It is recommended that lectures be conducted in an interactive, case-based discussion format. The learning objectives for each core topic need to be clearly defined, and providing pre-learning material is preferable. Whenever

applicable, core specialty topics should include workshops, team-based learning (TBL), and simulation to develop skills in core procedures. Regional supervisory committees, in coordination with academic and training affairs, program directors, and chief residents, should collaborate to plan and implement educational activities as indicated in the curriculum. Trainees should actively develop and deliver topics under faculty supervision, with involvement in content development, delivery, or research, among other areas. The trainee's supervisor should ensure that each topic's discussion is stratified into three categories of learning domains: knowledge, skill, and attitude, whenever applicable (see Appendix D for a table of top knowledge topics and procedure list).

The recommended number of annual half-days is 40 sessions per academic training year, with reserved time for other teaching methods such as journal clubs and clinical/practical teaching. In coordination with educational and training affairs and regional supervisory committees, the residency training committee, program directors, and chief residents should collaborate to plan and implement educational activities as indicated in the curriculum. This should be done efficiently, utilizing available resources with optimal exchange of expertise.

Appendix E provides an example of an academic half-day table

Academic week	*Section*	*Date*	*Time*	*Sessions*	*presenters*
1	Fundamentals in Surgery	Oct-5	13:00–14:00	Welcome to the program	Program director
			14:00–15:00	Case-based study**	A
			15:00–16:00	Topic 2	B
2		Oct-12	13:00–14:00	Topic 3	C
			14:00–15:00	Case-based study	D
			15:00–16:00	Topic 5	E
3		Oct- 19	13:00–14:00	Topic 6	F
			14:00–15:00	Case-based study	B
			15:00–16:00	Topic 8	C
4		Oct- 26	13:00–14:00	Journal club*	K
			14:00–15:00	Case-based study	B
			15:00–16:00	Topic 10	A

* Journal club sessions may be held in the evening or during the academic half-day. ** A case-based study may be held in the evening or during the academic half-day

An example of a half-day table can be placed in the appendices instead of the main text.

B) Practice-Based Learning:

Excellent learning opportunities exist during bedside, lab, O.R., and other work-related activities, including courses and workshops (e.g., simulations, standardized patients, and bedside teaching). Trainees are expected to build their capacity through self-directed learning. Practice-based learning, on the other hand, allows educators to supervise trainees, ensuring they become competent in the program's required practical skills and achieve proficiency in the knowledge, psychomotor, and attitude learning domains. Each trainee must maintain a logbook documenting procedures observed, performed under supervision, and performed independently. It would be prudent to determine the minimum number of procedures to be performed before training completion and the minimum number needed to maintain competency after certification.

C) Morning report:

The morning Report is a case-based teaching session. Many residency programs with varying purposes and focuses are expected. The morning reports aim to teach efficient handover strategies and case presentation skills, allow discussions on the management of interesting cases, and enhance problem-solving and multidisciplinary team skills.

1.1 Universal Topics

Universal topics are educational activities developed by the SCFHS and intended for all specialties. Priority will be given to topics that:

- Are high value
- Are interdisciplinary and integrated
- Require expertise that might be beyond the availability of the local clinical training sites

The SCFHS has developed universal e-learning topics, accessible to each trainee through personalized accounts. Each topic concludes with a self-assessment module. As outlined in the "Executive Policies of Formative Assessment and Annual Promotion," these universal topics are a mandatory component for trainees to be promoted from their current to the subsequent level of training, particularly at the residency level. The universal topics will be distributed throughout the training period.

See Appendix C for Universal Topics

Universal Topics distributed over training years

Training Year	Modules		Topics name	
	Number	Name	Number	Name
R1	Module-1	Introduction	Topic-1 Tpoic-2 Tpoic-3 Tpoic-4 Topic-5	Safe drug prescribing Hospital-acquired infections Sepsis; SIRS; DIVC Antibiotic stewardship Blood transfusion
R2	Module-5	Acute Care	Topic-21 Topic-22 Topic-23 Topic-24 Topic-25 Topic-26	Preoperative assessment Postoperative care Acute pain management Chronic pain management Management of fluid in hospitalized patients Management of electrolyte imbalances
R3	MODULE 4	Medical and Surgical Emergencies	Topic-15 Topic-16 Topic-17 Topic-18	Management of acute chest pain Management of acute breathlessness Management of altered sensorium

Training Year	*Modules*		Topics name	
	Number	Name	Number	Name
				Management of acute hypotension and hypertension
R4	Module-3	Diabetes and Metabolic Disorders	Topic-11 Topic-12 Topic-13 Topic-14	Recognition and management of diabetic emergencies Management of diabetic complications Comorbidities of obesity ECG Abnormalities
R5	Module-2	Cancer	Topic-6 Tpoic-7 Tpoic-9 Tpoic-10	Principles of cancer management Side effects of chemotherapy and radiation therapy Oncologic emergencies Cancer prevention Surveillance follow-up of cancer patients
	Module-6	Frailty and Care of Older Adults	Topic-27 Tpoic-28 Tpoic-29 Tpoic-30	Assessment of frailty in older adults Mini-Mental State Examination Prescribing drugs to older adults Care of older adults
R6	Module-7	Ethics and Healthcare	Topic-31 Topic-32 Topic-33 Topic-34 Topic-35 Topic-36	Occupational hazards of HCW 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

General Learning Opportunities:

Formal training time should be supplemented by other practice-based learning (PBL) such as:

- Journal Clubs**
- Grand rounds**
- Involvement in quality improvement committees and meetings
- Continuous professional development (CPD) activities relevant to the specialty (conferences and workshops)
- Morbidity and Mortality (M&M)** meetings

Simulation:

The SCFHS, as the national supervising body, initiated a move toward integrating simulation into residency training programs.

