Gastroenterology

Residency Training Program
Leading to the degree of

MD Gastroenterology

SHAHEED ZULFIQAR ALI BHUTTO MEDICAL UNIVERSITY
ISLAMABAD

CURRICULUM

MD Gastroenterology

Course Title:

MD Gastroenterology

ROAD MAP OF MD Gastroenterology (A Brief Summary)

GENERAL INFORMATION AND PROGRAM GOALS:

University offers a 06 years MD program in the field of Gastroenterology and Hepatology. This program intends to attract candidates that have an interest in Gastrointestinal and Liver diseases, pathologies, Diagnostic and Therapeutic endoscopic interventions and related research methodologies. The curriculum focuses on formal teaching & training as well as practical fieldwork.

This MD program aims to train and equip the post-graduate students with all the necessary knowledge & skills, at par with international standards, required to be a leader in the field of Gastroenterology and Hepatology. The candidates, upon graduation, will be expected to demonstrate a high level of expertise in the field of Gastroenterology and Hepatology with a more specific focus on community oriented diseases

COURSE DESCRIPTION:

Structure of the Course

The course would consists of two parts:

Part I:

First 2 years will be spent in rotation in General medicine and Allied-Sub-Specialties i-e Cardiology, Pulmonology and Nephrology. There is also 2 months optional Rotation in Transplant Medicine. Candidate shall undertake clinical training in fundamental concepts of Internal Medicine.

MID Term Assessment

MTA is structured for the 1st and 2nd calendar years. The candidate shall under take clinical training in fundamental concepts of Internal Medicine. At the end of 2nd year, the examination shall be held in fundamental concepts of Internal Medicine.

Part II:

The candidate shall undergo training to achieve educational objectives of MD Gastroenterology (knowledge & skills) along with rotation in relevant fields.

A complete road map for postgraduate MS/MD/MDS can be seen on University website at http://www.szabmu.edu.pk/content/downloads/road-map-for-

Eligibility Criteria for MD:

1. Candidate must possess MBBS or equivalent degree registered by PMC .
2. Must possess one year house job from a PMC recognized Institution
3. Permanent valid registration with PMC
4. Declared successful in MD/MS/MDS Part-I conducted by SZAB Medical University.
5. In case of foreign candidate, valid registration with Medical Council of their country of origin must be produced.

3. Duration of Course

The duration of MD Gastroenterology course shall be 6 years. The First two years will be spent in rotation in General Medicine and Allied Medical Sub-Specialties.The next FOUR years will be spent in the Department of Gastroenterology with structured training under the guidance of an approved supervisor.

4. Entrance Examination:

All candidates shall undertake an entrance exam which will include theoretical as well as a clinical evaluation of each candidate. It will include Basic Medical Sciences and Biostatistics & Research Methodology. Successful candidates will be interviewed and evaluated. The details of the entrance examinations are under the headings of Admissions Criteria.

Admission Criteria

1. For admission in MD Gastroenterology course, the candidate shall be required to have:

   - MBBS degree
   - Completed one year House Job
   - Registration with PMDC.
   - Passed Entry Test i-e MD Part -1 conducted by the University. This would include Basic Medical Sciences including Anatomy, Physiology, Biochemistry, and Pathology.

   Interview
   - Should have up to the mark credentials as per SZABMU rules. The number of attempts in each professional, any gold medals or distinctions would be considered and credited for.

2. Exemptions: A candidate holding FCPS/MRCP/Diplomat American Board/equivalent qualification in Internal Medicine shall be exempted from Part-I Examinations and shall be directly admitted to four years structured speciality training.

Their training duration would be four years. During the four years duration of the course, candidate will spend sufficient time for research.

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 classrooms (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)

- 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 MD programme in Gastroenterology is to train residents to acquire the competency of a specialist in the field of Gastroenterology so that they should possess sound concepts and core knowledge of Gastrointestinal, Hepatobiliary, Pancreatic system and Nutrition. They should be well versed with the principals of clinical practice of Gastroenterology and Hepatology and should be competent enough to perform all related endoscopic procedures and become good teachers, researchers and clinicians in their specialty after completion of their training.

