

GHANA COLLEGE OF PHYSICIANS AND SURGEONS

MEMBERSHIP AND FELLOWSHIP IN SURGERY

GENERAL INFORMATION

1.1 Preamble

The number of qualified consultant/specialist surgeons for the Ghana population is inadequate. There is therefore the need to develop a well structured programme for the training of surgeons for the country. These locally trained surgeons will fill the vacancies in district, regional and tertiary institutions as appropriate.

1.2 The Philosophy

The aim of the College of Surgeons therefore is to train high caliber surgeons to provide accessible high quality surgical service throughout the country.

1.3 Objectives

The Trainee by the end of the programme will

- 1.3.1 be able to, independently, manage surgical problems to the highest level of competence.
- 1.3.2 be able to set up, organize and manage surgical services in the district/regional/tertiary hospitals.
- 1.3.3 provide consultancy services where ever is needed, and therefore will increase access to quality surgical care
- 1.3.4 teach residents, medical officers, medical students and other health care providers in surgery
- 1.3.5 engage in research activities

1.4 Entry requirements

- 1.4.1 The candidate must possess MB ChB certificate or its equivalent from a recognized university.
- 1.4.2 The candidate must be fully registered with the Ghana Medical and Dental Council
- 1.4.3 The candidate must have done four post qualification rotations in the four major disciplines: namely Medicine, Surgery, Obstetrics and Gynaecology and Paediatrics.
- 1.4.4 The candidate must possess the Membership Part I of the Ghana College of Physicians and Surgeons or its equivalent from a College with which Ghana College of Physicians and Surgeons has reciprocity.
- 1.4.5 The candidate must pass an entrance interview
- 1.4.6 The candidate must provide 2 Referees, one of whom must be his or her immediate supervisor

The trainee on starting the programme will be designated as a Junior Resident. The Trainee will be assigned a supervisor.

1.5 Course Duration/Requirement for Certification

Council may exempt a candidate from part of the training programme and examination following an application and approval, on the recommendation of the Credentials Committee through the Faculty Board.

The examination towards the Fellowship is in 3 parts:

1.5.1 Part I Membership examination in the Basic Sciences

This examination can be taken only after completion of pre-registration internship and full registration by the Medical and Dental Council

1.5.2 Part II Membership examination

This examination is on principles of surgery, surgical pathology and operative surgery-in-general. This examination can only be taken after all the following conditions are met by a candidate:

- Success at or exemption from the Part I examination in the Basic Sciences.
- Successful completion of a 36 month period of rotation in the various specialties of surgery as described in the curriculum, in accredited institution(s).
- Present a logbook of procedures participated in during the 36-month period as prescribed in the Faculty logbook for Membership.

On successful completion of the Part II Membership examination, the candidate shall be awarded a certificate of Membership of the Ghana College of Physicians and Surgeons (MGCS).

1.5.3 Fellowship Examination

The candidate will train in the Sub-Specialty of his/her choice. This course will be of varying duration depending on the Specialty:

- General Surgery 2 years
- Orthopaedics/Trauma 2 years
- Urology 2 years
- Cardiothoracic Surgery 3 years
- Paediatric Surgery 3 years
- Plastic Surgery 3 years
- Neurosurgery 3 years

On successful completion of the fellowship examination the trainee shall be awarded a certificate of Fellowship of Ghana College of Physicians and Surgeons (FGCS).

1.6 Log Book

The log book shall be kept by the Trainee and inspected by the Head of Department/the Postgraduate Coordinator every 3 months.

1.7 Examinations

1.7.1 The Part I Membership examination shall consist of the following:

- A 2-hour Multiple Choice Questions paper of the **One correct answer in 5** type, each in:
 - ANATOMY
 - PATHOLOGY
 - PHYSIOLOGY

There will be **no** Oral examinations.

1.7.2 **The Part II Membership and Fellowship examinations will consist of:**

- Multiple Choice Questions: **One correct answer in 5** type.
 - Paper I Principles of Surgery – 2 hours
 - Paper II Operative Surgery and Surgical Pathology – 2 hours
- Essay Papers:
 - Paper I Principles of Surgery – 1 hour
 - Paper II Operative Surgery and Surgical Pathology – 1 hour
- Clinical examinations:
 - Long Case
 - Short Cases

- Oral Examinations:
 - Oral I Principles of Surgery
 - Oral II Operative Surgery and Surgical Pathology

The Examinations will be moderated by an External Examiner/Internal Assessor.

1.8 Rotations for Part II Membership Programme

The Trainee shall rotate through the following Specialties:

1.8.1	General Surgery	12 months
1.8.2	Orthopaedics/Trauma including Accident & Emergency	6 months
1.8.3	Urology	3 months
1.8.4	Anaesthesia and Intensive Care	3 months
1.8.5	Cardiothoracic Surgery	3 months
1.8.6	Paediatric Surgery	3 months
1.8.7	Neurosurgery	3 months
1.8.8	Plastic & Reconstructive Surgery	3 months

1.9 Routine for Residents

- Daily morning and evening ward rounds by the Trainee
- Once a week teaching ward rounds with the Consultant
- At least once a week outpatient clinic with the Consultant available for advice and discussion
- Weekly tutorials with the Consultant
- At least twice a week operation sessions
- Monthly clinic-mortality and clinical audit meetings with the Consultant
- Monthly journal club meeting with the Consultant
- Monthly radiological meeting with Consultants and Residents from the radiology Department
- Monthly seminars in specific topics with Consultants
- Trainees will conduct clinical research and publish a paper with the Consultant
- The College will organize regular skills workshop for Trainees

2 CURRICULUM FOR THE PART I EXAMINATION FOR THE MEMBERSHIP IN SURGERY

2.1 Anatomy

2.1.1 Head and Neck

The scalp

Topography of the anterior and lateral regions of the neck

The root of the neck

Pharynx, Larynx

The face and its vascularisation

The infratemporal and pterygopalatine fossae

The temporo-mandibular joint

The orbit

The buccal cavity, tongue , palate and major salivary glands

Development and morphology of the thyroid, thymus, parathyroid glands and tonsils

Osteology of the skull and the cervical vertebrae

2.1.2 Neuro-Anatomy

The brain major divisions surface anatomy

The cranial nerves

The meninges, venous sinuses, cerebral vessels

Spinal cord and its centres

Anatomy of the circulation of cerebrospinal fluid

Essentials of development of the brain and spinal cord

2.1.3 Thorax and Diaphragm

Anatomy of the thoracic wall with particular consideration of mammary gland

The thoracic cavity and its contents

Osteology of the thoracic cage

The strength of the spinal column

Development of the diaphragm

2.1.4 Abdomen

Anatomy of the abdominal wall, particularly the postero-lateral, inguinal and umbilical regions

Development, gross anatomy and microscopic structure of the abdominal viscera

2.1.5 Pelvis and Perineum

The development, gross anatomy and microscopic structure of pelvic viscera and the perineum

Development of the urogenital system

2.1.6 The Limbs

Osteology of the limb bones

The pelvic and shoulder girdles

Gross anatomy and cutaneous innervations of the upper and lower extremities with emphasis on segmental innervations

Classification and description of joints of the body

2.2 Histology and Intracellular Anatomy

Microscopic structure of normal tissues

Intracellular anatomy

Correlative normal and pathological anatomy

Basic principles of histochemistry

Brief introduction of electron microscopy

Genetic influences in development as applied to surgery

Radiological anatomy of the body relevant to clinical surgery

2.3 APPLIED PHYSIOLOGY (INCLUDING BIOCHEMISTRY, CHEMICAL PATHOLOGY AND PHARMACOLOGY)

2.3.1 General Physiological Principles

- Structure of living matter: Biological integration
 - The living cell, functions and changes in its mechanisms
 - Function of nucleoproteins in the integration of the cell as a unit of living matter

2.3.2 Energy Changes in the Living System

- Thermodynamics of the living organism and its potential energy status
- Oxygen utilization of the living cell
- Heat production and heat loss (basal metabolism, specific dynamic action, regulation of body temperature)
- Homeostasis

2.3.3 General considerations in Water, Electrolytes and Acid-Base Balance

- Distribution of water and electrolytes in extra and intracellular spaces of the body
- Brief survey of biological transport of water and solutes
- Water and electrolyte balance
 - Causes and effects of dehydration and oedema
 - Sodium and Potassium metabolism

2.3.4 Acid-Base Balance

- pH Regulation
 - pH of the body fluids and buffer systems of the body
 - Respiratory acidosis and alkalosis as encountered in surgical practice
 - Metabolic acidosis and alkalosis as encountered in surgical practice

2.3.5 Enzymes and Co-Enzymes

- Effects of enzymes in intermediary metabolism
- General aspects of metabolism of carbohydrates, lipids, proteins and nucleoproteins

2.3.6 General principles of nutrition in surgery including parenteral nutrition

- Vitamins, Folic Acid etc.