Medical simulation involves creating an artificial clinical scenario from which trainees can learn. This process offers several educational advantages, such as learning to deal with rare and high-risk clinical scenarios and procedures. It allows practice in a controlled, standardized environment with immediate, effective feedback that significantly impacts knowledge, skills, and attitude. (1,2,3,4)

Simulation scenarios need to be as close to real clinical situations as possible, including team members, equipment, and environment, followed by timely and effective feedback. According to McGaghie *et al.,* effective feedback has three critical components: planning, pre-briefing, and providing feedback. (5)

Simulation in postgraduate training programs is currently a necessity, especially with the use of competency-based curricula. Current programs aim to graduate skilled, competent, and independent physicians while maintaining a focus on quality and patient safety. Practically speaking, there can be a high level of variability in using simulation to implement competency-based

curricula, and the nature of the specialty is likely to be another factor increasing this variability. Establishing standardized needs assessment methods for simulation may pose a challenge to any national organizational body dealing with variable ongoing postgraduate training programs.

Simulations are increasingly used in plastic surgery training programs to help surgeons refine their skills and gain experience before operating on actual patients. The simulation program curriculum can include various exercises and scenarios designed to mimic accurate surgical procedures and challenges.

One common use of simulation in plastic surgery training is to practice surgical techniques and procedures, such as suture reconstruction options, flaps, hand anatomy and surgical treatment, microsurgery, and aesthetic and cosmetic procedures. Surgeons can use simulators and models to practice their skills in a controlled environment, allowing them to make mistakes and learn from them without harming a patient.

Simulation can also be used for team training and communication exercises. In these exercises, surgeons, nurses, anesthesiologists, and other surgical team members collaborate to practice effective communication, coordination, and decision-making in a simulated surgical environment.

Virtual reality simulations are another valuable tool in plastic surgery training programs, allowing surgeons to practice complex procedures in a realistic and immersive virtual environment. These simulations can help surgeons gain confidence and proficiency in performing challenging procedures before attempting them on patients.

Overall, integrating simulation into plastic surgery training programs can enhance surgeons' learning experience, imp rove patient safety, and ultimately lead to better outcomes for plastic surgery patients (See Appendix G).

X. ASSESSMENT AND EVALUATION

1. Purpose of Assessment

Assessments play a vital role in the success of postgraduate training. It guides trainees and trainers in achieving defined standards, learning outcomes, and competencies. Conversely, assessment provides feedback to learners and faculty regarding curriculum development and implementation, teaching methods, and the quality of the learning environment. Reliable and valid assessments are essential for evaluating curriculum alignment in terms of objectives, learning methods, and assessment tools. Finally, the assessment assures patients and the public that health professionals are safe and competent.

Assessment can serve the following purposes:

a. **Assessment for learning**: Trainers use information from trainees' performances to inform their learning for improvement. This enables educators to use information about trainees' knowledge, understanding, and skills to provide feedback about learning and ways to improve.

b. **Assessment as learning** involves trainees in the learning process while enabling them to monitor their progress. Trainees use self-assessment and educator feedback to reflect on their progress. It develops and supports the trainees' metacognitive skills. Learning assessment is crucial for helping residents/fellows become lifelong learners.

c. **Learning assessment** is used to demonstrate the trainees' learning achievement. This graded assessment usually counts towards the trainee's degree at the end of training.

d. **Feedback and evaluation,** as assessment outcomes, represent quality metrics that can improve the learning experience.

Miller's Pyramid of Assessment provides a framework for assessing trainees' clinical competencies. It guides the selection of assessment methods to target different clinical competencies, including "knows," "knows how," "shows how," and "does." To understand the process of formative assessment, a list of guidelines is readily available to assist with the proper execution of the necessary steps. Please refer to the electronic version posted online for the most up-to-date edition at www.scfhs.org.sa.

For the sake of the organization, assessments will be further classified into two main categories: Formative and Summative.

2. Formative Assessment

2.1 General Principles

Purpose of formative assessment:

- Enhance learning by providing formative assessments, enabling residents to receive immediate feedback, measure their performance, and identify areas for development and improvement.
- Drive learning and enhance the training process by clarifying what is required of residents and motivating them to ensure they receive suitable training and experience.
- Provide robust, summative evidence that residents are meeting the curriculum standards during the training program.
- Ensure that residents acquire competencies within the domain of good medical practice.
- Ensure that residents possess the essential underlying knowledge, skills, and attitude required for their specialty.

Trainees, as adult learners, should strive to seek and develop their performance based on feedback throughout their journey of competency from "novice" to "mastery" levels. Formative assessment (also referred to as continuous assessment) is the component of assessment that is distributed throughout the academic year, aiming primarily to provide trainees with effective feedback.

Every two weeks, at least one hour should be assigned for trainees to meet with their program director or review performance reports (e.g., ITER, logbook, and workplace-based assessment tools). Input from the overall formative assessment tools is utilized at the end of the year to determine whether individual trainees will be promoted from the current to the subsequent training level. Formative assessment tools are defined based on scientific (committee) recommendations, which are usually updated and announced for each individual program at the start of the academic year.

According to the executive policy on formative assessment (available online at www.scfhs.org), formative assessment has the following features that will be used based on targeted competencies:

- Multisource: minimum of three tools.
- Comprehensive: covering all learning domains (knowledge, skills, and attitude).
- Relevant: focusing on workplace-based observations.

Milestone-oriented competency reflects the trainee's expected competencies that match the trainee's developmental level.

2.2 Formative Assessment Tools

Trainees should actively seek feedback during training, and trainers should provide timely and formative assessments. The SCFHS provides an e-portfolio system to enhance the communication and analysis of data from formative assessments. Trainers and trainees are expected to follow the recommendations of the Scientific Council regarding the updated forms, frequency, distribution, and deadlines related to the implementation of evaluation forms.

To attain the optimum training level outcome, the candidate must complete the compulsory requisition of all selected formative assessment tools.

2.2.1 Workplace-based assessment

Workplace-based assessment (WBA) tools: Compliance must be no less than 75% for each repetitive tool. Compliance is calculated using the following equation:

Percentage of compliance with executing a single WBA tool = number of encounters performed by the trainee/total number required for the tool

2.2.2 Educational Activity (Non-WBA assessment)

Educational Activities (EA) are part of the trainees' training program, which involves teaching and learning activities to acquire specialty competencies. Examples of contributions to educational activities can be, but are not limited to, presenting in journal clubs, lectures, morbidity and mortality rounds, grand rounds, and research and scholarly activities.

All formative assessment tools used for formative assessment purposes MUST abide by the Scoring Categories and Scaling Definitions outlined in the SCFHS policies.