GENERAL OBJECTIVES

- This training should enable a physician to:
- Acquire and apply relevant knowledge to clinical practice
- Maintain currency of knowledge
- Apply scientific knowledge in practice appropriate to patients need and context
- Critically evaluate new technology and get familiar with its use.

- Safely and effectively performs appropriate clinical skills & procedures
- Consistently demonstrate sound clinical skills
- Demonstrate procedural knowledge and technical skills 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 carries 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
- 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 Gastroenterological system and differentiate those amenable to medical treatment
- 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, complications and risks associated, 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 patient management
- Initiate the resolution of misunderstandings or disputes
- Modify communication to accommodate cultural and linguistic sensitivities of the patien
- Recognize the value of knowledge and research and its application to clinical practice:

- Assume responsibility for self-directed learning
- Critically appraise new trends in Gastroenterology
- Facilitate the learning of others
- Appreciate ethical issues associated with Gastroenterology:
- 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.
- Ensure professionalism by:
- Employing a critically reflective approach to Gastroenterology
- 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

REGULATIONS

1. Scheme of the Course
2. A summary of six years course in MD Gastroenterology

COMPONENT	COURSE STRUCTURE	EXAMINATION
Entrance Examination **A .currently in practice** • **MD Part-1** • **Interview** • **Review of previous academic record**	**This includes** **MCQS FROM BASIC SCENCES;** **Anatomy, Physiology, Pathology, biochemistry, Pharmacology,** **MCQs from Internal Medicine and Gastroenterology** **INTERVIEW will comprise questions about candidates experience, his inclinations , commitment and his knowledge of Basic Sciences and Clinical Medicine especially about Gastroenterology**	**At the beginning of the course**
Part 1; MID TERM ASSESSMENT (MTA) **The PG Resident will spend 1 year of his/her training in internal Medicine and different sub-specialties including** **Cardiology, Nephrology,** **Pulmonology /Transplant Medicine**	**THIS EXAMINATION COMPRISES TWO MCQS** **PAPER 1;** **MCQS ABOUT INTERNAL MEDICINE** **PAPER 2 ;** **MCQS ABOUT GASTROENTEROLOGY** The Resident will be rotated in each specialty from 2-3 months to make them familiarize and enable them to manage major and important clinical disorders.	**The candidate will have to sit and pass this exam during the first 3 years of his training.** **MTA will be conducted twice a year.** **Any candidates who fail to pass the MTA in three years will not be allowed to continue his program.**
PART 2; FINAL EXAMINATION **THEORY;** **Paper 1; Gastrointestinal and Pancreatic Diseases 100 Marks** **Paper 2 ; Liver and Biliary Diseases 100 Marks** **Each paper will be comprised of 100 MCQs/ Clinical Scenarios (Diagnosis , investigation and Management)** **OSCE/TOACS and VIVA VOICAE** **10-12 stations each carrying 10 marks of 5 minutes duration** **This will evaluate performance based assessment.**	Four years specialty training in Gastroenterology (Adult and Pediatrics) Hepatology, Nutrition and basic and Advanced GI Endoscopy. This will cover the whole curriculum and train the residents in specialty related procedures and achieve endoscopic skills so that they can undertake responsibilities of competent consultants in the future.	At the end of training.

VIVA ; **This will be comprised of 5 components each carrying 10 marks.** **CLINICAL EXAMINATION ;** **Four short cases 25 marks each** **One long Case 100 marks** **Log book** **Thesis & Research/Publications 100 marks**	Thesis writing must be completed and submitted before the end of training. This will be the major research component of MD program and will be on one topic/clinical problem. The resident is supposed to develop and inculcate research capabilities and should at least produce 3 papers during his 6 year training	

