
**CURRICULUM/STATUTES & REGULATIONS
FOR
5 YEARS DEGREE PROGRAMME
IN
PAEDIATRIC SURGERY
(MS PAEDIATRIC SURGERY)**



**UNIVERSITY OF HEALTH SCIENCES,
LAHORE**

STATUTES

1. Nomenclature of the Proposed Course

The name of degree programme shall be MS Paediatric Surgery. This name is well recognized and established for the last many decades worldwide.

2. Course Title:

MS Paediatric Surgery

3. Training Centers

Departments of Paediatric Surgery (accredited by UHS) in affiliated institutes of University of Health Sciences Lahore.

4. Duration of Course

The duration of MS Paediatric Surgery course shall be five (5) years (first year in Part I, first two years in Part II and next three years in Part III) with structured training in a recognized department under the guidance of an approved supervisor.

The course is structured in three parts:

Part I is structured for the 1st calendar year. The candidate shall undertake didactic training in Basic Medical Sciences, Behavioural Sciences and Biostatistics & Research Methodology. At the end of first year the examination shall be held in Basic Sciences. The clinical training in fundamental concepts of Surgery shall start from the 1st day of enrollment.

Part II is structured for the 1st and 2nd calendar years. The candidate shall undertake clinical training in fundamental concepts of Surgery. At the end of 2nd year the examination shall be held in fundamental concepts of Surgery. The clinical training in Paediatric Surgery shall start from 3rd year onwards in the recognized institutions.

Part III is structured for 3rd, 4th and 5th calendar years in MS Paediatric Surgery. It has two components; Clinical and Research. The candidate shall

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undergo clinical training to achieve educational objectives of MS Paediatric Surgery (knowledge & skills) along with rotation in relevant fields

Research component and thesis writing shall be completed over the five years duration of the course. Candidate will spend total time equivalent to one calendar year for research during the training. Research can be done as one block in 5th year of training or it can be done in the form of regular periodic rotations over five years as long as total research time is equivalent to one calendar year.

5. Admission Criteria

- I. For admission in MS Paediatric Surgery course, the candidate shall be required to have:
 - MBBS degree
 - Completed one year House Job
 - One year experience in Paediatric Surgery/General surgery/Allied surgical discipline in the given order of preference
 - Registration with PMDC
 - Passed Entry Test conducted by the University & aptitude interview by the Institute concerned
 - Having up to the mark credentials as per UHS rules (no. of attempts in each professional, any gold medals or distinctions, relevant work experience, Rural/ Army services, research experience in a recognized institution, any research article published in a National or International Journal) may also be considered on case to case basis.
- II. Exemptions: A candidate holding FCPS/MRCS/Diplomate/equivalent qualification in General Surgery shall be exempted from Part-I & Part-II Examinations and shall be directly admitted to Part-III Examinations, subject to fulfillment of requirements for the examination.

6. Registration and Enrollment

- Total number of students enrolled for the course must not exceed 2 per supervisor/year.
- The maximum number of trainees that can be attached with a supervisor at a given point of time (inclusive of trainees in all years/phases of MS training), must not exceed 6.
- Beds to trainee ratio at the approved teaching site shall be at least 5 beds per trainee.
- The University will approve supervisors for MS courses.
- Candidates selected for the courses after their enrollment at the relevant institutions shall be registered with UHS as per prescribed Registration Regulation.

7. Accreditation Related Issues Of The Institution

A) Faculty

Properly qualified teaching staff in accordance with the requirements of Pakistan Medical and Dental Council (PMDC)

B) Adequate Space

Including class-rooms (with audiovisual aids), demonstration rooms, computer lab and clinical pathology lab etc.

C) Library

Departmental library should have latest editions of recommended books, reference books and latest journals (National and International).

- Accreditation of Paediatric Surgery training program can be suspended on temporary or permanent basis by the University, if the program does not comply with requirements for residents training as laid out in this curriculum.
- Program should be presented to the University along with a plan for implementation of curriculum for training of residents.

- Programs should have documentation of residents training activities and evaluation on monthly basis.
- To ensure a uniform and standardized quality of training and availability of the training facilities, the University reserves the right to make surprise visits of the training program for monitoring purposes and may take appropriate action if deemed necessary.

AIMS AND OBJECTIVES OF THE COURSE

AIM

The aim of five years MS programme in Paediatric Surgery is to train residents to acquire the competency of a specialist in the field so that they can become good teachers, researchers and clinicians in their specialty after completion of their training.

GENERAL OBJECTIVES

MS Paediatric Surgery training should enable a student for:

- Access and apply relevant knowledge to clinical practice:
 - Maintain currency of knowledge
 - Apply scientific knowledge in practice
 - Appropriate to patient need and context
 - Critically evaluate new technology
- Safely and effectively performs appropriate surgical procedures:
 - Consistently demonstrate sound surgical skills
 - Demonstrate procedural knowledge and technical skill at a level appropriate to the level of training
 - Demonstrate manual dexterity required to carry out procedures
 - Adapt their skills in the context of each patient and procedure
 - Maintain and acquire new skills
 - Approach and carry out procedures with due attention to safety of patient, self and others
 - Critically analyze their own clinical performance for continuous improvement
- Design and implement effective management plans:
 - Recognize the clinical features, accurately diagnose and manage paediatric problems
 - Formulate a well-reasoned provisional diagnosis and management plan based on a thorough history and examination
 - Formulate a differential diagnosis based on investigative findings

- Manage patients in ways that demonstrate sensitivity to their physical, social, cultural and psychological needs
- Recognize disorders of the paediatric age group and differentiate those amenable to surgical treatment
- Effectively manage the care of patients with trauma including multiple system trauma
- Effectively recognize and manage complications
- Accurately identify the benefits, risks and mechanisms of action of current and evolving treatment modalities
- Indicate alternatives in the process of interpreting investigations and in decision-making
- Manage complexity and uncertainty
- Consider all issues relevant to the patient
- Identify risk
- Assess and implement a risk management plan
- Critically evaluate and integrate new technologies and techniques.
- Organize diagnostic testing, imaging and consultation as needed:
 - Select medically appropriate investigative tools and monitoring techniques in a cost-effective and useful manner
 - Appraise and interpret appropriate diagnostic imaging and investigations according to patients' needs
 - Critically evaluates the advantages and disadvantages of different investigative modalities
- Communicate effectively:
 - Communicate appropriate information to patients (and their family) about procedures, potentialities and risks associated with surgery in ways that encourage their participation in informed decision making
 - Communicate with the patient (and their family) the treatment options including benefits and risks of each
 - Communicate with and co-ordinate health management teams to achieve an optimal surgical environment
 - Initiate the resolution of misunderstandings or disputes