Summary of the required assessment tools for all levels

Program			Plastic and Reconstructive Surgery										
Level	Rotation	Duration (weeks)	Knowledge Skills Attitude										
			Workplace-based assessment			Educational Activity (Non-WBA assessment)							
			DOPS	Mini - CEX	CbD	Academic Activities	Logbook	PT	SOE	OSCE	EYPT	Research	ITER
R1 & R2	General Plastic Surgery	12			√	√	√				√	√	√
	Burn Surgery	12			√	√	√				√	√	√
	Vascular Surgery	12			√	√	√				√	√	√
	General Surgery	8			√	√	√				√	√	√
	Intensive Care Unit (ICU)	6			√	√	√				√	√	√
	Emergency Medicine (ER)	6			√	√	√				√	√	√

Program			Plastic and Reconstructive Surgery										
Level	Rotation	Duration (weeks)	Knowledge Skills Attitude										
			Workplace-based assessment			Educational Activity (Non-WBA assessment)							
			DOPS	Mini - CEX	CbD	Academic Activities	Logbook	PT	SOE	OSCE	EYPT	Research	ITER
	Orthopedic Surgery	8			√	√	√				√	√	√
	Otorhinolaryngology (ENT)	4			√	√	√				√	√	√
	Radiology	4			√	√	√				√	√	√
	Dermatology	4			√	√	√				√	√	√
	Oral and Maxillofacial Surgery (OMFS)	4			√	√	√				√	√	√
	Electives	16			√	√	√				√	√	√

Program			Plastic and Reconstructive Surgery										
Level	Rotation	Duration (weeks)	Knowledge Skills Attitude										
			Workplace-based assessment			Educational Activity (Non-WBA assessment)							
			DOPS	Mini - CEX	CbD	Academic Activities	Logbook	PT	SOE	OSCE	EYPT	Research	ITER
	Research *					√					√	√	√
R3 & R4	General Plastic Surgery	12			√	√	√				√	√	√
	Burn Surgery	12			√	√	√				√	√	√
	Hand and Peripheral Nerves	24			√	√	√				√	√	√
	Reconstructive Surgery	24			√	√	√				√	√	√
	Trauma	24			√	√	√				√	√	√

Program			Plastic and Reconstructive Surgery										
Level	Rotation	Duration (weeks)	Knowledge Skills Attitude										
			Workplace-based assessment			Educational Activity (Non-WBA assessment)							
			DOPS	Mini - CEX	CbD	Academic Activities	Logbook	PT	SOE	OSCE	EYPT	Research	ITER
R5	Reconstructive Surgery	24	√			√	√				√	√	√
	Aesthetic/Cosmetic Surgery	20	√			√	√				√	√	√
	Cosmetic Medicine	4	√			√	√				√	√	√
R6	Craniofacial Surgery / Pediatric Surgery	24	√			√	√					√	√
	Microsurgery	24	√			√	√					√	√

DOPS: Direct observation of procedural skills **Mini-CEX:** Mini-Clinical Evaluation Exercise **CbD:** Case-Based Discussion **MCQs:** Multiple-Choice Question Exams **EYPT-Local:** End-of-Year Promotion Exam **SOE**: Structured Oral Exam **OSCE:**

Objective Structured Clinical Examination **ITER:** In-Training Evaluation Report **PT**: Progress Test

Elective rotations are four blocks, every four weeks in duration. These rotations can be chosen from the following: Oral and Maxillofacial Surgery (OMFS), Pediatric Surgery, Dermatology, Otolaryngology (ENT), Neurosurgery, and Research.

For the research rotation, a project must be reviewed and approved by a mentor and the program director before the rotation begins. By the end of the research block, the project must be presented to the program director for assessment. Successful completion of the project will determine a passing grade for the block.

**PGY6 residents are exempt from this requirement.

Description of Formative Assessment Tools

Learning Domain	Assessment Tool	Requirements
Knowledge	Academic Activities	All residents (R1–R6) must attend a minimum of 40 academic half-day sessions per academic year. Unexcused absences are not permitted. Any absence requires prior approval from the Program Director based on a valid excuse.
	CBD	Mandatory for all residents in R1 through R4.
	EYPT- Local	Residents at R1 to R5 level should sit a written exam at the end of each year. Passing this exam is mandatory for promotion to the next year.
Skills	Research	All residents (R1–R6) must demonstrate active and progressive scholarly activity. Involvement should evolve from participation in R1–R2 to leading a project with the aim of presentation or publication by R5–R6.
	Logbook	Each resident's mentor or program director should review the logbook annually to ensure the adequacy of training and discuss deficiencies.
	DOPS	Mandatory for senior residents (R5–R6). Must complete a minimum of 6 DOPS assessments per year.
Attitude	ITER	ITERS are completed at the end of each rotation in accordance with the relevant SCFHS policy.

The evaluation of each component will be based on the following equation:

Percentage	<50%	50–59.4%	60–69.4%	>70%
Description	Clear fail	Borderline fail	Borderline pass	Clear pass

To achieve unconditioned promotion, the candidate must score a minimum of a "borderline pass" in all formative assessment tools.

- The program director can still recommend the promotion of candidates if the above is not met in some situations:
    - If the candidate scored "borderline failure" in a maximum of two components, provided these scores are not from the same area of assessment (e.g., both borderline failures should not be from skills)
    - The candidate must have passed all other components and scored a minimum of precise passes in at least two components.

3. Summative Assessment

3.1 General Principles

Summative assessment is a component that primarily aims to make informed decisions about trainees' competency. Unlike formative assessment, *summative assessment* does not seek constructive feedback. For further details, please refer to the general bylaws of training in postgraduate programs and general assessment bylaws (available online at www.scfhs.org). To be eligible to sit for the final exams, trainees will be granted "Certification of Training Completion" upon completing all training rotations.

3.2 First Part Examination (If Applicable)

This applies only to residency programs. It is a written exam that permits the trainee to be promoted from “junior” to “senior” level of training. The first part of the examination is currently shared with the Saudi Board's General Surgery Residency Program.

For further details on the first part of the examination, please refer to the general bylaws of training in postgraduate programs and general assessment bylaws (available online at www.scfhs.org).

Blueprint Outlines: The content of the following table is for demonstration only (please refer to the most recent version published on the SCFHS website).