2.3.7 Mineral Metabolism

- Iron, Calcium, Phosphate, Vitamin D and Parathyroid Hormone, Magnesium and Trace Elements e.g. Copper, Cobalt

2.3.8 Effects of Physical Agents

- Radiation
- Hypothermia
- Hyperbaric Oxygen

2.3.9 Principles of Electronics

2.4 SYSTEMIC PHYSIOLOGY

2.4.1 Cardiovascular System

- Haemodynamics
 - Flow: The basic principles of the arterial circulation. Poiseuille's Law

- Blood Pressure
 - Arterial pressure, the normal blood pressure and factors maintaining it. Changes in the normal pressure, hypertension and hypotension, shock, syncope and cardiovascular regulations
- Venous Circulation and Venous Pressure
- Haemorrhage
- The clotting mechanism
- Cardiac muscle physiology: Cardiac cycle, mechanical and electrical
- Determinants of cardiac function: Cardiac output, regional circulation
- Coronary circulation
- Cardiac failure
- Congenital and Acquired Heart Diseases
- Correlation and clinical interpretation of the pathophysiology of cardiovascular disease and symptoms

2.4.2 Respiratory System

- Ventilation and Respiration
 - Tests of pulmonary function
 - Ventilation/Perfusion relations, Control of respiration
 - Pulmonary circulation and its control
- Protective mechanisms of the lung
 - Respiratory failure

2.4.3 Renal System

- Tests of Secretary function
 - Glomerular filtration rate and renal blood flow, concentration and dilution tests
 - Re-absorption mechanism: Tm measurement
 - Urine formation
 - Renal handling of Na⁺ and K⁺
- Endocrine Function: Erythropoietic, Pressor, and Antipressor Agents
- Renal failure

2.4.4 Digestive System

- Oesophagus
 - Functional disorders
 - Deglutition
- Stomach
 - Movements and functions of the stomach
 - Regulation of gastric secretion
 - Pathogenesis, symptomatology and diagnosis of peptic ulceration
- Intestine

- Movement and secretory function
- Digestion and absorption
- Pancreas and Gall Bladder
 - Secretory function and their regulation
- Liver Physiology
 - Functions of the liver, Jaundice, Oedema, Ascites, Liver failure

2.4.5 Haemopoietic and Reticulo-Endothelial Systems

- Hypersplenism, Haemolytic disorders

2.4.6 Muscles and Joints

- Skeletal muscle and disorder of its function
- Electromyography

2.4.7 Nervous System

- Consciousness and higher integrative functions.
- Sensory system
- Motor system, Pyramidal and Extra-pyramidal systems
- Spinal reflexes, maintenance of muscle tone
- Spinal cord injuries

2.4.8 Endocrine System

- Physiology of the endocrine glands and action of hormones
- Metabolic and endocrine response to injury and surgery

2.5 PHARMACOLOGY

2.5.1 General Principles of Pharmacology

- Route of administration, absorption, distribution metabolism and excretion of drugs
- Mechanisms of drug action
- Dose effect relationship, Biological assay
- Factors modifying drug effects: age, sex, body weight, route of administration, timing, inactivation, excretion, environmental and genetic factors. Drug interaction.
- Drug toxicity
- Development, evaluation and control of drugs: clinical trials

2.5.2 Specific classes of drugs

- Anaesthetic agents, Antibiotics, Steroids/

- Drugs acting on the autonomic nervous system: Choline and anti-choline drugs
- Sympathetic and adrenergic drugs.
- Drugs acting on the cardiovascular system
- Antituberculous, antihelminthic and antiamoebic drugs
- Cancer chemotherapy

2.6 PATHOLOGY (INCLUDING MICROBIOLOGY)

This shall be largely concerned with general pathology. General principles underlying disease process: Inflammation, Trauma, Degeneration, Regeneration, Repair, Hypertrophy, Hyperplasia, Blood coagulation, Thrombosis, Embolism, Infraction, Ischemia, Neoplasia, Oedema; Principles underlying tissue replacement.

2.7 HAEMATOLOGY

Anaemias, Leukaemias, Myelo-proliferative disorders, haemorrhagic disorders and the haemoglobinopathies.

Principles underlying blood transfusion

2.8 MICROBIOLOGY

Routine diagnostic methods, identification of bacteria, viruses and other organisms of surgical importance.

2.8.1 Serological Tests:

- Principles of sterilization and disinfection.
- Principles of immunology: Toxins, antibodies, allergy, the immune diseases
- Methods of action of antibodies
- Common parasitic and fungal diseases in the tropics

3 CURRICULUM FOR THE PART II MEMBERSHIP

3.1 PRINCIPLES OF SURGERY IN GENERAL

3.1.1 Preoperative Management

- General assessment of a patient for anaesthesia and surgery
- Applied physiology, anatomy and biochemistry of Respiratory, Cardiovascular and Renal system etc.
- Principles of anaesthesia
- Principles of Fluid and Electrolyte balance
- Shock
- Laboratory investigation
 - Biochemistry
 - Haematology – Blood transfusion, normal and abnormal haemostasis
 - Microbiology
- Imaging – X-ray, Ultrasound, CT-Scan, MRI. Diagnostic and interventional radiology
- Management of co-morbid factors in surgery
 - Malaria
 - Malnutrition
 - Cardiovascular
 - Respiratory Disease
 - Endocrine disorders – Diabetes Mellitus, thyrotoxicosis

-Anaemia

-HIV/AIDS patient etc.

3.1.2 Perioperative Management

- Surgical Theatre set-up
 - Surgical instrument and equipment
 - Ventilation in the theatre-humidity, temperature
 - Theatre design and layout
 - Sutures and implants
- Infection and the Surgical patient

- Scrubbing techniques
- Skin preparation and draping
- Infection control decontamination
- Sterilisation and disinfection
- Antibiotic prophylaxis
- General principle of infection in the surgical patient
- Pathophysiology of nosocomial infection, surgically important microorganism

3.1.3 Postoperative Management

- Nutrition in Surgery
- Pain management
- Principle of wound healing and management – wound dehiscence, and Surgical Site Infection (SSI)
- Metabolic response in injury
- Postoperative complication- deep vein thrombosis, renal failure etc.
- Basic principles of immunology
- Basic principles of transplant surgery

3.2 ETHICS OF SURGICAL PRACTICE

- Medical ethics and medico-legal aspect of surgery
- Psychological effects of surgery and bereavement

3.3 COMMUNICATION SKILLS

- Patient/doctor/other health staff
- Report writing, presentation skills

3.4 HOSPITAL MANAGEMENT

- Administrative procedures
- Financial management
- Human resources management

- Logistic management

3.5 RESEARCH METHODOLOGY/COMPUTER SKILLS

- Basic principles of statistics
- Computer skills

3.6 CLINICAL AUDIT

- Decision making in surgery

3.7 TRAUMA

3.7.1 Clinical assessment

- Prehospital Care
- Triage
- Transport of the injured patient
- Primary assessment and resuscitation
 - Assessment of the injured patient
 - ABCDE of resuscitation (CPR, BTLIS, ATLS: - “hands-on”)
 - Shock: - management of haemorrhagic shock, cardiopulmonary bypass-general principles
 - Care of the multiple injured patient
 - Trauma scoring system
 - Gunshot/Blast injuries
 - Management of mass casualty
- Principles of traumatic wound management – Compound fractures

3.7.2 Head, Neck and Spinal Injury

- Applied anatomy and physiology of head, neck and the spine
- Management of the head injured patient
- Management of neck injuries
- Management of the spinal injured patient

3.7.3 Chest Injuries

- Applied anatomy and physiology of the chest
- Management of chest injuries
 - Pneumothorax, Haemothorax
 - Rib fractures, Flail chest
 - Mediastinal, parenchymal and diaphragmatic injuries