- Modify communication to accommodate cultural and linguistic sensitivities of the patient
- Recognize the value of knowledge and research and its application to clinical practice:
 - Assume responsibility for self-directed learning
 - Critically appraise new trends in Paediatric Surgery
 - Facilitate the learning of others.
- Appreciate ethical issues associated with Paediatric Surgery:
 - Consistently apply ethical principles
 - Identify ethical expectations that impact on medico-legal issues
 - Recognize the current legal aspects of informed consent and confidentiality
 - Be accountable for the management of their patients.
- Professionalism by:
 - Employing a critically reflective approach to Paediatric Surgery
 - Adhering with current regulations concerning workplace harassment
 - Regularly carrying out self and peer reviewed audit
 - Acknowledging and have insight into their own limitations
 - Acknowledging and learning from mistakes
- Work in collaboration with members of an interdisciplinary team where appropriate:
 - Collaborate with other professionals in the selection and use of various types of treatments assessing and weighing the indications and contraindications associated with each type
 - Develop a care plan for a patient in collaboration with members of an interdisciplinary team
 - Employ a consultative approach with colleagues and other professionals
 - Recognize the need to refer patients to other professionals.
- Management and Leadership
 - Effective use of resources to balance patient care and system resources
 - Identify and differentiate between system resources and patient needs
 - Prioritize needs and demands dealing with limited system resources.

- Manage and lead clinical teams
- Recognize the importance of different types of expertise which contribute to the effective functioning of clinical team.
- Maintain clinically relevant and accurate contemporaneous records
- Health advocacy:
 - Promote health maintenance of patients
 - Advocate for appropriate health resource allocation
 - Promote health maintenance of colleagues and teacher

SPECIFIC LEARNING OUTCOMES

On completion of the training programme, Paediatric Surgical Trainees pursuing an academic pathway will be expected to have demonstrated competence in all aspects of the published syllabus. The specific training component would include the following areas:

1. Establishing clearly defined standards of knowledge and skills required to practice paediatric surgery at secondary and tertiary care level
2. Understand Basic Sciences relevant to child development and disease (including relevant genetics and embryology)
3. The symptom patterns, differential diagnosis, investigation and management of common paediatric surgical conditions related to:
 - Neonatal Surgery
 - Emergency Surgery
 - Central and peripheral nervous systems
 - Head and neck surgery
 - Thoracic surgery
 - Gastrointestinal surgery
 - Genitourinary surgery
 - Endoscopic Surgery
 - Traumatology
 - Organ transplantation
 - Paediatric Tumour Surgery etc.
4. Understanding key differences between adult and child in the management of surgical conditions.
5. Being able to diagnose common paediatric surgical conditions
6. The ability to construct a differential diagnosis, interpret investigations and construct a management plan for common conditions
7. Undergoing exposure and training in a range of common surgical procedures
8. Developing a number of generic and advanced operative skills specific to paediatric surgery
9. Proficiency in handling critical and intensive care surgical illness

10. Understand the indications, actions and monitoring of drugs used in the paediatric surgical diseases
11. Developing communication skills according to age
12. Specific ethical and legal issues affecting the practice of paediatric surgery (including issues of consent)
13. History taking relevant to specific age or developmental stage
14. The clinical skills with appropriate examination techniques for children of different ages related to paediatric surgery
15. Basic life support skills in paediatric practice
16. Recognize the value of screening programs and prenatal diagnosis
17. Appreciate the role of family education in paediatric surgical disorders
18. Understand the role of staff management and of referral in particularly complex paediatric surgical disorders
19. Acquire management skills in running a Paediatric Surgery Unit

REGULATIONS

1. Scheme of the Course

A summary of five years course in MS Paediatric Surgery is presented as under:

Course Structure	Components	Examination
Part I	<p>Basic Medical Sciences Anatomy, Physiology, Biochemistry, Pathology, Pharmacology, Behavioural Sciences and Biostatistics & Research Methodology.</p>	<p>Part-I examination at the end of 1st year of MS Paediatric Surgery programme.</p> <ul style="list-style-type: none"> • Written: Paper I: MCQs Paper II: SEQs
Part-II	<ul style="list-style-type: none"> • Fundamental Concepts in Surgery : Training in basic clinical techniques of Surgery with compulsory rotation for two years starting from first day of enrollment 	<p>Part-II examination at the end of 2nd year of MS Paediatric Surgery programme.</p> <ul style="list-style-type: none"> • Written: Papers 1 & 2: Basic Principles of Surgery • Oral & Practical/ Clinical Examination <ul style="list-style-type: none"> • OSCE • Clinical Examination (Long case, Short cases) • Log Book
Part-III	<p>Clinical component of Part III</p> <ul style="list-style-type: none"> • Professional Education in Paediatric Surgery : Training in Paediatric Surgery during 3rd, 4th & 5th year of MS Paediatric Surgery programme. Three years of training with compulsory & optional rotations in relevant fields <p>Research component of Part III</p> <p>Research work/Thesis writing project must be completed and thesis be submitted before the end of training.</p>	<p>Part-III examination in specialized components of Paediatric Surgery at the end of 5th year of MS Paediatric Surgery programme.</p> <ul style="list-style-type: none"> • Written: Paper 1 & 2: Problem-based questions in the subject • Oral & Practical/ Clinical Examination <ul style="list-style-type: none"> • OSCE/ • Clinical Examination (Long case, Short cases) • Log Book <p>Part-III thesis examination with defense at the end of fifth (5th) year of MS Paediatric Surgery programme.</p>

2. Examinations

Part-I Examination

1. All candidates admitted in MS Paediatric Surgery course shall appear in Part-I examination at the end of 1st calendar year.
2. The examination shall be held on biannual basis.
3. The candidate who fails to pass the examination in 3 consecutive attempts availed or un-availed, shall be dropped from the course.
4. The examination shall have two components:

▪ Paper-I MCQs (single best)	100 Marks
▪ Paper-II SEQs	100 Marks
5. Subjects to be examined shall be Basic Sciences relevant to Paediatric Surgery (Anatomy, Physiology, Biochemistry, Pathology, Pharmacology), Behavioural Sciences and Biostatistics & Research Methodology.
6. To be eligible to appear in Part-I examination the candidate must submit:
 - i. duly filled, prescribed Admission Form to the Controller of Examinations duly recommended by the Principal/Head of the Institution in which he/she is enrolled;
 - ii. a certificate by the Principal/Head of the Institution, that the candidate has attended at least 75% of the lectures, seminars, practical/clinical demonstrations;
 - iii. Examination fee as prescribed by the University
7. To be declared successful in Part-I examination the candidate must secure 60% marks in each paper.