No.	Section	Percentage
1	Surgical Anatomy	20%
2	Surgical Physiology and Pathology	8%
3	Trauma, Systemic Response to Injury, and Metabolic Support	16%
4	Shock, Fluid, and Electrolyte Management of Surgical Patient	12%
5	Hemostasis, Surgical Bleeding, and Transfusion	6%
6	Surgical Infection	7%
7	Burn and Wound Healing	5%
8	Surgical Oncology and Transplantation	5%
9	Surgical Critical Care and Bedside Surgical Procedures	7%
10	Principles of Preoperative, Operative, Anesthesia, and Pain Management	8%
11	Surgical Complications	6%
Total		100%

Note:

- The blueprint distribution of the examination may differ by up to ±5% in each category.
- The percentages and content are subject to change at any time. See the SCFHS website for the most up-to-date information.
- Research, Ethics, Professionalism, and Patient Safety are incorporated within various domains.

3.3. Final In-training Evaluation Report (FITER)

In addition to the supervising committee approving the completion of clinical requirements (residents' logbook), the program directors prepared a FITER for each resident at the end of their final year of training. This report will be the basis for obtaining a Certificate of Training Program Completion and qualifying for the final specialty examinations.

3.4. Certification of Training Completion

To be eligible to sit for final specialty examinations, each trainee must obtain a "Certification of Training Completion." Based on the General Bylaws of Training in Postgraduate Programs and executive policy (please refer to www.scfhs.org), trainees will be granted a "Certification of Training Completion" once the following criteria are fulfilled:

A. Successful completion of all training rotations.

B. Completion of training requirements (e.g., logbook, research, and others), as outlined in FITER and approved by the scientific council/committee of the specialty.

C. Clearance from the SCFHS Training Affairs that ensures compliance with tuition payments and completion of universal topics.

D. Passing the first part of the examination (whenever applicable).

The supervisory committee or its equivalent will issue and approve the "Certification of Training Completion" according to SCFHS policies.

3.5 Final Specialty Examinations

The final specialty examination is a summative assessment component that grants trainee specialty certifications. It has two elements:

a) Final written exam: To be eligible for this exam, trainees must have obtained "Certification of Training Completion."

b) Final clinical/practical exam: Trainees are required to pass the final written exam to be eligible to sit for the final clinical/practical exam.

Written Exam Blueprint

No.	Section	Percentage
1	Core of Knowledge/General Plastic Surgical Principles and Techniques: Wound repair principles and applications, Flaps and Grafts, Microsurgery, implants, and Biomaterials.	10%
2	Plastic Surgical Aspects of Specific Related Disciplines: Psychiatric Aspects of Plastic Surgery, Anesthesia and Critical Care, Transplantation and Immunology, Pharmacology, and Therapeutics.	7%
3	Plastic Surgery of the Integument: Anatomy, Physiology, Embryology, Benign and Malignant Skin Lesions, Burns and Trauma, Congenital and Functional Problems.	8%
4	Plastic Surgery of the Head and Neck: Anatomy, Physiology, Embryology, Congenital Disorders, Benign and Malignant Tumors, Aesthetic and Functional Problems, and Reconstruction.	22%
5	Plastic Surgery of the Upper Extremity: Anatomy, Physiology, Embryology, Congenital Disorders, Benign and Malignant Tumors, Trauma, Reconstruction and Functional Problems, and Upper Extremity Aesthetic Surgery.	20%
6	Plastic Surgery of the Trunk: Anatomy, Physiology, Embryology, Congenital Disorders, Benign and Malignant Trunk Tumors, Trauma and Reconstruction of the Trunk, and Aesthetic and Functional Trunk Problems.	10%
7	Plastic Surgery of the Lower Extremity: Anatomy, Physiology, Embryology, Trauma, and Reconstruction of the Lower Extremities in Post-Bariatric Patients.	10%
8	Plastic Surgery of the Genitourinary System: Anatomy, Embryology, Trauma, Reconstruction, and Functional Disorders.	5%

No.	Section	Percentage
9	Plastic Surgery of the Breast: Breast Anatomy, Congenital Disorders, Benign and Malignant Tumors, Breast Reconstruction, and Aesthetic Problems of the Breast.	8%
Total		**100%**

Note:

- The blueprint distribution of the examination may differ by up to ±5% in each category.
- The percentages and content are subject to change at any time. See the SCFHS website for the most up-to-date information.
    - Research, Ethics, Professionalism, and Patient Safety are incorporated within various domains.
    - For further details on final exams, please refer to the General Bylaws of Training in Postgraduate Programs and General Assessment Bylaws (available online: www.scfhs.org).

Learning Domain	Summative Assessment Tools	Passing Score
Knowledge	- Final Written Examination	At least a borderline pass in each tool by the standard-setting method used by the executive administration of assessment
Skills	- Objective Structured Clinical Examinations (OSCE)	At least a borderline pass in each tool by the standard-setting method used by the executive administration of assessment
Attitude	- FITER: In-Training Evaluation Report	Successfully pass FITER

XI. PROGRAM AND COURSE EVALUATION

The SCFHS will apply variable measures to evaluate the implementation of this curriculum. Training outcomes of this program will undergo the quality assurance framework endorsed by the Central Training Committee at the SCFHS. Resident assessment (both formative and summative) results will be analyzed and mapped to curriculum content. Other indicators that will be incorporated are as follows:

- Reports of the annual residents' satisfaction survey.
- Reports from residents' evaluation of faculty members.
- Reports from residents' evaluation of rotations.
- Reports from the annual survey of program directors.
- Data available from program accreditations.
- Reports from direct field communications with residents and trainers.

Goal-Based Evaluation: The achievement of intended milestones will be evaluated at the end of each stage to assess the progress of curriculum delivery, and any deficiencies will be addressed in the following stage, utilizing the time devoted to resident-selected topics and professional sessions.

In addition to subject-matter opinions and best practices from benchmarked international programs, the SCFHS will apply a robust method to ensure that this curriculum will utilize all data available during its revision in the future.

XII. POLICIES AND PROCEDURES

This curriculum represents the means and materials, and outlines the learning objectives, with which trainees and trainers interact to achieve the identified educational outcomes. The SCFHS has a complete set of "General Bylaws of Training in Postgraduate Programs" and "Executive Policies" (published on the official SCFHS website) that regulate all training-related processes. General bylaws of training, assessment, accreditation, executive policies on admission, registration, formative evaluation and promotion, examination, trainees' representation and support, duty hours, and leave are examples of regulations that must be implemented. Under this curriculum, trainees, trainers, and supervisors must comply with the most updated bylaws and policies, which can be accessed online (via the official SCFHS website).