3.7.4 Abdominal Injuries

- Applied anatomy and physiology of the abdomen
- Management of blunt and penetrating injuries of the abdomen
 - Solid organ injuries (liver, spleen, pancreas etc)
 - Hollow organ injuries (blood vessels, intestines, stomach, oesophagus etc)

3.7.5 Genitourinary Injuries

- Applied anatomy and physiology of the genitourinary system
- Management of genitourinary injuries
- Kidneys, ureters, bladder, prostate, urethra, penis, testis, vagina, uterus

3.7.6 Pelvic Injuries

- Applied anatomy physiology of the pelvis
- Management of pelvic injuries

3.7.7 Limb Injuries

- Applied anatomy and physiology of the limbs
- Management of hand injuries:- nerve, tendons, vessels and bones
- Management of upper limb injuries
- Management of lower limb injuries
- Fractures
 - pathophysiology of fracture healing
 - principles of fracture management
- Non-union, delayed union and complications
- Bone grafting

- Compartment syndrome, Traumatic oedema, Fat embolism
- Brachial plexus injury

3.7.8 Management of Severely Injured Patient

- Systemic and metabolic response to trauma
- Mass casualty

3.7.9 Rehabilitation of Trauma Patient

- Physiotherapy
- Prosthesis

3.8 BURNS

- Applied anatomy and physiology of the skin
- Pathophysiology of Burns
- First Aid at site and safety
- Immediate care – resuscitation – ABCDE and fluid therapy
- Eschariotomy
- Burn wound care
 - Wound dressing
 - Excision and skin graft
- Rehabilitation – scar management – keloids, hypertrophic scars

3.9 INTENSIVE CARE

- Organisation, staffing and function
- Indications for admission
- Scoring
- Costs
- Sepsis, predisposing factors:-localised, pneumonia, lung abscess
- Vascular access
- Monitoring of cardiovascular, respiratory and renal system in the critically ill-patient

- Endotracheal intubation, laryngotomy, tracheostomy
- Multisystem failure
- Systemic response to trauma
- Shock management
- Applied pharmacology
- Applied anatomy, and physiology of the respiratory, cardiovascular, renal and endocrine system

3.10 PRINCIPLES OF ONCOLOGY

- Epidemiology of common neoplasms- the role of Cancer Registry
- Principles of carcinogenesis and pathogenesis of cancer
- Clinico-pathological staging of cancer
- Principles of cancer management by surgery, radiotherapy, chemotherapy, immunotherapy and hormonal therapy
- Immunology
- Special investigation
- Molecular biology of cancers and mechanism of invasion
- Cancer screening and prevention programmes
- Care of the terminal cancer patients
- Rehabilitation and psychological support after surgery

3.11 SYSTEM SURGERY

3.11.1 Abdomen

- Abdominal wall
 - applied anatomy of the abdominal wall:- incisions, laparoscopic access
 - the anatomy of the abdominal wall:- hernias; inguinal canal, femoral canal, etc
 - Hernias:- clinical features, complications and management
- Acute abdominal condition
 - applied anatomy and physiology of abdominal viscera: peritoneum, solid and hollow viscera
 - management of acute abdominal conditions:-
 - Inflammatory conditions
 - Obstruction of hollow viscus
 - Perforations
 - Haemorrhage
 - Pancreatitis
 - Gynaecological conditions
 - Others: - e.g. non-surgical conditions – sickle cell crisis, pneumonia, ulcerative colitis, typhoid and amoebic infections
- Elective abdominal condition
 - Stomach and Duodenum - Peptic ulcer disease etc.
 - Oesophagus
 - Spleen and Portal hypertension
 - Liver and biliary tree - Jaundice – differential diagnosis and treatment, Hepatocellular carcinoma etc.
 - Pancreas
 - Common and peri-anal disorders: -haemorrhoid, anal fissure, fistula-in-ano
 - Enterocutaneous fistula
 - Abdominal masses

- Herniae
- Colorectal tumours – management and colonic obstruction
- Irritable bowel syndrome
- Diverticular disease

3.11.2 Genitourinary

- Applied anatomy and physiology of the renal system
- Management of the upper urinary tract conditions:
 - urinary tract infection
 - haematuria
 - urinary calculi
 - tumours
- Management of lower urinary tract conditions
 - urinary retention
 - disorders of the prostate
 - pain and swelling in the scrotum – testicular torsion
 - tumours of the prostate, bladder, testis

3.11.3 Breast

- Applied anatomy and physiology of the breast
- Investigation of breast diseases
- Inflammatory conditions of the breast
- Benign neoplastic diseases of the breast
- Malignant diseases of the breast

3.11.4 Neck and Endocrine Glands

- Applied anatomy and physiology of the endocrine glands
- Patho-physiology of the thyroid, parathyroid, pituitary, adrenal cortex, adrenal medulla; the gut as endocrine gland
- Management of common neck swellings

- Thyroid – the role of surgery in thyroid disease including hospitalisation of thyroidectomy
- Parathyroid – hyperparathyroidism, hypercalcaemia
- Secondary hypertension
- Pancreatic conditions of surgical importance
- Adrenal conditions of surgical importance

3.11.5 Paediatric Surgery

- Examination of the paediatric surgical patient
- Fluid and electrolyte balance
- Neonatal physiology
- Special problems of anaesthesia and surgery I in the newborn
- Specific paediatric surgical disorders:
 - Pyloric stenosis
 - Hernias
 - Intussusception
 - Underscended testis
 - Torsion
 - Neonatal intestinal obstruction
 - Abdominal wall abnormalities
 - Phimosi
 - Posterior urethral valves

3.11.6 Lumps and Swellings

- Applied anatomy and physiology of the skin and subcutaneous tissue
- Superficial soft tissue swellings and their management.

3.11.7 Plastic Surgery

- Management of chronic ulcers – skin grafting
- Lymphoedema
- Congenital malformations – Cleft lip and palate, haemangiomas

3.11.8 Arterial and Venous Disorders

- Vascular and Lymphatic systems
 - Arterial diseases
 - Venous diseases
 - Lymphatic disorders

3.11.9 Cardiothoracic Surgery

- The thorax
- The Heart

3.11.10 Neurosurgery

- Hydrocephalus
- Spine and cord defects
- Intracranial infections
- Neoplastic lesions

3.11.11 Orthopaedics

- Acute and chronic bone infections including TB
- Poliomyelitis
- Osteoarthritis and low back pain
- Compartment syndromes
- Congenital deformities
- Bone tumours

3.11.12 Principles of Minimally Invasive Surgery

3.11.13 Day Care Surgery

4 FELLOWSHIP PROGRAMME

4.1 GENERAL INFORMATION

4.1.1 Objectives

- To provide a comprehensive and structured higher training programme in Surgery
- To enable Trainees to achieve the experience and training necessary for independent practice as consultants
- To provide the Trainees with skills necessary to teach and research into major problems in Surgery
- To submit a dissertation in part fulfillment of the requirements for award of the Fellowship in Surgery

4.1.2 Philosophy

- There is the need to provide higher surgical training in Surgery to provide the highest level of surgical expertise as well as to produce teachers for training of surgical specialists and medical students.

4.1.3 Eligibility to Fellowship Programme

- The Trainee should have passed the Part II Membership examination in Surgery and must have served **one year** in the district to be eligible for admission to the Fellowship training as a Senior Resident.

4.1.4 Programme Duration

- The programme shall be for a variable period with a minimum of 2-3 years depending on the specialty.

4.1.5 Training Programme

- The emphasis of this segment of the fellowship programme is on acquisition of operative surgical skills and management of patients. Theoretical knowledge will be acquired during the programme in the form of tutorials/seminars/workshops/journal club discussions/teaching ward rounds/CPC.

4.1.6 Duties

- Daily morning and evening ward rounds by the trainees
- Once a week teaching ward rounds with the consultant
- At least once a week outpatient clinic with the consultant available for advice and discussion
- Weekly tutorials with the consultant
- At least twice a week operation sessions
- At least twice a month bed side teaching by consultant
- Monthly clinic-mortality and clinical audit meeting with the consultant

- Monthly journal clubs with consultants
- Monthly radiological/imaging meetings with consultants and residents from the radiology department
- Monthly seminars in specific topics with consultants
- Trainees will conduct clinical research and publish a paper with the consultant

The College will organize regular skills' workshop for trainees.