Part-II Examination

1. All candidates admitted in MS Paediatric Surgery course shall appear in Part-II examination at the end of second calendar year.
2. The examination shall be held on biannual basis.
3. The candidate who fails to pass the examination within 3 years of passing the Part-I examination shall be dropped from the course.
4. The examination shall have the following components:
 - a. Written 200 Marks
 - b. OSCE 50 Marks
 - c. Clinical examination 100 Marks
 - d. Log Book Evaluation 80 Marks (40 marks per year)

5. There shall be two written papers of 100 marks each:

Papers 1 & 2: Principles of General Surgery

6. The types of questions shall be of Short/Modified essay type and MCQs (single best).
7. Oral & practical/clinical examination shall be held in clinical techniques in General Surgery.
8. To be declared successful in Part-II examination the candidate must secure 60% marks in each component and 50% in each sub-component.
9. Only those candidates who pass in theory papers, will be eligible to appear in the Oral & Practical/clinical Examination.
10. The candidates, who have passed written examination but failed in oral & practical/ clinical examination, will re-appear only in oral & practical/clinical examination.
11. The maximum number of attempts to re-appear in oral & practical /clinical Examination alone shall be three, after which the candidate shall have to appear in both written and oral & practical/clinical examinations as a whole.
12. To be eligible to appear in Part-II examination the candidate must submit:
 - i. duly filled, prescribed Admission Form to the Controller of Examinations duly recommended by the Principal/Head of the Institution in which he/she is enrolled;

- ii. a certificate by the Principal/Head of the Institution, that the candidate has attended at least 75% of the lectures, seminars, practical/clinical demonstrations;
- iii. a certificate of having passed the Part-I examination;
- iv. Examination fee as prescribed by the University.

Part-III Examination

1. All candidates admitted in MS Paediatric Surgery course shall appear in Part-III (clinical) examination at the end of structured training programme (end of 5th calendar year), and having passed the part I & II examinations. However, a candidate holding FCPS / MRCS / Diplomate / equivalent qualification in General Surgery shall be exempted from Part-I & Part-II Examinations and shall be directly admitted to Part-III Examinations, subject to fulfillment of requirements for the examination.
2. The examination shall be held on biannual basis.
3. To be eligible to appear in Part-III examination the candidate must submit;
 - i. duly filled, prescribed Admission Form to the Controller of Examinations duly recommended by the Principal/Head of the Institution in which he/she is enrolled;
 - ii. a certificate by the Principal/Head of the Institution, that the candidate has attended at least 75% of the lectures, seminars, practical/clinical demonstrations;
 - iii. Original Log Book complete in all respect and duly signed by the Supervisor (for Oral & practical/clinical Examination);
 - iv. certificates of having passed the Part-I & part-II examinations;
 - v. Examination fee as prescribed by the University.
4. The Part-III clinical examination shall have the following components:

▪ Written	300 marks
▪ Oral & practical/clinical examination	300 marks
▪ Log Book Evaluation	120 marks (40 marks per year)
5. There shall be two written papers of 150 marks each.
6. Both papers shall have problem-based Short/Modified essay questions and MCQs.
7. Oral & practical/clinical examination shall have 300 marks for:

i. 1 Long Case	100
ii. 4 Short Cases	100(25 marks each)
iii. OSCE	100

8. To be declared successful in Part-III examination the candidate must secure 60% marks in each component and 50% in each sub-component.
9. Only those candidates, who pass in theory papers, will be eligible to appear in the Oral & Practical/ Clinical Examination.
10. The candidates, who have passed written examination but failed in Oral & Practical/ Clinical Examination, will re-appear only in Oral & Practical / Clinical examination.
11. The maximum number of attempts to re-appear in oral & practical /clinical Examination alone shall be three, after which the candidate shall have to appear in both written and oral & practical/clinical examinations as a whole.
12. The candidate with 80% or above marks shall be deemed to have passed with distinction.
13. *Log Book/Assignments:* Through out the length of the course, the performance of the candidate shall be recorded on the Log Book.
14. The Supervisor shall certify every year that the Log Book is being maintained and signed regularly.
15. The Log Book will be developed & approved by the Advanced Studies & Research Board.
16. The evaluation will be maintained by the Supervisor (in consultation with the Co- Supervisor, if appointed).
17. The performance of the candidate shall be evaluated on annual basis, e.g., 40 marks for each year in five years MS Paediatric Surgery course. The total marks for Log Book shall be 200. The log book shall reflect the performance of the candidate on following parameters:
 - Year wise record of the competence of skills.
 - Year wise record of the assignments.
 - Year wise record of the evaluation regarding attitude & behaviour
 - Year wise record of journal club / lectures / presentations / clinico-pathologic conferences attended & / or made by the candidate.

3. Submission / Evaluation of Synopsis

1. The candidates shall prepare their synopsis as per guidelines provided by the Advanced Studies & Research Board, available on UHS website.
2. The research topic in clinical subject should have 30% component related to basic sciences and 70% component related to applied clinical sciences. The research topic must consist of a reasonable sample size and sufficient numbers of variables to give training to the candidate to conduct research, to collect & analyze the data.
3. Synopsis of research project shall be submitted by the end of the 3rd year of MS program. The synopsis after review by an Institutional Review Committee shall be submitted to the University for consideration by the Advanced Studies & Research Board, through the Principal / Dean /Head of the institution.

4. Submission of Thesis

1. Thesis shall be submitted by the candidate duly recommended by the Supervisor.
2. The minimum duration between approval of synopsis and submission of thesis shall be one year, but the thesis can not be submitted later than 8 years of enrolment.
3. The research thesis must be compiled and bound in accordance with the Thesis Format Guidelines approved by the University and available on website.
4. The research thesis will be submitted along with the fee prescribed by the University.

5. Thesis Examination

1. All candidates admitted in MS course shall appear in Part-III thesis examination at the end of 5th year of their training course.
2. Only those candidates shall be eligible for thesis evaluation who have passed Part I, II & III (clinical) Examinations.
3. The examination shall include thesis evaluation with defense.

4. The Vice Chancellor shall appoint three external examiners for thesis evaluation, preferably from other universities and from abroad, out of the panel of examiners approved by the Advanced Studies & Research Board. The examiners shall be appointed from respective specialty. Specialists from General Surgery and Allied surgical Disciplines may also be appointed/co-opted, where deemed necessary.
5. The thesis shall be sent to the external examiners for evaluation, well in time before the date of defense examination and should be approved by all the examiners.
6. After the approval of thesis by the evaluators, the thesis defense examination shall be held within the University on such date as may be notified by the Controller of Examinations. The Controller of Examinations shall make appropriate arrangements for the conduct of thesis defense examination in consultation with the supervisor, who will co-ordinate the defense examination.
7. The thesis defense examination shall be conducted by two External Examiners who shall submit a report on the suitability of the candidate for the award of degree. The supervisor shall act as coordinator.

6. Award of MS Paediatric Surgery Degree

After successful completion of the structured courses of MS Paediatric Surgery and qualifying Part-I, Part-II and Part-III examinations, the degree with title MS Paediatric Surgery shall be awarded.