XIII. APPENDICES

A) Junior-Level Competency-Matrix

B) Senior-Level Competency-Matrix

C) Universal Topics Modules

D) Top Conditions and Procedures in the Specialty

E) Examples of an Academic Half-Day Table

F) Example of a Research Rotation Objective

G) References

Appendix-C

Universal Topics

Intent:

These are high-value interdisciplinary topics of the utmost importance to trainees. Delivering topics centrally ensures that every trainee receives high-quality teaching and develops essential core knowledge. These topics are common across all specialties.

Topics included here meet one or more of the following criteria:

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

Development and Delivery:

The Commission will centrally develop and deliver core topics for the PG curriculum through an e-learning platform. A set of preliminary learning outcomes for each topic will be created. Content experts may modify the learning outcomes in collaboration with the central team.

These topics will be didactic, focusing on the practical aspects of care. They will be more content-intensive than workshops, and other face-to-face interactive sessions will be planned.

The suggested duration of each topic is 1.30 hours.

Assessment:

The topics will be delivered in a modular fashion. At the end of each Learning Unit, there will be an online formative assessment. After completing all issues, a combined summative assessment will be conducted as a context-rich multiple-choice question exam. All trainees must attain minimum competency in the summative assessment. Alternatively, these topics can be assessed in a summative manner, along with a specialty examination.

Some ideas may include case studies, high-quality images, worked examples of prescribing drugs in disease states, and Internet resources.

Module 1: Introduction

1. Safe drug prescribing
2. Hospital-acquired infections
3. Sepsis; SIRS; DIVC
4. Antibiotic stewardship
5. Blood transfusion

Safe drug prescribing:

At the end of the Learning Unit, you should be able to:

a) Recognize the importance of safe drug prescribing in healthcare

b) Describe the various adverse drug reactions with examples of commonly prescribed drugs that can cause such reactions

c) Apply principles of drug-drug interactions, drug-disease interactions, and drug-food interactions into everyday situations

d) Apply principles of prescribing drugs in special situations, such as renal failure or liver failure

e) Apply principles of prescribing drugs in older and pediatric patients and in pregnant and lactating women

f) Promote evidence-based, cost-effective prescribing

g) Discuss ethical and legal framework governing safe drug prescribing in Saudi Arabia

Hospital Acquired Infections (HAI):

At the end of the Learning Unit, you should be able to:

a) Discuss the epidemiology of HAIs, with particular reference to HAIs in Saudi Arabia

b) Recognize HAI as one of the major emerging threats in healthcare

c) Identify the familiar sources and settings associated with HAIs

d) Describe the risk factors for common HAIs, such as ventilator-associated pneumonia, MRSA, CLABSI, and vancomycin-resistant Enterococcus (VRE)

e) Identify the role of healthcare workers in the prevention of HAIs

f) Determine appropriate pharmacological (e.g., selected antibiotic) and non-pharmacological (e.g., removal of an indwelling catheter) measures for the treatment of HAIs

g) Propose a plan to prevent HAIs in the workplace

Sepsis, SIRS, and DIVC:

At the end of the Learning Unit, you should be able to

a) Explain the pathogenesis of sepsis, SIRS, and DIVC

b) Identify patient- and nonpatient-related predisposing factors for sepsis, SIRS, and DIVC

c) Recognize a patient at risk of developing sepsis, SIRS, and DIVC

d) Describe the complications of sepsis, SIRS, and DIVC

e) Apply the principles of management of patients with sepsis, SIRS, and DIVC

f) Describe the prognosis of sepsis, SIRS, and DIVC

Antibiotic Stewardship:

At the end of the Learning Unit, you should be able to:

a) Recognize antibiotic resistance as one of the most pressing public health threats globally

b) Describe the mechanism of antibiotic resistance

c) Differentiate between appropriate and inappropriate antibiotic use

d) Develop a plan for safe and proper antibiotic use, including correct indications, duration, types of antibiotics, and discontinuation

e) Appraise local guidelines for the prevention of antibiotic resistance

Blood Transfusion:

At the end of the Learning Unit, you should be able to:

a) Review the different components of blood products available for transfusion

b) Recognize the indications and contraindications of blood product transfusion

c) Discuss the benefits, risks, and alternatives to transfusion

d) Obtain informed consent for transfusion of specific blood products

e) Perform the steps necessary for safe transfusion

f) Develop an understanding of special precautions and procedures necessary during massive transfusions

g) Recognize transfusion-associated reactions and provide immediate management

Module 2: Cancer

1. Principles of cancer management
2. Side effects of chemotherapy and radiation therapy
3. Oncologic emergencies
4. Cancer prevention
5. Surveillance follow-up of cancer patients

Principles of cancer management:

At the end of the Learning Unit, you should be able to:

a) Discuss the basic principles of staging and grading of cancers

b) Enumerate the basic principles (e.g., indications, mechanism, types) of

   a. Cancer surgery

   b. Chemotherapy

   c. Radiotherapy

   d. Immunotherapy

   e. Hormone therapy

Side Effects of Chemotherapy and Radiation

Therapy: At the end of the Learning Unit, you should be able to:

a) Describe the essential side effects (e.g., frequent or life-threatening) of standard chemotherapy drugs

b) Explain the principles of monitoring side effects in a patient undergoing chemotherapy

c) Describe measures (pharmacological and non-pharmacological) available to ameliorate the side effects of commonly prescribed chemotherapy drugs

d) Describe important (e.g., joint and life-threatening) side effects of radiation therapy

e) Describe measures (pharmacological and non-pharmacological) available to ameliorate the side effects of radiotherapy

Oncologic Emergencies:

At the end of the Learning Unit, you should be able to:

a) Enumerate critical oncologic emergencies encountered both in hospital and ambulatory settings

b) Discuss the pathogenesis of critical oncologic emergencies

c) Recognize oncologic emergencies

d) Institute immediate measures when treating a patient with oncologic emergencies

e) Counsel the patients in an anticipatory manner to recognize and prevent oncologic emergencies