4.2 CURRICULUM FOR THE FELLOWSHIP EXAMINATION IN GENERAL SURGERY

Following successful completion of the membership examination, the candidate wanting to train in **GENERAL SURGERY** should seek admission into an accredited hospital for training in this specialty.

The training is for a minimum of **24 months** and training is in various aspects of general surgery.

Each candidate should keep a daily and up to date record of operative procedures he/she participates in during this period of training, using the prescribed log book for general surgery published by the Faculty.

During this period, the candidate is encouraged to attend the continuous education programmes and the integrated revision course in surgery regularly organized by the College.

Each Trainee shall carry out a research project and write a dissertation which shall form part of his/her final assessment for the award of the Fellowship (*Guidelines for the dissertation – Appendix 1*)

4.2.1 Syllabus

The candidate is expected to further deepen the knowledge acquired during the Parts I and II Membership programmes.

The candidate is expected to acquire detailed theoretical knowledge and skill in the pathology, pathophysiology, evaluation and management, including operative surgery, in the following areas and aspects of surgery.

4.2.1.1 Trauma

- General management of the injured
- Endocrine and metabolic response to trauma
- Wounds and their complications
- Mass casualty and multiple injuries
- Abdominal trauma

- Thoracic trauma
- Craniocerebral trauma
- Musculoskeletal trauma

4.2.1.2 Surgical nutrition

4.2.1.3 Abscesses

- Breast
- Injection
- Perianal
- Pyomyositis

4.2.1.4 Lumps and Bumps

- Lipoma
- Sebaceous cyst
- Dermoid cyst
- Ganglion

4.2.1.5 Ingrowing nails

4.2.1.6 Herniae

- Inguinal
- Femoral
- Umbilical/Paraumbilical
- Epigastric
- Incisional
- Others

4.2.1.7 Hydroceles

4.2.1.8 Diseases of the Oesophagus

- Perforation
- Gastro-Oesophageal Reflux Disease (GERD)
- Stricture
- Motility disorders
- Malignant disease

4.2.1.9 Peritoneum and retroperitoneal space

- Peritonitis
- Intraperitoneal abscesses

- Lesions of the mesentery and omentum
- Retroperitoneal tumours

4.2.1.10 Gastrointestinal bleeding

4.2.1.11 Gastric and Duodenal Diseases

- Peptic ulcer disease and its complications
- Benign and malignant neoplasms
- Others

4.2.1.12 Problems of the Appendix

- Appendicitis and its complications
- Mucocele
- Neoplasms of the Appendix

4.2.1.13 Intestinal Obstruction

4.2.1.14 Intestinal and colonic diseases

- Infections and infestations
- Typhoid and its complications
- Amoebiasis
- Ascariasis
- Schistosomiasis
- Others
- Enterocutaneous fistula
- Inflammatory bowel disease
- Diverticular disease
- Benign and malignant neoplasms

4.2.1.15 Anorectal diseases

- Trauma
- Infections and infestations
- Abscesses
- Fistula-in-ano
- Fissure
- Haemorrhoids
- Anorectal prolapsed
- Benign and malignant neoplasms

4.2.1.16 Hepatobiliary diseases

- Infections and infestations
- Portal hypertension
- Bile duct obstruction
- Cholelithiasis and cholecystitis
- Benign and malignant neoplasms

4.2.1.17 Splenic diseases

- Infections and infestations
- Hypersplenism
- Benign and malignant neoplasms
- Others

4.2.1.18 Pancreatic diseases

- Acute and chronic pancreatitis
- Benign and malignant neoplasms

4.2.1.19 Endocrine Surgery

- Thyroid
- Parathyroid
- Adrenal glands
- Ovaries
- Others

4.2.1.20 Breast Surgery

- Infections and infestations
- Lumps and other benign conditions
- Carcinoma
- Other malignancies

4.2.1.21 Salivary gland diseases

- Parotid
- Submandibular
- Sublingual
- Minors glands

4.2.1.22 Diseases of the skin and integuments

- Infections and infestations
- Malignancies of the skin including cutaneous metastases
- Others

4.2.1.23 Vascular diseases

- Arterial
- Venous
- Lymphatic

4.2.1.24 Gynaecological problems

- Salpingitis and pelvic abscess
- Ectopic pregnancy
- Surgical complications of gynaecological procedures
- Ovarian tumours

4.2.1.25 Minimally Invasive Surgery

4.2.1.26 Day care Surgery

4.2.1.27 Transplantation surgery

4.2.1.28 Investigative procedures

- Endoscopy (All types)
- Ultrasonography
- Plain radiography
- Contrast radiography (All types)
- Computerized tomography
- Magnetic resonance imaging
- Various biopsy procedures
- Others

4.3 CURRICULUM FOR THE FELLOWSHIP EXAMINATION IN UROLOGY

Following successful completion of the Part I examination, the candidate wanting to train in **UROLOGY** should seek admission into an accredited hospital for training in the specialty.

The training is for a minimum **of 24 months** and training is in various aspects of urology.

Each candidate should keep a daily and up to date record of operative procedures he/she participates in during this period of training, using the prescribed logbook for urology published by the Faculty.

During this period, the candidate is encouraged to attend the integrated revision course in urology regularly organized by the College.

Each candidate shall carry out a research project and write a dissertation which shall form part of his/her final assessment for the award of the Fellowship (*Guidelines for dissertation – Appendix I*).

4.3.1 Syllabus

The training involves training in general urology, urological oncology, reconstruction and trauma, female urology, paediatric urology, andrology and male infertility, nephrology and transplantation and endourology. Others include radiology and radiotherapy, statistical methods and research methods. The candidate is expected to acquire detailed theoretical knowledge and skill in the pathology, pathophysiology, evaluation and management, including operative surgery, in the following areas and aspects of urology.

4.3.1.1 GENERAL UROLOGY

- Physiology of urinary tract
Renal physiology, pathophysiology of reno-vascular hypertension. Ischaemic nephropathy diagnosis and treatment
- Anatomy & embryology
Anterior abdominal wall, adrenals, kidneys, ureters, pelvis (bone, soft tissues, retroperitoneum, circulation, innervations viscera) perineum, genitalia (penis, testis, scrotum)
Endoscopy, Laparoscopic Surgical anatomy
- Molecular genetics cancer
The cell – Division, abnormal growth
Biology tissue engineering
Molecular and cellular biology cytokines and growth factors
Basic principles of immunology immunity cell activation transduction apoptosis
Lymphocyte tolerance Tumour immunity molecular immunology chemokines
cytokines

- Principles of surgery for cancer
Tumour markers, Pain, Wound healing
- Clinical decision making
Clinical evaluation, Physical examination, Urinalysis
- Physiology of intestines
Use of intestinal segments in the Urinary Tract
- Outcomes of research
Access to care, costs of care, quality of care, Health related quality of life Future

4.3.1.2 BASIC DIAGNOSTIC UROLOGY AND UROLOGIC SURGERY

- Basic instrumentation and cystoscopy
Urethral catheterisation/urethral dilatation; Panendoscopy, urethrocytoscopy, cystoscopy, ureteroscopy, nephroscopy – rigid/flexible retrograde pyelography
- Urinary tract imaging
Uroradiology and radiopharmaceuticals
Conventional radiology
Ultrasonography – B Mode Doppler Colour duplex
CT SCAN Angiology
MRI – MRI Angiology
Nuclear sintigraphy
Urodynamics
- Basics of laparoscopic urologic surgery
History, Pre operative patient management, operating room procedure
Post operative management, physiological considerations.
Trouble shooting Transperitoneal extraperitoneal approaches, flank, pelvis

4.3.1.3 MALE GENITALIA

- Anataomy embryology – Penis, testis, scrotum
- Surgery penis & urethra
- Principles Reconstructive Surgery
- Selected processes
Penetrating trauma penis
Urethral stricture disease
Distraction injuries urethra
Vesico urethral distraction defects
Complex fistulae of posterior urethra
Curvature of penis

Total penis reconstruction
Surgery of scrotum & seminal vesicles
Female to male trans sexualism