CONTENT OUTLINE

Part I MS Paediatric Surgery

Basic sciences:

Student is expected to acquire comprehensive knowledge of Anatomy, Physiology, Pathology, Biochemistry and Pharmacology relevant to surgical practice

1. Anatomy

Detailed Anatomy of the organ systems of body, their blood supply, nerve supply, lymphatic drainage and important gross relations to other organs as appropriate for surgical operations

Developmental Anatomy and associated common congenital abnormalities
Features of Surface, Imaging and Applied Anatomy within each organ system
Relate knowledge to assessment of clinical situation or progress of disease condition

CARDIOVASCULAR:

- Embryogenesis of heart and major vessels, and formation of the lymphatic system
- Common anatomical variations of heart chambers, valves and major vessels
- Surgical anatomy of heart and major arteries + veins in thorax, neck, abdomen and groins

RESPIRATORY:

- Embryogenesis of trachea and bronchial tree
- Lung development
- Development and defects of diaphragm
- Common anatomical variations of respiratory tree and lungs to include vascular anomalies
- Surgical anatomy of pleura, lung and trachea and bronchial tree

GASTROINTESTINAL TRACT AND ABDOMINAL WALL:

- Embryogenesis of the GIT to include formation of the solid organs, anorectum, and abdominal wall
- Common anatomical variations in the formation of the GIT and abdominal wall
- Surgical anatomy of the GIT and its relations to other systems

RENAL:

- Embryogenesis of the upper and lower renal tract to include male and female genital development
- Common anatomical variations of the renal tract and genitalia
- Surgical anatomy of the renal tract, and associated genital structures to include relationships to other systems

NEUROLOGICAL:

- Embryogenesis of the brain and spinal cord, and of the supporting structures (skull, vertebral column)
- Common anatomical variations of the brain and spinal cord
- Surgical anatomy of the brain, spinal cord and major somatic nerves (to include relationships to other systems)

MUSCULO SKELETAL:

- Embryogenesis of the skeleton and muscle development
- Common anatomical variations of skeleton
- Surgical anatomy of skeleton where relevant to other systems

ENDOCRINE:

Development, defects and surgical anatomy of endocrine organs

2. Physiology

- Cellular organization, structure function correlations and physiological alterations in the organ systems of body
- Relate knowledge to assessment of clinical situation or progress of disease condition

FLUID BALANCE:

- Basic requirements of fluid and electrolytes at different ages
- Mechanisms of homeostasis
- Influence of disease states
 - renal
 - cardiac
 - gastrointestinal
 - trauma
- Mechanisms of homeostasis
- Abnormalities encountered in disease

ACID-BASE BALANCE:

- Basic requirements of fluid and electrolytes at different ages
- Mechanisms of homeostasis
- Influence of disease states

OXYGEN TRANSPORT:

- Airway function in health and disease
- Alveolar function and gas exchange
- Effect of disease
 - R.D.S.
 - Infection
 - Barotrauma
 - Prematurity
- Effect of foetal circulation

GASTROINTESTINAL TRACT:

- Motility of different regions of gut
- Secretion and absorption
- Function of sphincter regions
 - G.O. junction
 - Pylorus
 - Ileocaecal region
 - Anorectum
- Defaecation and continence

HEPATOBILIARY FUNCTION AND PANCREATIC FUNCTION:

- Metabolic and synthetic hepatic function
- Bile production and transport
- Exocrine pancreatic function
- Effect of disease on normal function

RENAL TRACT:

- Renal mechanisms for maintenance of homeostasis
- Effect of disease
- Bladder function and continence
- Transitional renal physiology in neonate and young child

GROWTH AND METABOLISM:

- Nutritional requirements at different ages
- Endocrine factors influencing growth
 - thyroid
 - pituitary
 - pancreatic
 - adrenal
 - gonadal
- Effect of disease states including
 - chronic disease
 - trauma
 - response to operation
- Influence and use of parenteral and enteral feeding

AUTONOMIC NERVOUS SYSTEM:

- Differing effects of sympathetic and parasympathetic innervation
- Effects on differing physiological processes

3. Biochemistry

- Membrane biochemistry and signal transduction
- Gene expression and the synthesis of proteins
- Bioenergetics; fuel oxidation and the generation of ATP
- Carbohydrate metabolism
- Lipid metabolism
- Nitrogen metabolism

- Enzymes and biologic catalysis
- Tissue metabolism
- Biotechnology and concepts of molecular biology with special emphasis on use of recombinant DNA techniques in medicine and the molecular biology of cancer

4. Pharmacology

- The Evolution of Medical Drugs
- British Pharmacopia
- Introduction to Pharmacology
- Receptors
- Mechanisms of Drug Action
- Pharmacokinetics
- Pharmacokinetic Process
 - Absorption
 - Distribution
 - Metabolism
 - Desired Plasma Concentration
 - Volume of Distribution
 - Elimination
 - Elimination rate constant and half life
 - Creatinine Clearance
- Drug Effect
 - Beneficial Responses
 - Harmful Responses
 - Allergic Responses
- Drug Dependence, Addiction, Abuse and Tolerance
- Drug Interactions
- Dialysis
- Drug use in pregnancy and in children

5. Pathology

Pathological alterations at cellular and structural level

- Inflammation
- Wound healing
- Cellular injury
- Vascular disorders
- Disorders of growth, differentiation and morphogenesis
- Tumours
- Surgical immunology
- Surgical haematology

Microbiology:

- Surgically important microorganisms
- Sources of infection

- Asepsis and antisepsis
- Sterilization
- Antibiotics
- High risk patient management

6. Biostatistics & Research Methodology

1. Introduction to Bio-Statistics
2. Introduction to Bio- Medical Research
3. Why research is important?
4. What research to do?
 - Selecting a Field for Research
 - Drivers for Health Research
 - Participation in National and International Research
 - Participation in Pharmaceutical Company Research
 - Where do research ideas come from
 - Criteria for a good research topic
5. Ethics in Health Research
6. Writing a Scientific Paper
7. Making a Scientific Presentation
8. Searching the Literature

7. Behavioural Sciences

- Bio-psycho-social (BPS) model of health care
- Use of non-medicinal interventions in clinical practice
 - Communication skills
 - Counseling
 - Informational skills
- Crisis intervention/disaster management
- Conflict resolution
- Breaking bad news
- Medical ethics, professionalism and doctor-patient relationship
 - Hippocratic oath
 - Four pillars of medical ethics (autonomy, beneficence, non-malficence and justice)
 - Informed consent and confidentiality
 - Ethical dilemmas in a doctor's life
- Delivery of culturally relevant care and cultural sensitivity
- Psychological aspects of health and disease
 - Psychological aspect of health
 - Psychological aspect of disease
 - Stress and its management
 - Psychological aspect of pain
 - Psychological aspect of aging