Cancer Prevention:

At the end of the Learning Unit, you should be able to:

a) Conclude that many primary cancers are preventable

b) Identify smoking prevention and lifestyle modifications as primary preventable measures

c) Recognize preventable cancers

d) Discuss the significant cancer prevention strategies at the individual as well as national level

e) Counsel patients and families in a proactive manner regarding cancer prevention, including screening

Surveillance Follow-Up of Cancer Patients:

At the end of the Learning Unit, you should be able to:

a) Describe the principles of surveillance follow-up in patients with cancer

b) Enumerate the surveillance follow-up plan for common forms of cancer

c) Describe the role of primary care physicians, family physicians, and others in the surveillance follow-up of patients with cancer

d) Liaise with oncologists to provide surveillance follow-up for patients with cancer

Module 3: Diabetes and Metabolic Disorders

1. Recognition and management of diabetic emergencies
2. Management of diabetic complications
3. Comorbidities of obesity
4. ECG Abnormalities

Recognition and Management of Diabetic Emergencies:

At the end of the Learning Unit, you should be able to:

a) Describe the pathogenesis of common diabetic emergencies, including their complications

b) Identify risk factors and groups of patients vulnerable to such emergencies

c) Recognize a patient presenting with diabetic emergencies

d) Institute immediate management

e) Refer the patient to the appropriate next level of care

f) Counsel patients and families to prevent such emergencies

Management of Diabetic Complications:

At the end of the Learning Unit, you should be able to:

a) Describe the pathogenesis of essential complications of Type 2 diabetes mellitus

b) Screen patients for such complications

c) Provide preventive measures for such complications

d) Treat such complications

e) Counsel patients and families, with particular emphasis on prevention

Comorbidities of Obesity:

At the end of the Learning Unit, you should be able to:

a) Screen patients for the presence of common and essential comorbidities of obesity

b) Manage obesity-related comorbidities

c) Provide dietary and lifestyle advice for the prevention and management of obesity

ECG Abnormalities:

At the end of the Learning Unit, you should be able to:

a) Recognize common and important ECG abnormalities

b) Institute immediate management, if necessary

Module 4: Medical and Surgical Emergencies

1. Management of acute chest pain
2. Management of acute breathlessness
3. Management of altered sensorium
4. Management of hypotension and hypertension
5. Management of upper GI bleeding
6. Management of lower GI bleeding

For all of the above, the following learning outcomes apply.

At the end of the Learning Unit, you should be able to:

a) Triage and categorize patients

b) Identify patients who need prompt medical and surgical attention

c) Generate preliminary diagnoses based on history and physical examination

d) Order and interpret urgent investigations

e) Provide appropriate immediate management to patients

f) Refer the patients to the next level of care if needed

Module 5: Acute Care

1. Preoperative assessment
2. Postoperative care
3. Acute pain management
4. Chronic pain management
5. Management of fluids in hospitalized patients
6. Management of electrolyte imbalances

Preoperative Assessment:

At the end of the Learning Unit, you should be able to:

a) Describe the basic principles of preoperative assessment

b) Perform preoperative assessment in uncomplicated patients, with particular emphasis on:

   i. General health assessments

   ii. Cardiorespiratory assessments

   iii. Medications and medical device assessments

   iv. Drug allergies

   v. Pain relief needs

c) Categorize patients according to their level of risk

Postoperative Care:

At the end of the Learning Unit, you should be able to:

a) Devise a postoperative care plan, including monitoring vital signs, pain management, fluid management, medications, and laboratory investigations

b) Hand over patients properly to the appropriate facilities

c) Describe the process of postoperative recovery in a patient

d) Identify common postoperative complications

e) Monitor patients for possible postoperative complications

f) Institute immediate management for postoperative complications

Acute Pain Management:

At the end of the Learning Unit, you should be able to:

a) Review the physiological basis of pain perception

b) Proactively identify patients who might be in acute pain

c) Assess a patient with acute pain

d) Apply various pharmacological and non-pharmacological modalities available for acute pain management

e) Provide adequate pain relief for uncomplicated patients with acute pain

f) Identify and refer patients with acute pain who can benefit from specialized pain services

Chronic Pain Management:

At the end of the Learning Unit, you should be able to:

a) Review the bio-psychosocial and physiological basis of chronic pain perception

b) Discuss various pharmacological and non-pharmacological options available for chronic pain management

c) Provide adequate pain relief for uncomplicated patients with chronic pain

d) Identify and refer patients with chronic pain who can benefit from specialized pain services

Management of Fluid in Hospitalized Patients:

At the end of the Learning Unit, you should be able to:

a) Review the physiological basis of water balance in the body

b) Assess a patient's hydration status

c) Recognize patients with over- and under-hydration

d) Prescribe fluid therapy (both oral and intravenous) for hospitalized patients

e) Monitor fluid status and therapeutic response through history, physical examination, and selected laboratory investigations

Management of Acid-Base Electrolyte Imbalances:

At the end of the Learning Unit, you should be able to:

a) Review the physiological basis of electrolyte and acid-base balance in the body

b) Identify diseases and conditions likely to cause or be associated with acid-base and electrolyte imbalances

c) Correct electrolyte and acid-base imbalances

d) Perform careful calculations, checks, and other safety measures when correcting acid-base and electrolyte imbalances

e) Monitor therapeutic response through history, physical examination, and selected laboratory investigations

Module 6: Frailty and Care of Older Adults

1. Assessment of frailty in older adults
2. Mini-Mental State Examination
3. Prescribing drugs in older adults
4. Care of older adults

Assessment of frailty in older adults:

At the end of the Learning Unit, you should be able to

a) Enumerate the differences and similarities between the comprehensive assessment of older adults and evaluation of other patients

b) Perform a comprehensive assessment of an older adult with frailty, in conjunction with other members of the healthcare team, with particular emphasis on social factors, functional status, quality of life, diet and nutrition, and medication history

c) Develop a problem list based on the assessment findings

Mini-Mental State Examination:

At the end of the Learning Unit, you should be able to:

a) Review the appropriate usages, advantages, and potential pitfalls of the Mini-MSE

b) Identify patients suitable for the Mini-MSE

c) Screen patients for cognitive impairment using the Mini-MSE

Prescribing Drugs in Older Adults:

At the end of the Learning Unit, you should be able to:

a) Discuss the principles of prescribing medications for older adults

b) Recognize polypharmacy, prescribing cascade, inappropriate dosages, inappropriate drugs, and deliberate drug exclusion as significant causes of morbidity in older adults

c) Describe the physiological and functional declines in older adults that contribute to increased drug-related adverse events

d) Discuss drug-drug interactions and drug-disease interactions among older adults

e) Be familiar with Beers criteria

f) Develop rational prescribing habits for older adults

g) Counsel older patients and their families on safe medication usage

Care of the Elderly:

At the end of the Learning Unit, you should be able to

a) Describe the factors that need to be considered while planning care for older adults

b) Recognize the needs and well-being of caregivers

c) Identify the local and community resources available in the care of older adults

d) Develop, with input from other healthcare professionals, an individualized care plan for older patients

Module 7: Ethics and Healthcare

1. Occupational hazards of HCW
2. Evidence-based approach to smoking cessation
3. Patient Advocacy
4. Ethical issues: transplantation/organ harvesting; withdrawal of care
5. Ethical issues: treatment refusal; patient autonomy
6. Role of doctors in death and dying

Occupational Hazards of Health Care Workers (HCW):

At the end of the Learning Unit, you should be able to:

a) Recognize familiar sources and risk factors of occupational hazards among HCW

b) Describe common occupational hazards in the workplace

c) Develop familiarity with legal and regulatory frameworks governing occupational hazards among HCW

d) Develop a proactive attitude to promote workplace safety

e) Protect yourself and colleagues against potential occupational hazards in the workplace

Evidence-Based Approach to Smoking Cessation:

At the end of the Learning Unit, you should be able to:

a) Describe the epidemiology of smoking and tobacco usage in Saudi Arabia

b) Review the effects of smoking on smokers and their family members

c) Effectively use pharmacologic and non-pharmacologic measures to treat tobacco use and dependence

d) Effectively use pharmacological and nonpharmacological measures to treat tobacco use and dependence among special population groups such as pregnant women, adolescents, and patients with psychiatric disorders

Patient Advocacy:

At the end of the Learning Unit, you should be able to:

a) Define patient advocacy

b) Recognize patient advocacy as a core value governing medical practice

c) Describe the role of patient advocates in the care of patients

d) Develop a positive attitude towards patient advocacy

e) Be a patient advocate in conflicting situations

f) Be familiar with local and national patient advocacy groups

Ethical issues: transplantation/organ harvesting; withdrawal of care:

At the end of the Learning Unit, you should be able to:

a) Apply fundamental ethical and religious principles governing organ transplantation and withdrawal of care

b) Be familiar with the legal and regulatory guidelines regarding organ transplantation and withdrawal of care

c) Counsel patients and families in the light of applicable ethical and religious principles

d) Guide patients and families to make informed decisions

Ethical issues: treatment refusal; patient autonomy:

At the end of the Learning Unit, you should be able to:

a) Predict situations where a patient or family is likely to decline prescribed treatment

b) Describe the concept of a 'rational adult' in the context of patient autonomy and treatment refusal

c) Analyze critical ethical, moral, and regulatory dilemmas in treatment refusal

d) Recognize the importance of patient autonomy in the decision-making process

e) Counsel patients and families declining medical treatment in light of the best interests of the patients

Role of Doctors in Death and Dying:

At the end of the Learning Unit, you should be able to:

a) Recognize the critical role a doctor can play during the dying process

b) Provide emotional as well as physical care to a dying patient and family

c) Provide appropriate pain management in a dying patient

d) Identify suitable patients and refer them to palliative care services

Appendix-D

Top Conditions and Procedures in the Specialty

Top Conditions and Procedures in the Specialty			
Top Ten Causes of Mortality in Saudi Arabia*			
Disease; Conditions		Relative	Cumulative
		Frequency	Frequency
1.	Burns		
2.	Vascular embolism		
3.			
*Overall mortality patterns may be relevant to some specialties, whereas disease prevalence or procedural frequency may be more appropriate for others. The values shown in this table are illustrative only.			
Top Ten Cancers			
Disease; Conditions		Relative	Cumulative
		Frequency	Frequency
1.	Lung	18%	18%
2.	Colorectal	13%	31%
3.	Prostrate	10%	41%

Top Conditions and Procedures in the Specialty			
	Top Ten Causes of Out-Patient Consultations Related to the Specialties in Saudi Arabia		
	Disease; Conditions	Relative Frequency	Cumulative Frequency
1.	Burns		
2.	Hand trauma		
3.	Breast reconstruction		
	Top Ten Causes of In-patient Admissions Related to the Specialties in Saudi Arabia		
	Disease; Conditions	Relative Frequency	Cumulative Frequency
1.	Burns		
2.	Head infection		3
3.	Reconstruction		
Top Ten Procedures/Surgeries Performed by the Specialty			
	Name of Procedures/ Surgeries	Approximate Frequency	
	Procedure A		

Top Conditions and Procedures in the Specialty	
Procedure B	
Procedure C	
Examples of Core Specialty Topics: Case Discussions, Interactive Lectures	
Topics	**Comments**
Grafts and flaps	
Hand trauma	
Examples of Core Specialty Topics: Workshops/Simulations	
Topics	**Comments**
Microvascular anastomosis	
Hand Anatomy	
Wound care	

Appendix-E

The following table illustrates example topics for half-day activities over one year (or one teaching cycle, if more than one year is needed to cover all topics).

Repeating sessions or topics each training year is discouraged. Ideally, each half-day should be dedicated to a single theme.

Academic week	*Section*	*Date*	*Time*	*Sessions*	*presenters*
1	Fundamentals in Surgery	Oct-5	13:00–14:00	Welcome to the program	Program director
			14:00–15:00	Case-based study**	A
			15:00–16:00	Topic 2	B
2		Oct-12	13:00–14:00	Topic 3	C
			14:00–15:00	Case-based study	D
			15:00–16:00	Topic 5	E
3		Oct- 19	13:00–14:00	Topic 6	F
			14:00–15:00	Case-based study	B
			15:00–16:00	Topic 8	C
4		Oct- 26	13:00–14:00	Journal club*	K
			14:00–15:00	Case-based study	B
			15:00–16:00	Topic 10	A

* Journal club sessions may be held in the evening or during the academic half-day.