4.3.1.4 RECONSTRUCTION AND TRAUMA

- Renal & Reno vascular injuries ureteral injuries
- General principles of substitution in urinary tract (Bowel, Bucal mucosa, others)
- Ureteral strictures
- Upper urinary tract disease
- Upper urinary tract obstruction and trauma
Pathophysiology and management of upper tract obstruction, PUJ kidney
pyeloplasty Retrocaval ureter, Ureteral stricture, Uretero enteric anastomotic
stricture, intrinsic ureteric obstruction
Retroperitoneal fibrosis Extrinsic uretric obstruction
- Gynaecologic ureteric encounter
UTI females, pregnancy painful bladder syndrome
Reconstruction short & long ureteric defects – reimplantation /substitution Bouri
flap/intestine
- Bladder (Augmentation cystoplasty replacement)
- Use intestinal segments in urinary tract urinary diversion pathophysiology
cutaneous continent urinary diversion, orthotopic urinary bladder
- Penile erections and fracture
- Scrotum elephantiasis – Aetiology pathophysiology – management
- Lower urinary tract and genital trauma, bladder injuries urethral injuries, genital
injuries

4.3.1.5 PROSTATE GLAND AND SEMINAL VESICLES

- Molecular biology Endocrinology Physiology
- Benign prostatic hyperplasia, Aetiology pathophysiology Epidemiology, Natural
history evaluation, Non surgical management.
- Minimal invasive management endoscopic – TURP, TUIP, Vaporisation HIPU
- Retropubic, suprapubic prostatectomy

4.3.1.6 ONCOLOGY

- Principles and biology of cancer spread
- Principles of cancer therapy (Radiotherapy, Chemotherapy, immunotherapy,
phytotherapy)

- Adrenal glands: Anatomy, Physiology; Adrenal Tumours, Cushing's Syndrome, Hyperaldosteronism, Conn's Syndrome, Pheochromocytoma,
- Surgery of adrenal glands – Open, laparoscopic, Robotic. Nonsurgical alternatives
- Neoplasms of upper urinary tract
Renal tumours: Open surgery, Radical nephrectomy, simple nephrectomy, partial nephrectomy, Laparoscopic nephrectomy, chemotherapy
- Ablative therapy of renal tumours – cryotherapy, radiofrequency microwave high intensity, ultrasound Radiosurgery
- Renal artery reconstruction, Aorto-renal bypass
- Urothelial tumours of renal pelvis and upper tract
Open/Laparoscopic nephroureterectomy Endoscopic treatment
- Prostate cancer and its management
Epidemiology, prevention, pathology, Biopsy TRUS guided/digital guided
Tumour markers, PSA, diagnosis, Staging, Principles for screening for prostate cancer
Definite local treatment
Localised prostate cancer
Treatment: radical prostatectomy, open retropubic/perineal, Laparoscopic, Robotic
Cryotherapy, microwave
- Treatment locally advanced metastatic disease
- Clinical state post treatment rising PSA
- Hormone Refractory prostate cancer and treatment
- Bladder cancer and its management
- Bladder urothelial tumour
- Non muscle invasive cancer management
- Invasive Bladder Cancer
Management TURBT, Radical cystectomy, simple cystectomy, partial cystectomy, Laparoscopic cystectomy
- Penile cancer
Management non surgical – cytotoxic drugs
Laser
MOHS micro surgical surgery
Surgery for penile cancer
- Testicular cancer
Aetiology, pathology, surgery, chemotherapy
- Scrotal cancer

Aetiology, epidemiology, diagnosis and surgery treatment

4.3.1.7 FEMALE UROLOGY

- Urodynamics principles and practice
- Urinary incontinence assesement
- Management of incontinence
- Conservative management and exercises
- Injection therapy for incontinence
- Therapies for storage emptying failure
- Vaginal reconstructive surgery for sphincteric incontinence and prolapse
- Retropubic suspension surgery for incontinence in women
- Pubo vaginal sling
- Tension free vaginal tape procedures
- Geriatric incontinence and voiding dysfunction
- Urinary tract fistulae
- Diverticula of bladder repair
- Gynaecological ureteric encounters. Prevention of injuries, diagnosis
- And management of injuries
- Female urethra trauma, tumour
- Urethral syndromes
- Uti in females
- Painful bladder syndrome

4.3.1.8 PAEDIATRIC UROLOGY

- Development of urogenital system – Kidney, Ureters, Bladder, Genitalia
- Renal function in Foetus Noenate and Children
- Anatomical and Functional Stages of development Evaluation of renal function in foetus, infant and child
- Response of developing kidneys to malformation or injury
- Perinatal urology
- Congenital obstruction nephropathies and foetal uropathies.
- Neonatal urologic emergencies.
- Evaluation of paediatric urology patient
- Renal disease in childhood
- UTI and inflammations in paediatric GU tract

- Kidney anomalies. Renal Dysgenesis, Cystic diseases of kidney. Medullary sponge kidney
- Ureteric anomalies PUJ obstruction and surgery PUJ obstruction in children. Ectopic ureteric openings
- Prune Belly Syndrome
- Paediatric Genitourinary trauma
- Reflux and Megaureters
- Exstrophy – Epispadias Complex and reconstruction
- Bladder and Cloacal Malformation
- Voiding dysfunction in children
- Neurogenic and non neurogenic dysfunction of bladder & bladder sphincter dysfunction Dysfunctional elimination – constipation syndrome
- Enuresis – aetiology and management
- Preputial pathology circumcision
- Posterior and anterior urethral valves and valve bladder syndrome
- Urinary tract reconstruction
Antireflux Augmentation cystoplasty
Urinary diversion and universion Ureteroceles
- Hypospadias anatomical pathology and management
- Genitalia abnormalities in boys and girls
- Intersex and its management
- Anomalies of testes and scrotum – Acute scrotum varicoceles
- Cryptorchidism and management
- Paediatric endourology & laparoscopic surgery
- Paediatric neoplastic diseases
Wilm’s & Renal tumours. Neuroblastoma
Testicular tumours

4.3.1.9 ANDROLOGY, REPRODUCTIVE SEXUAL FUNCTION AND MALE INFERTILITY

- Anatomy of male genital system
- Male reproductive physiology
- Biology of spermatogenesis, gene control
- Sexual function and dysfunction
- Ejaculation physiology and disorders
- Physiology of penile erection, erectile dysfunction, premature ejaculation
- Non surgical management of erectile dysfunction

- Surgery for erectile dysfunction, prosthetic, vascular and venous
- Priapism – Pathophysiology, natural history, management
- Reproduction – physiology, dysfunction
- Principles and multidisciplinary approach to infertile couple
- Male infertility: Definitions, aetiology and pathophysiology
- Assessment of male infertility
- Azoospermia, oligospermia, aspermia, hyperspermia.
- Medical management of male infertility
- Surgery for male infertility – sperm production, retrieval
- Ejaculatory disorders
- Ejaculatory duct obstruction
- Management of anatomic congenital and organic causes of infertility
- Assisted Reproductive Techniques (ARTS)
- Androgen deficiency in aging men

4.3.1.10 URINE TRANSPORT STORAGE EMPTYING

- Physiology and pharmacology of renal pelvis and ureter
- Physiology and pharmacology of bladder and urethra
- Anatomy and biomechanics of bladder, urethra
- Neural control of lower urinary tract and pharmacology, lower urinary tract
- Pathophysiology and classification of voiding dysfunction
- Urodynamics & video urodynamics in evaluation of voiding dysfunction.
Evaluation of equipment, ambulatory urodynamics, analysis, interpretation
- Lower urinary tract dysfunction in neurologic disease/injury
- Urinary incontinence: epidemiology, evaluation, management
- Overactive bladder: Mechanism, evaluation, management, pharmacological management of storage – medical management, urethral and pelvic devices

4.3.1.11 NEPHROLOGY/ NEUROPHYSIOLOGY

- CNS control urinary tract function, bladder and sexual function.
- Neurological dysfunction and the urinary tract
- instrumentation and neurophysiological assessment.
- Urodynamics – video urodynamics
- Imaging – blood flow, measurement, nuclear medicine, MRI and electrical potentials.
- Spinal cord injury disease spina bifida

- Neurogenic bladder assessment and management.
- Renal physiology and pathophysiology
- Fluid and base regulation, Evaluation of kidneys and renal function tests
- Acute and chronic renal failure (see below – this is repeated)
- Hypertension: renovascular and secondary hypertension and surgically correctible hypertension
- Obstructive uropathy
- Extrinsic obstruction of the ureters
- Gynaecologic ureteric encounters
- UTI in females, males and female children
- Painful bladder syndromes
- Pyelonephritis