Part II

MS Paediatric Surgery

Fundamental Principles of Surgery

- History of surgery
- Preparing a patient for surgery
- Principles of operative surgery: asepsis, sterilization and antiseptics
- Surgical infections and antibiotics
- Basic principles of anaesthesia and pain management
- Acute life support and critical care:
 - Pathophysiology and management of shock
 - Fluids and electrolyte balance/ acid base metabolism
 - Haemostasis, blood transfusion
- Trauma: assessment of polytrauma, triage, basic and advanced trauma
- Accident and emergency surgery
- Wound healing and wound management
- Nutrition and metabolism
- Principles of burn management
- Principles of surgical oncology
- Principles of laparoscopy and endoscopy
- Organ transplantation
- Informed consent and medico-legal issues
- Molecular biology and genetics
- Operative procedures for common surgical manifestations e.g cysts, sinuses, fistula, abscess, nodules, basic plastic and reconstructive surgery
- Principles of basic diagnostic and interventional radiography
- Principles and interpretation of conventional and advanced radiographic procedures

Common Surgical Skills

Incision of skin and subcutaneous tissue:

- Langer's lines
- Healing mechanism
- Choice of instrument
- Safe practice

Closure of skin and subcutaneous tissue:

- Options for closure
- Suture and needle choice
- Safe practice

Knot tying:

- Choice of material
- Single handed
- Double handed
- Superficial
- Deep

Tissue retraction:

- Choice of instruments

- Placement of wound retractors
- Tissue forceps

Use of drains:

- Indications
- Types
- Insertion
- Fixation
- Management/removal

Incision of skin and subcutaneous tissue:

- Ability to use scalpel, diathermy and scissors

Closure of skin and subcutaneous tissue:

- Accurate and tension free apposition of wound edges

Haemostasis:

- Control of bleeding vessel (superficial)
- Diathermy
- Suture ligation
- Tie ligation
- Clip application
- Plan investigations
- Clinical decision making
- Case work up and evaluation; risk management

Pre-operative assessment and management:

- Cardiorespiratory physiology
- Diabetes mellitus
- Renal failure
- Pathophysiology of blood loss
- Pathophysiology of sepsis
- Risk factors for surgery
- Principles of day surgery
- Management of comorbidity

Intraoperative care:

- Safety in theatre
- Sharps safety
- Diathermy, laser use
- Infection risks
- Radiation use and risks
- Tourniquets
- Principles of local, regional and general anaesthesia

Post-operative care:

- Monitoring of postoperative patient
- Postoperative analgesia
- Fluid and electrolyte management
- Detection of impending organ failure
- Initial management of organ failure
- Complications specific to particular operation
- Critical care

Blood products:

- Components of blood
- Alternatives to use of blood products

- Management of the complications of blood product transfusion including children

Antibiotics:

- Common pathogens in surgical patients
- Antibiotic sensitivities
- Antibiotic side-effects
- Principles of prophylaxis and treatment

Safely assess the multiply injured patient:

- History and examination
- Investigation
- Resuscitation and early management
- Referral to appropriate surgical subspecialties

Technical Skills

- Central venous line insertion
- Chest drain insertion
- Diagnostic peritoneal lavage
- Bleeding diathesis & corrective measures, e.g. warming, packing
- Clotting mechanism; Effect of surgery and trauma on coagulation
- Tests for thrombophilia and other disorders of coagulation
- Methods of investigation for suspected thromboembolic disease
- Anticoagulation, heparin and warfarin
- Role of V/Q scanning, CT angiography and thrombolysis
- Place of pulmonary embolectomy
- Awareness of symptoms and signs associated with pulmonary embolism and DVT
- Role of duplex scanning, venography and d-dimer measurement
- Initiate and monitor treatment

Diagnosis and Management of Common Surgical Conditions:

- Child with abdominal pain
- Vomiting child
- Trauma
- Groin conditions
 - Hernia
 - Hydrocoele
 - Penile inflammatory conditions
 - Undescended testis
 - Acute scrotum
- Abdominal wall pathologies
- Urological conditions
- Constipation
- Head / neck swellings
- Intussusception
- Abscess
 - In growing toenail

In terms of general experience it is expected that trainees would have gained exposure to the following procedures and to be able to perform those marked (*) under direct supervision.

- Elective Procedures

- Inguinal hernia
- (not neo-natal)
 - Orchidopexy
 - Circumcision*
 - Lymph node biopsy*
 - Abdominal wall herniae
 - Insertion of CV lines
 - Management of in growing toenails*
 - EUA rectum*
 - Manual evacuation*
 - Open rectal biopsy
 - Excision of skin lesions*
- Emergency Procedures
 - Appendicectomy
 - Incision and drainage of abscess*
 - Pyloromyotomy
 - Operation for testicular torsion*
 - Insertion of pleural drain*
 - Insertion of suprapubic catheter*
 - Reduction of intussusception

PART –III MS PAEDIATRIC SURGERYClinical ComponentAdvanced Professional Education in Paediatric Surgery

The aim of this stage is to allow the trainee to continue to develop the advanced skills knowledge and attitude required to practise as consultant Paediatric Surgeon in Pakistan and Abroad.

Trainee will build on the basic skills and competences achieved in the initial stage of the programme, gaining exposure to the more specialised areas of practice.

The goals as outlined in initial stages remain pertinent, as it is expected that the trainees will continue to build on their clinical experience and move beyond competent practice to the level of an advanced practitioner, in many of the areas.

The different sections will contain a mixture of information on relevant conditions, symptom patterns and associated surgical operations. This is in an attempt to represent the variety of clinical practice. Overall these goals outlined are simply guides to progress and should be used by trainees, trainers and Programme Directors to help plan rotational placements to ensure a full breadth; of training.

The difference surgical sections are:

- Emergency surgery
- Gastrointestinal surgery
- Neonatal surgery
- Urology
- Thoracic surgery
- Orthopaedic Surgery
- Neurosurgery
- Surgical Oncology
- Surgical Endocrinology
- Research and Audit
- Teaching and Training

By the end of the final stage of training trainees including those who are following an academic pathway will have:

- Achieved the level of an advanced practitioner in the management of the common surgical problems of childhood
- Acquired the skills to practice with integrity, respect and compassion
- Gained sufficient theoretical knowledge and practical experience to be able to enter for the examination in paediatric surgery as set by the University of Health Sciences in Paediatric Surgery.
- Increasing exposure to the more specialised areas of paediatric surgery to include clinical presentation, operative and non-operative management of cases within the different areas.
- Competence in further range of operations common to paediatric practice
- Developed skills and experience in areas of more specialised practice – with a view to developing a sub-specialty interest if appropriate.
- Achieved the level of advanced practitioner in operations common to Paediatric practice, and be developing competence in procedures appropriate to sub-specialty training.

The operative skills outlined here are those relevant to this stage of surgical training. Many are related to the conditions outlined in the specialty modules.

Again the curriculum is there to act as a guide to a minimum level of competence to be achieved by the end of 4th year. The operations detailed here are those it is reasonable to expect the trainee to be able to perform either independently or with consultant assistance available but not necessarily at the operating table.

Although this list is not exhaustive it gives an indication of those procedures that it is reasonable to expect a trainee by the end of 4th year to have been exposed to.