** A case-based study may be held in the evening or during the academic half-day.

Appendix F

2.2.6 RESEARCH ROTATION

Number of rotation months	First-year	Second year	Total
	0	1	1

MEDICAL EXPERT

Goals:

- Demonstrate an understanding of the basic principles of research design, methodology, data analysis, and clinical epidemiology, as well as their advantages and disadvantages from a radiology perspective.
- Familiarize themselves with the ethical requirements of research and demonstrate an understanding of the responsible use of informed consent.
- Practice appropriate methods for writing research proposals, manuscripts, data collection, and result analysis and discussion.
- Demonstrate awareness of current research topics in radiology using available medical informatics systems.
- Skillfully present scientific presentations and participate in public discussions.

Training Methods

- Specify the appropriate period dedicated to research *or* a full-time rotation in research.
- The program may require attendance at dedicated courses or workshops that enhance research skills.
- The project is expected to last more than a month; therefore, the work should be completed in parallel with subsequent rotations.
- The trainee must choose a supervisor to help access essential resources, enabling appropriate utilization of research skills and periodic discussion of progress.
- The trainee must finish the research proposal by the end of the first six months, and it should be accepted by the institutional review board.
- An oral abstract of the study results should be presented at a specified time (e.g., at the end of the final year before entering the final exam) on the Specialty Research Day.
- The research paper should be submitted at least two weeks before the specialty's Research Day.
- It is highly desirable for trainees to present research results at national and international meetings and aim to publish their work in indexed journals.

Evaluation

- Attendance at designated courses, lectures, and workshops will be monitored and incorporated into the annual evaluation score.
- Panel scoring of the research abstract presentation will be conducted at the end of the pre-specified year, on the specialty's Research Day. This will count as the rotation score for that month.

COMMUNICATOR

- Demonstrate skills in conveying and discussing scientific research with scientific communities through posters, abstracts, teaching slides, manuscripts, or other scientific communication modalities.
- Communicate and collaborate effectively with the research supervisor to conduct the research.

COLLABORATOR

- Identify, consult, and collaborate with appropriate experts, research institutions, and organizations to facilitate research.

LEADER

- Identify an area of research interest and a research supervisor to engage in scientific inquiry and dissemination of scholarship.
- Utilize available resources and regularly meet with an identified research mentor.
- Set realistic priorities and use time effectively to optimize professional performance.
- Utilize healthcare resources cost-effectively.

HEALTH ADVOCATE

- Recognize the contributions of scientific research in improving the health of patients and communities.

SCHOLAR

- Pose appropriate research questions, recognize and identify gaps in knowledge and expertise around these questions, and formulate an appropriate study design to answer them.
- Conduct research as outlined in the proposal.
- Collect and analyze data utilizing appropriate methods.
- Prepare abstracts and manuscripts for publication in peer-reviewed journals and international scientific meetings.
- Identify research limitations and areas for further research.

PROFESSIONAL

- Uphold ethical and professional research expectations consistent with institutional review board guidelines, including maintaining meticulous data and conducting ethical research.
- Demonstrate personal responsibility for setting research goals and working with the supervisor to set and achieve research timeline objectives.
- Appropriately attribute authorship and contributions when publishing research
- Disclose potential financial conflicts of interest (including speaker fees, consultative relationships, etc.) as appropriate when engaging in and disseminating research results.

Appendix-G

1. Example simulation table adapted from the EM roadmap:

(All sessions listed below are 4 hours in length and have an instructor-to-learner ratio of 1:5.)

Theme	Learners	Objectives	Simulation Modality / Challenges
Nerve Blocks Peripheral nerve reconstruction	Junior	• Recognize anatomical landmarks for and perform the following nerve blocks: median, radial, ulnar, posterior tibial, and sural. • Utilize ultrasound guidance to direct nerve blocks when applicable. • Study peripheral nerve anatomy, including the brachial plexus, nerve transfer, and reconstructive techniques for facial and other body applications.	Task Trainers (commercial or locally made) 1 2 3 4 5
Craniofacial	Junior/senior	• Dissect all applied facial anatomy. • Perform reconstruction of facial and neck deformities. • Repair and reconstruct facial nerve injuries. • Perform reconstructions related to facial aesthetic anatomy. • Perform aesthetic and reconstructive surgery for nasal deformities.	Animals, Home-Made Task Trainers 1 2
Hand surgery	Senior	• Dissect all applied anatomy. • Perform closed reduction of the following joint dislocations: dorsal MCP, dorsal PIP	No available commercial / locally made trainers for

Theme	Learners	Objectives	Simulation Modality / Challenges
		(hand), dorsal DIP (hand), posterior, dorsal PIP, and dorsal DIP. • Perform ultrasound-guided intra-articular blocks. • Measure compartment pressure. • Perform nerve microvascular repair. • Perform nerve transfer and reconstruction. • Perform tendon reconstruction and transfer. • Perform extensor tendon repair in the forearm and hand. • Perform primary repair of partial fingertip amputations. • Perform skin flapping, bone rounding, and skin closure for complete fingertip amputations not candidates for reimplantation. • Perform repair of nail bed lacerations. • Perform diagnostic and therapeutic wrist arthroscopy.	most of these procedures
Microvascular/reconstruction	Junior/Senior	• Describe flap anatomy and reconstructive options for the breast, upper limb, lower limb, and trunk. • Perform peripheral microvascular dissection. • Perform nerve and vascular grafting and microvascular anastomosis. • Perform a range of flap procedures.	Task Trainers (commercial and locally made)

Theme	Learners	Objectives	Simulation Modality / Challenges
Surgical Skills	Senior	• Demonstrate fundamental surgical skills. • Apply appropriate suturing techniques. • Perform a range of graft and flap procedures. • Perform escharotomy of the upper limbs, lower limbs, torso, and neck.	Animal labs, Task Trainers (commercial and locally made)

Appendix-H

References:

In APA

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5- So, H. Y., Chen, P. P., Wong, G. K. C., & Chan, T. T. N. (2019). Simulation in medical education. *Journal of the Royal College of Physicians of Edinburgh,* 49(1), 52-57.

6- The SCFHS booklet of the plastic surgery training program

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