4.3.1.12 RENAL FAILURE AND TRANSPLANTATION

- Acute chronic renal failure Aetiology, Pathophysiology, epidemiology
- Management conservative dialysis
- End Stage renal disease management conserve dialysis transplantation
- Renal Transplantation principles, practice, immunology rejection
- Selection – Donor, recipient and assessments
- donor Operation – Live open laparoscopic Surgery
- Cadaver – operation organ preservation
- Recipient operation – Adult child
- Post transplant care, complications and management e.g. Rejection vascular ureteric etc complications of immunosuppression

4.3.1.13 ENDOUROLOGY AND URINARY LITHIASIS

- Panendoscopy Diagnostic therapeutics, urethroscopy cystoscopic flexible rigid Urethrotomy (Direct vision – blind) Ureteroscopy rigid/flexible Laparoscopic urologic surgery ROBOTIC Surgery, Radical prostatectomy
- Urinary lithiasis – Aetiology, epidemiology, evaluation – Management – Medical ESWL, Endoscopic Lithotripsy – laparoscopic and open lithotomy Upper tract calculi Staghorn calculi – ureteroscopic and retrograde percutaneous renal access, percutaneous nephrostomy, nephrotomy drainage

Lower urinary tract calculi – Bladder, prostatic, seminal vesicles, urethral and preputial calculi – Endoscopic, open lithotomy

4.3.1.14 INFECTIONS AND INFLAMMATIONS

- Infections of urinary tract: incidence, epidemiology, pathogenesis, clinical manifestations, imaging, antimicrobial therapy.
- Antibiotic prophylaxis of urinary tract infections
- Kidney – infections, bacteraemia, bacteriuria
- Infections in pregnancy, elderly, catheter associated bacteriuria
- Bladder-cystitis – painful bladder syndrome, interstitial cystitis
- Prostatitis: acute, chronic, abacterial
- Orchitis/epididymo-orchitis
- Urogenital abscesses
- Sexually transmitted diseases
- HIV/AIDS Epidemiology, Urological and genital manifestations
- Warts, Genital ulcers, Herpes Simplex, Chancroid, Syphilis, Lymphogranuloma Venereum, Chlamydia trachomatis, Gonorrhoea, Trichomoniasis, Moluscum contagiosum, Scabies, Pediculosis Pubis, Hepatitis A,B,C and other viral infections
- Cutaneous/dermatological diseases of external genitalia, allergic dermatitis, infections, cutaneous diseases of men
- Genito-urinary tuberculosis, Bilharziasis filariasis
- Parasitic diseases of GU Tract
- Fungal & Viral disease of GU Tract

4.3.1.15 STATISTICAL METHODS AND RESEARCH METHODOLOGY

- Outcomes of research

4.3.1.16 RADIATION MEDICAL PHYSICS

- Radiodiagnosis & Radiotherapy, Radiation therapy
- Chemotherapy, immunotherapy
- Newer forms of energy – laser, cryotherapy
- High Intensity Focused Radiation, PET

4.4 CURRICULUM FOR THE FELLOWSHIP EXAMINATION IN ORTHOPAEDICS AND TRAUMA SURGERY

Following successful completion of the Part II membership examination, the candidate wanting to train in **ORTHOPAEDICS AND TRAUMA SURGERY** should seek admission into an accredited hospital for training in this specialty.

The training is for a minimum of **24 months** and training is in various aspects of Orthopaedics and Trauma Surgery.

Each candidate should keep a daily and up to date record of operative procedures he/she participates in during this period of training, using the prescribed log book for Orthopaedics and Trauma Surgery published by the Faculty.

During this period, the candidate is encouraged to attend the continuous education programmes and the integrated revision course in Orthopaedics and Trauma Surgery regularly organized by the College.

Each Trainee shall carry out a research project and write a dissertation which shall form part of his/her final assessment for the award of the Fellowship (*Guidelines for the dissertation – Appendix 1*)

4.4.1 Syllabus

The candidate is expected to further deepen the knowledge acquired during the Parts I and II Membership programmes.

The candidate is expected to acquire detailed theoretical knowledge and skill in the pathology, pathophysiology, evaluation and management, including operative surgery, in the following areas and aspects of Orthopaedics and Trauma.

4.4.1.1 General Principles

- Bone formation and healing
- Wound healing

4.4.1.2 Trauma

- Vascular access and resuscitation
- Evaluation and management of the multiply injured
- Wound care
- Conservative and open management of various fractures and dislocations
- Hand injuries
- Foot injuries
- Nerve injuries

4.4.1.3 Orthopaedics

- Clinical evaluation of the orthopaedic patient
- Radiological investigation of the musculoskeletal system, other imaging
- Arthroscopy
- Acute and chronic infections of bones and joints including tuberculosis
- Osteoarthritis and its management – Joint reconstruction/revision surgery
- Hereditary diseases of bone and connective tissues
- Acquired connective tissue diseases
- Metabolic bone diseases
- Wrist, hand and foot
- Diseases and surgery of the spine
- Neurological disorders and the musculoskeletal system
- Principles of peripheral nerve surgery
- Sports medicine and biomechanics
- Orthopaedic implants
- Benign and malignant tumours of bone and cartilage

4.4.1.4 Paediatric Orthopaedics

- Normal development and congenital disorders
- Diseases of the growing skeleton

4.4.1.5 Plastic Surgery

- Basic principles of plastic surgery
- Grafts
- Flaps

4.5 CURRICULUM FOR THE FELLOWSHIP EXAMINATION IN PLASTIC AND RECONSTRUCTIVE SURGERY

Following successful completion of the Part II membership examination, the candidate wanting to train in **PLASTIC AND RECONSTRUCTIVE SURGERY** should seek admission into an accredited hospital for training in this specialty.

The training is for a minimum of **36 months** and training is in various aspects of Plastic and Reconstructive Surgery.

Each candidate should keep a daily and up to date record of operative procedures he/she participates in during this period of training, using the prescribed log book for Plastic and Reconstructive Surgery published by the Faculty.

During this period, the candidate is encouraged to attend the continuous education programmes and the integrated revision course in Plastic and Reconstructive Surgery regularly organized by the College.

Each Trainee shall carry out a research project and write a dissertation which shall form part of his/her final assessment for the award of the Fellowship (*Guidelines for the dissertation – Appendix 1*)

4.5.1 Syllabus

The candidate is expected to further deepen the knowledge acquired during the Parts I and II Membership programmes.

The candidate is expected to acquire detailed theoretical knowledge and skill in the pathology, pathophysiology, evaluation and management, including operative surgery, in the following areas and aspects of Plastic and Reconstructive Surgery.

4.5.1.1 General Principles

- Principles of wound healing and wound repair
- Tissue transfer – free grafts, vascular pedicles, microanastomosis
- Use of non-autogenous grafts and implants
- Tissue expansion and vacuum-assisted closure
- Principles of aesthetic surgery
- Patient selection
- Scars and their management
- Management of benign skin diseases
- Principles of laser therapy

- Microvascular surgery
- Ulcers - specific, non-specific and malignant
- Soft tissue infections - necrotizing and non-necrotizing

4.5.1.2 Management of acute trauma

- Hand injuries – tendon, neurovascular, bones
- Hand infections
- Soft tissue injuries of the face
- Fractures of the nose, malars
- Principles of management of maxillary and mandibular fractures

4.5.1.3 Burns

- Resuscitation of major burns
- Primary treatment of burns
- Management of post burns scarring
- Nutrition and infections

4.5.1.4 Paediatric Plastic Surgery

- General principles of cleft lip and palate management
- General principles of craniofacial surgery
- General principles of hypospadias management
- General principles of congenital hand and foot surgery

4.5.1.5 Malignant Skin Tumours

- Melanoma and its management
- Squamous and basal cell carcinomas and their management
- Soft tissue sarcoma of skin and other tissues and their management

4.5.1.6 Head and neck tumours

- Principles of management
- Carcinoma of the floor of the mouth, palate and maxillary antrum
- Functional and radical neck dissection
- Functional and aesthetic reconstruction
- Mandibular reconstruction
- Parotidectomy and reconstruction of the facial nerve

4.5.1.7 Hand surgery

- Contractures (Dupuytren's contracture)
- Carpal tunnel syndrome
- Tendon transfers
- Congenital malformations
- Complex post-traumatic surgical rehabilitation