Key to competency levels in clinical skills:

1. Observer status. 1
2. Assistant status. 2
3. Performed under supervision. 3
4. Performed independently. 4

A candidate is expected to attain the laid down level of competence for the following procedures by the end of each year as given below:

II. Procedures

A. General surgical procedures

	Level of competence			
	2 nd year	3 rd year	4 th year	Minimum number
Excision of superficial lump	4	4	4	10
Biopsy of lymph node	4	4	4	10
Drainage of deep seated abscess	3	4	4	10
Polypectomy	3	4	4	10
Skin grafting	2	3	4	10
Trauma and fractures	2	3	4	20
Diseases and malformation of the bones and joints	2	3	4	10
Performing endoscopic examination ---Sigmoidoscopy ---Cystoscopy ----Urethroscopy	2	3	4	10 10 5

B. Abdomen**Level of competence**

	2 nd year	3 rd year	4 th year	Minimum number
Gastrostomy	2	3	4	5
Ileostomy & Colostomy	3	4	4	10
Colostomy and closure of colostomy	2	3	4	10
Ramstedt's operation	2	3	4	7
Exploratory laparotomy	2	3	4	10
Bowel resection, anastomosis, by-pass procedure	2	3	4	10
Operative manual reduction for intussusception	2	3	4	5
Appendicectomy	3	4	4	10
Operations for anus				
- anoplasty	3	4	4	10
- pull through	1	2	3	5
Excision mass and fistula of the umbilicus	2	3	4	5
Reduction and fixation of rectal prolapse	2	3	4	10
Herniotomy/herniorrhaphy	3	4	4	15
Splenectomy	2	3	3	4
Operations for Hirschsprung's disease				
- rectal biopsy	3	4	4	10
- pull through	1	2	3	10
Excision of retro peritoneal mass and tumour	2	3	3	5
Repair of omphalocele and gastroschisis	1	2	3	5
Reconstruction of biliary tract	1	2	3	
- Biliary atresia				5
- Choledochal cyst				5
Cholecystectomy	1	2	3	3
Reconstruction of oesophagus	1	2	2	4
Oesophageal dilatation	1	2	3	5
Heller's operation	1	2	3	2

C. Thorax

Level of competence

	2 nd year	3 rd year	4 th year	Minimum number
Repair of diaphragmatic hernia	2	3	4	5
Repair of Oesophageal atresia+/-Fistula	1	2	3	5
Intercostal drainage	4	4	4	15
Exploratory thoracotomy and pulmonary resection	1	2	3	5
Excision of mediastinal tumour	1	2	3	3
Decortication	1	2	3	5
Chest wall anomalies	1	2	3	3
Pectus excavatum				
Pectus carinatum				
Colonic interposition/ gastric pullup	1	2	3	4

D. Head, neck and face

Level of competence

	2 nd year	3 rd year	4 th year	Minimum number
Pre-auricular sinus and cyst	2	3	4	2
Cervical lymphadenopathy	3	4	4	10
Cystic hygroma	2	2	3	5
Diseases of thyroid and parathyroid	1	2	2	3
Torticollis	2	3	4	3
Repair of cleft lip and palate	2	3	4	10
Repair of nose and ear deformities	2	2	3	5
Tracheostomy	3	4	4	4

E. Oncology

Level of competence

	2 nd year	3 rd year	4 th year	Minimum number
Wilms tumor	2	2	3	5
Neuroblastoma	2	2	3	5
Hepatoblastoma	1	2	2	2
Teratomas	2	3	3	5
Abdominal & sacrococcygeal				
Soft tissue tumors	2	3	4	2
Osteosarcoma	1	2	3	5
Adrenal tumors benign/malignant	1	2	3	2

F. Genitourinary system

Level of competence

	2 nd year	3 rd year	4 th year	Minimum number
Nephrectomy/nephrostomy/ nephrolithotomy	2	3	3	5
Pyeloplasty	2	3	3	3
Cystostomy/ cystolithotomy	3	4	4	5
Orchiopexy	2	3	4	10
Circumcision	3	4	4	10
Repair of hypospadias	2	3	3	10
Repair of epispadias	2	3	4	3
Vesicostomy	3	4	4	5
Reimplantation of ureters	1	2	3	2
P.U. Valves	1	2	3	4
Bladder extrophy closure	1	2	2	5
Intersex reconstruction	1	2	2	5
Urinary Diversion and Undiversion	1	2	2	3

G. CNS

Level of competence

	2 nd year	3 rd year	4 th year	Minimum number
Myelomeningocele	2	3	4	5
Hydrocephalus	1	2	3	5
Head injury	2	3	3	5

H. Orthopedic

Level of competence

	2 nd year	3 rd year	4 th year	Minimum number
Plastering technique	3	4	4	10
Management of Club Foot	2	3	4	10

ROTATIONS:

2nd Year; Two months in paediatric medicine & two months in pathology rotations are mandatory.

3rd, 4th & 5th Years;

For 3 months in any 3 specialty of pediatric surgery.

1. Paediatric/ Adult Orthopedic Surgery
2. Paediatric/Adult Urology
3. Paediatric/Adult Neuro Surgery
4. Paediatric/Adult Plastic Surgery

Part-III

Thesis Component

(Fifth year of MS Paediatric Surgery Programme)

RESEARCH/ THESIS WRITING

Total of one year will be allocated for work on a research project with thesis writing. Project must be completed and thesis be submitted before the end of training. Research can be done as one block in 5th year of training or it can be stretched over five years of training in the form of regular periodic rotations during the course as long as total research time is equivalent to one calendar year.

Research Experience

The active research component program must ensure meaningful, supervised research experience with appropriate protected time for each resident while maintaining the essential clinical experience. Recent productivity by the program faculty and by the residents will be required, including publications in peer-reviewed journals. Residents must learn the design and interpretation of research studies, responsible use of informed consent, and research methodology and interpretation of data. The program must provide instruction in the critical assessment of new therapies and of the surgical literature. Residents should be advised and supervised by qualified staff members in the conduct of research.

Clinical Research

Each resident will participate in at least one clinical research study to become familiar with:

1. Research design
2. Research involving human subjects including informed consent and operations of the Institutional Review Board and ethics of human experimentation
3. Data collection and data analysis
4. Research ethics and honesty
5. Peer review process

This usually is done during the consultation and outpatient clinic rotations.

Case Studies or Literature Reviews

Each resident will write, and submit for publication in a peer-reviewed journal, a case study or literature review on a topic of his/her choice.

Laboratory Research

Bench Research

Participation in laboratory research is at the option of the resident and may be arranged through any faculty member of the Division. When appropriate, the research may be done at other institutions.