- Infectious and post-burn contractures

4.5.1.8 Reconstructive and aesthetic plastic surgery

- Reconstruction of facial defects (Upper and lower lips)
- Face lifts
- Reconstructive rhinoplasty
- Reconstructive and aesthetic surgery of the eyelid
- Reconstructive and aesthetic surgery of the ear
- Reconstructive and aesthetic surgery of the breast (Post-mastectomy)
- Reconstructive and aesthetic surgery of the trunk and limbs
- Reconstruction of the chest and abdominal wall defects
- Treatment of lipotrophy
- Lymphoedema and its management
- Surgical management of malignant conditions of the skin and soft tissues

4.5.1.9 Reconstructive surgery of the external genitalia

- Hypospadias and epispadias
- Vaginal reconstruction and gender reassignment

4.5.1.10 Principles of research

- Familiarity with relevant and scientific publications and detailed knowledge of recent advances
- Detailed knowledge of investigation and management of relevant and syndromic diagnoses
- Research methodology and statistical methods

4.6 CURRICULUM FOR THE FELLOWSHIP EXAMINATION IN PAEDIATRIC SURGERY

Following successful completion of the Part II membership examination, the candidate wanting to train in **PAEDIATRIC SURGERY** should seek admission into an accredited hospital for training in this specialty.

The training is for a minimum of **36 months** and training is in various aspects of Paediatric Surgery.

Each candidate should keep a daily and up to date record of operative procedures he/she participates in during this period of training, using the prescribed log book for Paediatric Surgery published by the Faculty.

During this period, the candidate is encouraged to attend the continuous education programmes and the integrated revision course in Paediatric Surgery organized by the College.

The trainee should be encouraged to visit other paediatric surgery institutions overseas for at least three months as observers. The Faculty will facilitate this process.

Each Trainee shall carry out a research project and write a dissertation which shall form part of his/her final assessment for the award of the Fellowship (*Guidelines for the dissertation – Appendix 1*)

4.6.1 Syllabus

The candidate is expected to further deepen the knowledge acquired during the Parts I and II Membership programmes.

The candidate is expected to acquire detailed theoretical knowledge, understanding and skill in the principles, pathology, pathophysiology, evaluation and management, including operative surgery, in the following areas and aspects of Paediatric Surgery.

4.6.1.1 General Principles

- Surgical embryology and teratology
- Principles of the prenatal diagnosis and foetal therapy
- Physiology of the neonatal and paediatric surgical patient
- Fluids and electrolytes
- Nutritional support
- Infection and immunity
- Haematological problems and their management
- Paediatric anaesthesia
- Trauma and resuscitation
- Malignant disease and chemotherapy

- Biogenetics in congenital abnormalities

4.6.1.2 Neonatal surgery

- Evaluation and handling of the surgically ill neonate
- Air way obstruction
- Intestinal obstruction
- Stoma formation and care
- Abdominal wall defects
- Neural tube defects
- Neonatal tumours
- Oesophageal disorders
- Congenital syndromes of surgical importance

4.6.1.3 Head and neck

- Thyroglossal duct remnants
- Thyroid problems
- Cystic swellings (Hygromas, branchial cysts etc.)
- Cleft lip and palate
- Other miscellaneous swellings of the Head and neck
- Other miscellaneous swellings of the Head and neck

4.6.1.4 Thoracic Surgery

- Surgical aspects of congenital heart disease
- Tracheostomy
- Foreign bodies in the aerodigestive tract
- Chest infections and its complications
- Pleural collections
- Chest wall deformities
- Intrathoracic congenital lesions

4.6.1.5 Oesophageal surgery

- Atresia and tracheo-oesophageal fistula
- Caustic and corrosive injuries
- Replacement and reconstruction
- Oesophageal web and other congenital /acquired anomalies of the oesophagus

4.6.1.6 Gastrointestinal surgery

- Intestinal obstruction
- Intestinal malrotation
- Intestinal duplication

- Vitelline duct anomalies
- Pyloric stenosis
- Gastro-oesophageal reflux
- Anorectal anomalies
- Hirschsprung's disease
- Hepato-biliary surgery – biliary atresia, choledochal cyst
- Pancreatic lesions – cysts/pseudocysts

4.6.1.7 Paediatric Urology

- Bladder exstrophy/epispadias
- Hypospadias
- Vesico-ureteric reflux
- Bladder outlet obstruction
- Urinary stones
- Urinary diversion/undiversion
- Ambiguous genitalia
- Endoscopy
- Renal tumours
- Prune belly syndrome
- Enuresis – aetiology and management
- Preputial pathology circumcision
- Posterior and anterior urethral valves and valve bladder syndrome
- Genitalia abnormalities in boys and girls
- Intersex and its management
- Cryptorchidism and management
- Anomalies of testes and scrotum – acute scrotum, varicoceles
- Paediatric genitourinary trauma

4.6.1.8 Paediatric neurosurgery

- Neural tube defects
 - Spina bifida
 - Hydrocephalus
 - Encephaloceles
- Phakomatosis
 - von Recklinghausen's disease
 - Sturge-Weber disease
 - von Hippel-Lindau
 - Tuberous sclerosis
 - Others

- Head and spinal injuries

4.6.1.9 Transplant surgery

- Renal
- Liver
- Intestinal

4.6.1.10 Childhood Tumours

- Management of childhood tumours
 - Nephroblastoma
 - Neuroblastoma
 - Teratoma
 - Rhabdomyosarcoma
 - Hepatoblastoma
 - Lymphoma, etc.

4.6.1.11 Principles of research

4.6.1.12 Minimally-invasive surgery: endoscopy, laparoscopic surgery, VATS

4.7 CURRICULUM FOR THE FELLOWSHIP EXAMINATION IN CARDIOTHORACIC SURGERY

Following successful completion of the Part II membership examination, the candidate wanting to train in **CARDIOTHORACIC SURGERY** should seek admission into an accredited hospital for training in this specialty.

The training is for a minimum of **36 months** and training is in various aspects of Cardiothoracic Surgery.

Each candidate should keep a daily and up to date record of operative procedures he/she participates in during this period of training, using the prescribed log book for Cardiothoracic Surgery published by the Faculty.

During this period, the candidate is encouraged to attend the continuous education programmes and the integrated revision course in Cardiothoracic Surgery regularly organized by the College.

Each Trainee shall carry out a research project and write a dissertation which shall form part of his/her final assessment for the award of the Fellowship (*Guidelines for the dissertation – Appendix 1*)

4.7.1 Syllabus

The candidate is expected to further deepen the knowledge acquired during the Parts I and II Membership programmes.

The candidate is expected to acquire detailed theoretical knowledge and skill in the pathology, pathophysiology, evaluation and management, including operative surgery, in the following areas and aspects of Cardiothoracic Surgery.

4.7.1.1 General Principles

- Principles of surgical embryology as it relates to the heart and great vessels, and tracheobronchial tree chest wall and diaphragm
- Physiology of neonatal circulation, univentricular circulation, pulmonary circulation and management of pulmonary vascular diseases
- Morphology and classification of congenital heart diseases
- Haemostatic mechanisms, anticoagulants and antiplatelet agents
- Investigations, including angiography and cardiac catheter data
- Basic biochemical studies
- Electrocardiograms
- Cardiac isotope studies

4.7.1.2 Radiological investigations, including CT scan and MRI

- Pathologies of emphysema, lung cancer, oesophageal carcinoma, mesothelioma and cardiac tumours.

4.7.1.3 Cardiopulmonary resuscitation

4.7.1.4 Endoscopy

- Indications and preparation of patients for various endoscopic procedures including laryngoscopy, bronchoscopy, oesophagoscopy and thoracoscopy

4.7.1.5 Thoracic Surgery

- Congenital problems
- Trauma
- Infective problems and their complications
- Obstructive and restrictive air way diseases
- Oesophageal problems and their management
- Benign and malignant tumours

4.7.1.6 Cardiac surgery

- Principles of cardiac catheterization
- Management of congenital heart diseases (PDA, ASD, VSD, Fallot's, Tetralogy etc.)
- Management of anomalies of the great vessels
- Pacemakers
- Valve design and construction
- Management of acquired valvular diseases
- Pericardial diseases and their management
- Aneurysms
- Arrhythmias and their management
- Management of venous thrombosis
- Pulmonary embolism and its management
- Cardiac tumours and their management

4.7.1.7 Transplant surgery

- Detailed knowledge of basic immunology, pharmacology
- Cardiac, lung, heart-lung machine
- Mechanical circulatory support
- Organ retrieval, preservation and monitoring of rejection
- Harvest and utilization of homografts in congenital heart surgery
- Cardiomyoplasty

4.7.1.8 Principles of research

- Audit and analysis of scientific data
- Statistical methods and research methodology

4.8 CURRICULUM FOR THE FELLOWSHIP EXAMINATION IN NEUROSURGERY

Following successful completion of the Part II membership examination, the candidate wanting to train in **NEUROSURGERY SURGERY** should seek admission into an accredited hospital for training in this specialty.

The training is for a minimum of **36 months** and training is in various aspects of Neurosurgery Surgery.

Each candidate should keep a daily and up to date record of operative procedures he/she participates in during this period of training, using the prescribed log book for Neurosurgery Surgery published by the Faculty.

During this period, the candidate is encouraged to attend the continuous education programmes and the integrated revision course in Neurosurgery Surgery regularly organized by the College.

Each Trainee shall carry out a research project and write a dissertation which shall form part of his/her final assessment for the award of the Fellowship (*Guidelines for the dissertation – Appendix 1*)

4.8.1 Syllabus

The candidate is expected to further deepen the knowledge acquired during the Parts I and II Membership programmes.

The candidate is expected to acquire detailed theoretical knowledge and skill in the neuropathology, neurophysiology, neuroanatomy, neurology, embryogenesis, neuroradiology to enable the candidate diagnose evaluate and manage pathological processes which affect the nervous system. Neurosurgery includes the operative, non-operative, intensive care management and rehabilitation of patients with disorders of the cranium, spine, and nervous system. The syllabus include:

4.8.1.1 General Principles

- Embryogenesis of neural tube defects
- Fluid and electrolytes in neurosurgery
- Hormones in neurosurgery
- Detailed knowledge of neurophysiology, including neurotransmitters
- Pathophysiology of neurotrauma and neoplastic conditions
- Neuroradiological diagnoses (X-rays, CT scan, MRI, angiogram, myelogram)

4.8.1.2 Neurotrauma

- Management of head injury, including mechanism, non-surgical and surgical management

- Spinal injuries and their management

4.8.1.3 Infections in neurosurgery

- Osteomyelitis
- Brain abscesses and subdural empyema
- HIV and neurosurgery

4.8.1.4 Brain Tumours

- Theories about causation of brain tumours
- Detailed knowledge of management (medical and surgical) of various brain tumours
- Knowledge and user of CUSA in brain tumour surgery
- Meningiomas – classification and management
- Posterior fossa tumours
- Others

4.8.1.5 Pituitary surgery

- Pituitary tumours – presentation and management

4.8.1.6 Vascular surgery

- Aneurysms – presentations and management
- Carotid endarterectomy
- Carotico-carvenous fistula
- The operating microscope and microsurgical instruments
- Others

4.8.1.7 Skull base surgery

4.8.1.8 Spinal Surgery

- Tumours (benign and malignant)
- Degenerative diseases
- Cervical disc disease
- Cervical canal stenosis
- Lumbar disc diseases
- Spinal tuberculosis
- Others

4.8.1.9 Paediatric neurosurgery

- Detailed embryogenesis of spina bifida and their management
- Management of hydrocephalus
- Tumour-like malformation

- Pharkomatosis (Von Recklinghausen's disease, Sturge-Weber, Von Hippel Lindau, Tuberculosis)
- Craniostenosis

4.8.1.10 Pain management

- Trigeminal neuralgias, pathophysiology and surgical management
- Cordotomy
- Others

4.8.1.11 Stereotactic surgery

- Principles of stereotactic surgery, including familiarity with the frames
- Indications for application of stereotaxy in biopsy, definitive treatment and tissue transplant in neurosurgery

4.8.1.12 Principles of research

GHANA COLLEGE OF PHYSICIANS AND SURGEONS

FACULTY OF SURGERY

GUIDELINES FOR WRITING OF DISSERTATION

The dissertation shall cover all surgical specialties

A. Eligibility

The candidate must possess the Membership Part II of the Ghana College of Physicians and Surgeons and must have been enrolled into the Fellowship programme of any of the surgical specialties of the Faculty of Surgery.

B. The dissertation

The title of the dissertation and a protocol shall be submitted to the Chairman of the Faculty Board within 3 months of starting the Fellowship Programme. The protocol should have the following sections as indicated in 1 – 7 and 12 below. The expected outcome of the research should be stated.

Format of the dissertation

The dissertation must have the following parts:

1. Title Page
 - a. Title of dissertation
 - b. Name and address of Resident and his Department
2. Structured Abstract
 - a. Brief background
 - b. General aim
 - c. Brief methodology
 - d. Main findings/Results
 - e. Conclusion

Main body of the dissertation

3. Background
 - a. Introduction
 - b. Literature Review
 - c. Hypothesis (If any)

4. Aims/ Objectives of the study
5. Methodology
 - a. Study design
 - b. Study sites
 - c. Subjects and Methods
 - d. Inclusion/ exclusion criteria
6. Ethics Committee Approval and Consent form (If applicable)
7. Statistical Methods
8. Results
9. Discussion
10. Conclusions
11. Appendices
12. References – These should be numbered consecutively as they occur in the text using Arabic numerals. References should be based on the Vancouver style and should be as current as possible but old landmark works may be referenced.

C. Supervisor(s)

Every candidate shall normally have an approved supervisor(s). The supervisor's role is purely advisory. The candidate must obtain a letter of consent from his/her supervisor(s) indicating the supervisor's willingness to serve as a supervisor. The supervisor(s) must also submit his Curriculum Vitae to the College.

D. Contribution to knowledge

The dissertation shall be written in English and should make some contribution to surgical knowledge and show originality. It must consist of the candidate's own account of his/her research. Any already published work of the candidate may be included in the dissertation if such published work is relevant to the subject matter of the dissertation.

E. Submission of Dissertation

Every candidate shall present a short abstract of his/her dissertation of not more than 300 words which shall be bound with each copy of the dissertation submitted to the College. **Two typed and bound copies of the dissertation** shall be submitted to the Rector of Ghana College of Physicians and Surgeons **not later than 3 months to the start of the Final Fellowship examinations of the College.** The size of the dissertation shall be standard A4 paper and should be typed on both sides of the paper with double spacing

A candidate shall not be permitted to submit as his/her dissertation a dissertation which has already been submitted to another College.

F. Examination of the Dissertation

Two Examiners shall be appointed by the Faculty Board to examine the dissertation separately but they must submit a joint report to the Court of Examiners at the Examiners' meeting. There shall be an oral examination of the dissertation by the two Examiners appointed by the Faculty Board. For this examination, **the candidate shall bring along a copy of his/her dissertation.** None of the Examiners shall be the candidate's supervisors.

Determination of the results of the dissertation shall be as follows:

- The candidate has passed this section of the examination and the dissertation is acceptable for the award of the Fellowship.
- The candidate has satisfied the examiners in the defence of the dissertation and it is acceptable subject to correction indicated by the examiners. The corrected dissertation must be re-submitted within three months. If the examiners are satisfied with the corrections the dissertation is passed.
- The candidate has been referred in this section of the examination and must attend for re-examination after submitting a dissertation which has been revised. The revised dissertation must be re-submitted within three months.
- The candidate has failed this section and shall submit a fresh dissertation within nine months and attend for re-examination.

Passing the Fellowship Examination

- In addition to passing the dissertation, the candidate must pass the clinical part of the examination and obtain an overall score of 50% or more.
- A candidate who passes the clinical part of the examination and obtains an overall score of 50% or more but is referred in the dissertation shall be examined in the dissertation only at the next examination.
- A candidate who passes the dissertation but fails the clinical part of the examination or fails to obtain an overall score 50% (even if he passes the clinical examination) shall present himself/herself again for the examination but she shall be credited with the dissertation he/she has already passed.

- A candidate who has failed the examination as well as the dissertation shall submit a fresh dissertation within 9 months and present himself/herself for the whole examination.

Distribution of copies of the Dissertation

A copy of the dissertation that has been passed shall be deposited in the College Library. A copy shall be given back to the candidate.