Research involving animals

Each resident participating in research involving animals is required to:

1. Become familiar with the pertinent Rules and Regulations of the University of Health Sciences Lahore i.e. those relating to "Health and Medical Surveillance Program for Laboratory Animal Care Personnel" and "Care and Use of Vertebrate Animals as Subjects in Research and Teaching"
2. Read the "Guide for the Care and Use of Laboratory Animals"
3. View the videotape of the symposium on Humane Animal Care

Research involving Radioactivity

Each resident participating in research involving radioactive materials is required to

1. Attend a Radiation Review session
2. Work with an Authorized User and receive appropriate instruction from him/her.

METHODS OF INSTRUCTION/COURSE CONDUCTION

As a policy, active participation of students at all levels will be encouraged.

Following teaching modalities will be employed:

1. Lectures
2. Seminar Presentation and Journal Club Presentations
3. Group Discussions
4. Grand Rounds
5. Clinico-pathological Conferences
6. SEQ as assignments on the content areas
7. Skill teaching in ICU, Operation Theatres, emergency and ward settings
8. Attend genetic clinics and rounds for at least one month.
9. Attend sessions of genetic counseling
10. Self study, assignments and use of internet
11. Bedside teaching rounds in ward
12. OPD & Follow up clinics
13. Long and short case presentations

In addition to the conventional teaching methodologies interactive strategies like conferences will also be introduced to improve both communication and clinical skills in the upcoming consultants. Conferences must be conducted regularly as scheduled and attended by all available faculty and residents. Residents must actively request autopsies and participate in formal review of gross and microscopic pathological material from patients who have been under their care. It is essential that residents participate in planning and in conducting conferences.

1. Clinical Case Conference

Each resident will be responsible for at least one clinical case conference each month. The cases discussed may be those seen on either the consultation or clinic service or during rotations in specialty areas. The resident, with the advice of the Attending Surgeon on the Consultation Service, will prepare and present the case(s) and review the relevant literature.

2. Monthly Student Meetings

Each affiliated medical college approved to conduct training for MS Paediatric Surgery will provide a room for student meetings/discussions such as:

- a. Journal Club Meeting
- b. Core Curriculum Meetings
- c. Skill Development

a. Journal Club Meeting

A resident will be assigned to present, in depth, a research article or topic of his/her choice of actual or potential broad interest and/or application. Two hours per month should be allocated to discussion of any current articles or topics introduced by any participant. Faculty or outside researchers will be invited to present outlines or results of current research activities. The article should be critically evaluated and its applicable results should be highlighted, which can be incorporated in clinical practice. Record of all such articles should be maintained in the relevant department.

b. Core Curriculum Meetings

All the core topics of Paediatric Surgery should be thoroughly discussed during these sessions. The duration of each session should be at least two hours once a month. It should be chaired by the chief resident (elected by the residents of the relevant discipline). Each resident should be given an opportunity to brainstorm all topics included in the course and to generate new ideas regarding the improvement of the course structure

c. Skill Development

Two hours twice a month should be assigned for learning and practicing clinical skills.

List of skills to be learnt during these sessions is as follows:

1. Residents must develop a comprehensive understanding of the indications, contraindications, limitations, complications, techniques, and interpretation of results of those technical procedures integral to the discipline (mentioned in the Log Book).
2. Residents must acquire knowledge of and skill in educating patients about the technique, rationale and ramifications of procedures and in obtaining procedure-specific informed consent. Faculty supervision of residents in their performance is required, and each resident's experience in such procedures must be documented by the program director.
3. Residents must have instruction in the evaluation of medical literature, clinical epidemiology, clinical study design, relative and absolute risks of disease, medical statistics and medical decision-making.
4. Training must include cultural, social, family, behavioral and economic issues, such as confidentiality of information, indications for life support systems, and allocation of limited resources.
5. Residents must be taught the social and economic impact of their decisions on patients, the primary care physician and society. This can be achieved by attending the bioethics lectures and becoming

familiar with Project Professionalism Manual Residents should have instruction and experience with patient counseling skills and community education.

6. This training should emphasize effective communication techniques for diverse populations, as well as organizational resources useful for patient and community education.
7. Residents should have experience in the performance of Paediatric Surgery related clinical laboratory and radionuclide studies and basic laboratory techniques, including quality control, quality assurance and proficiency standards
8. Each resident will manage the essential paediatric surgical cases and observe and participate in each of the procedures, preferably done on patients under supervision initially and then independently (pg.29-34)

3. Annual Grand Meeting

Once a year all residents enrolled for MD Paediatric Surgery should be invited to the annual meeting at UHS Lahore.

One full day will be allocated to this event. All the chief residents from affiliated institutes will present their annual reports. Issues and concerns related to their relevant courses will be discussed. Feedback should be collected and suggestions should be sought in order to involve residents in decision making.

The research work done by residents and their literary work may be displayed.

In the evening an informal gathering and dinner can be arranged. This will help in creating a sense of belonging and ownership among students and the faculty.

Curriculum/Statutes & Regulations-MS Paediatric Surgery
LOG BOOK

The residents must maintain a log book and get it signed regularly by the supervisor. A complete and duly certified log book should be part of the requirement to sit for MS examination. Log book should include adequate number of diagnostic and therapeutic procedures observed and performed the indications for the procedure, any complications and the interpretation of the results, routine and emergency management of patients, case presentations in CPCs, journal club meetings and literature review.

Proposed Format of Log Book is as follows:

Candidate's Name: _____

Roll No. _____

The above mentioned procedures shall be entered in the log book as per format (pg.29-34):

Procedures Performed

Sr.#	Date	Name of Patient, Age, Sex & Admission No.	Diagnosis	Procedure Performed	Supervisor's Signature
1					
2					
3					
4					

Emergencies Handled

Sr. #	Date	Name of Patient, Age, Sex & Admission No.	Diagnosis	Procedure/ Management	Supervisor's Signature
1					
2					
3					
4					

Cases Presented

Sr.#	Date	Name of Patient, Age, Sex & Admission No.	Case Presented	Supervisor's Signature
1				
2				
3				
4				

Seminar/Journal Club Presentation

Sr.#	Date	Topic	Supervisor's signature
1			
2			
3			
4			

Evaluation Record

(Excellent, Good, Adequate, Inadequate, Poor)

At the end of the rotation, each faculty member will provide an evaluation of the clinical performance of the fellow.

Sr.#	Date	Method of Evaluation (Oral, Practical, Theory)	Rating	Supervisor's Signature
1				
2				
3				
4				

EVALUATION & ASSESSMENT STRATEGIES

Assessment

It will consist of action and professional growth oriented *student-centered integrated assessment* with an additional component of *informal internal assessment, formative assessment* and measurement-based *summative assessment*.

Student-Centered Integrated Assessment

It views students as decision-makers in need of information about their own performance. Integrated Assessment is meant to give students responsibility for deciding what to evaluate, as well as how to evaluate it, encourages students to 'own' the evaluation and to use it as a basis for self-improvement. Therefore, it tends to be growth-oriented, student-controlled, collaborative, dynamic, contextualized, informal, flexible and action-oriented.

In the proposed curriculum, it will be based on:

- Self Assessment by the student
- Peer Assessment
- Informal Internal Assessment by the Faculty

Self Assessment by the Student

Each student will be provided with a pre-designed self-assessment form to evaluate his/her level of comfort and competency in dealing with different relevant clinical situations. It will be the responsibility of the student to correctly identify his/her areas of weakness and to take appropriate measures to address those weaknesses.

Peer Assessment

The students will also be expected to evaluate their peers after the monthly small group meeting. These should be followed by a constructive feedback according to the prescribed guidelines and should be non-judgmental in nature. This will enable students to become good mentors in future.

Informal Internal Assessment by the Faculty

There will be no formal allocation of marks for the component of Internal Assessment so that students are willing to confront their weaknesses rather than hiding them from their instructors.

It will include:

- a. Punctuality
- b. Ward work
- c. Monthly assessment (written tests to indicate particular areas of weaknesses)
- d. Participation in interactive sessions

Formative Assessment

Will help to improve the existing instructional methods and the curriculum in use

Feedback to the faculty by the students:

After every three months students will be providing a written feedback regarding their course components and teaching methods. This will help to identify strengths and weaknesses of the relevant course, faculty members and to ascertain areas for further improvement.

Summative Assessment

It will be carried out at the end of the programme to empirically evaluate cognitive, psychomotor and affective domains in order to award diplomas for successful completion of courses.

MS Paediatric Surgery Examinations

Part I MS Paediatric Surgery **Total Marks: 200**

All candidates admitted in MS Paediatric Surgery course shall appear in Part I examination at the end of first calendar year.

Components of Part-I Examination:

Paper-I, 100 MCQs (single best, having one mark each)	100 Marks
Paper-II, 10 SEQs (having 10 marks each)	100 Marks

Topics included in papers:

	Paper-I	Paper-II
1. Anatomy	(20 MCQs)	(2 SEQs)
2. Physiology	(20 MCQs)	(2 SEQS)
3. Pathology	(20 MCQs)	(2 SEQS)
4. Biochemistry	(15 MCQs)	(1 SEQS)
5. Pharmacology	(15 MCQs)	(1 SEQ)
6. Behavioural Sciences	(05 MCQs)	(1 SEQ)
7. Biostatistics & Research Methodology	(05 MCQs)	(1 SEQ)

Part II- MS Paediatric Surgery **Total Marks: 430**

All candidates admitted in MS Paediatric Surgery course shall appear in Part II examination at the end of second calendar year.

There shall be two written papers of 100 marks each, Oral & practical/ clinical examination of 150 marks and log book assessment of 80 marks.

Topics included in papers 1 & 2:

Basic Principles of Surgery

Components of Part II Examination

Theory:

Paper 1:	100 Marks	3 Hours
10 SEQs (No Choice; 05 marks each)	50 Marks	
50 MCQs	50 Marks	
Paper 2:	100 Marks	3 Hours
10 SEQs (No Choice; 05 marks each)	50 Marks	
50 MCQs	50 Marks	

Only those candidates, who pass in theory papers, will be eligible to appear in the Oral & Practical/Clinical Examination.

Oral & Practical/ Clinical Examination shall be held in clinical techniques relevant to General Surgery.

OSCE

50 Marks

10 stations each carrying 05 marks of 10 minutes duration; each evaluating performance based assessment with five of them interactive

Clinical

100 Marks

Four short cases (each 15 marks)

60 Marks

One long case:

40 Marks

Log Book

80 Marks

Part III MS Paediatric Surgery**Total Marks: 920**

All candidates admitted in MS Paediatric Surgery course shall appear in Part-III examination at the end of structured training programme (end of 5th calendar year and after clearing Part I & II examinations).

There shall be two written papers of 150 marks each, Oral & Practical/ Clinical examination of 300 marks, log book assessment of 120 marks and thesis examination of 200 marks.

Part III MS Paediatric Surgery**Clinical Examination****Total Marks: 720****Topics included in paper 1**

- | | |
|---|-----------|
| 1. Neonatal Surgery | (15 MCQs) |
| 2. Emergency Surgery | (15 MCQs) |
| 3. Traumatology | (10 MCQs) |
| 4. Anaesthesiologic techniques | (10MCQs) |
| 5. Central and peripheral nervous systems | (10 MCQs) |
| 6. Head and neck surgery | (15 MCQs) |

Topics included in paper 2

- | | |
|----------------------------------|-----------|
| 1. Gastrointestinal surgery | (20 MCQs) |
| 2. Thoracic surgery | (15 MCQs) |
| 3. Genitourinary surgery | (15 MCQs) |
| 4. Endoscopic Surgery | (15 MCQs) |
| 5. Organ transplantation | (05 MCQs) |
| 6. Paediatric Tumour Surgery etc | (05 MCQs) |

Components of Part III Clinical Examination**Theory**

Paper I	150 Marks	3 Hours
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- | | |
|---------------------|----------|
| 15 SEQs (No Choice) | 75 Marks |
| 75 MCQs | 75 Marks |

Paper II	150 Marks	3 Hours
-----------------	------------------	----------------

- | | |
|---------------------|----------|
| 15 SEQs (No Choice) | 75 Marks |
| 75 MCQs | 75 Marks |

Only those candidates, who pass in theory papers, will be eligible to appear in the Oral & Practical/ Clinical Examination.

OSCE

100 Marks

10 stations each carrying 10 marks of 10 minutes duration; each evaluating performance based assessment with five of them interactive

Clinical

200 Marks

Four short cases (each 25 marks)

100 Marks

One long case:

100 Marks

Log Book

120 Marks

Part III MS Paediatric Surgery

Thesis Examination

Total Marks: 200

All candidates admitted in MS Paediatric Surgery courses shall appear in Part-III (thesis examination) at the end of 5th year of the MS programme and not later than 8th calendar year of enrolment. The examination shall include thesis evaluation with defense.

Curriculum/Statutes & Regulations-MS Paediatric Surgery

RECOMMENDED BOOKS

- Grays Anatomy. 39th Ed. 2005. Standring S.
- Textbook of Medical Physiology 11th Ed. 2006 Guyton
- Harper's Biochemistry 25th Ed.
- Katzung's Basic and Clinical Pharmacology 9th Ed 2004
- Pathologic Basis of Disease. Robbins & Cotran. 7th Ed 2005
- Medical Embryology Langman's 9th Ed. 2004
- Pediatric Surgery 6th Edition. Grosfeld, O'Neill, Coran, Fonkalsrud. 2006
- Newborn Surgery 2nd Edition. P Puri. 2003
- Operative Surgery- Paediatric Surgery. Rob & Smith
- Pediatric Surgery. Puri P, Höllwarth. 2006
- Pediatric Surgery 4rd Edition. Ashcraft K
- Principles and Practice of Pediatric Surgery. Oldham KT
- Paediatric Surgery 2nd Ed. Burge DM