2. Curriculum

Given at the end

3. Examinations

Entrance Examination

1. All candidates admitted in MD Gastroenterology courses shall appear in Entrance examination at the beginning of the course.
2. The examination shall be held on twice a year basis.
3. The Subject matter to be examined shall be Basic Sciences relevant to Gastroenterological and Hepatobiliary system including applied and relevant Anatomy, Physiology, Biochemistry, Pathology, Pharmacology and principles of Clinical Medicine and Gastroenterology.
4. The examination shall have two components:

- NTS Examination including basic sciences and internal Medicine/ Gastroenterology.
- Interview (previous work experience and skills and knowledge of basic and clinical importance)

5. To be eligible to appear in Entrance examination the candidate must submit;

   i. MBBS degree

   ii. Valid PMDC registration certificate

   iii. Completed one year house Job testimonial

   iv. Any additional experience in Internal Medicine or allied medical sub specialties will be credited.

6. To be declared successful in NTS examination the candidate must secure 60% marks.

7. Any gold medal or distinction during the professional (MBBS) exams will carry additional marks and number of attempts to pass a professional exam will be likewise a discredit.

MID TERM ASSESSMENT (MTA)

1. All candidates admitted in MD Gastroenterology course shall appear in Mid Term Assessment Exam (MTA)/Part-I examination at the end of 2 years rotation program.
2. The rotation will include 6 months rotation in Internal Medicine and 2-3 rotation in Accident & Emergency, Cardiology, Pulmonology/Oncology , Nephrology/Neurology, Radiology, Pathology and Pediatrics.
3. The examination shall be held on biannual basis.
4. The candidate who fails to pass the examination within 3 years of entrance into the program will not be allowed to continue.

MTA Examination consists of the following components:

ASSESSMENT Written Paper:100 One Best MCQs (100 Marks)
Part-A: 50% MCQs from General Principles
Part-B: 50% MCQs from Specialty Oriented

Pass Marks 60% Aggregate and Not Less than 55% in any Part(A Or B)

Assessment of Clinical & Technical Skills (ACTS/OSCE) 100 Marks 8-12 Stations
Pass Marks 60% Total Marks 200

Topics included in paper 1

Principles of internal medicine including;

- Pulmonary Medicine
- Allergy and Immunology
- Cardiovascular Illness
- Diabetes & Endocrinology
- Infectious Disease
- Neurology
- Nephrology
- Hematology
- Oncology

Topics included in paper 2

Principles of internal medicine including;

- Gastroenterology
- Hepatology
- Nutrition

4. To be eligible to appear in MID Term examination the candidate must submit;

a. Duly filled, prescribed Admission Form forwarded by the Principal/Head of the Institution, that the

candidate has attended at least 75% of the lectures, seminars, practical/clinical demonstrations;

B. A certificate of having completed 2 years rotation training program in Internal Medicine and above mentioned subspecialties

a. Examination fee as prescribed by the University.
b. Approved Synopsis of the Dissertation.
c. A certificate that the candidate has paid annual University fee.

Part-II Examination

1. All candidates admitted in MD Gastroenterology course shall appear in Part-II (clinical) examination at the end of structured training programme (end of 6th calendar year) having passed the MTA examinations. However, a candidate holding FCPS / MRCP / Diplomate American Board/equivalent qualification in Internal Medicine shall be exempted from MTA Examinations and shall be directly admitted to four years special training program after the completion of which he/she will be eligible to sit the Part-II Examinations.
2. The examination shall be held on biannual basis.
3. 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 Head of the Department, 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 MTA examinations;

v. Examination fee as prescribed by the University.

4. The Part-II clinical examination shall have the following components:

There shall be two written papers of 100 marks each, Oral & Practical/ Clinical examination, log book assessment and thesis examination.

Final Postgraduate examination of MD comprises of following three (03) main components.

1. Theory Examination
2. OSCE & Clinical Examination
3. Defence of Thesis

Paper 1	MCQs	100	3 Hours	75% Aggregate and not less than 70 % in any Paper.
Paper 2	MCQs	100	3 Hours	

Topics included in paper 1

- Upper GI Disorders
- Lower GI Disorders
- Pediatric and Geriatric

Gastroenterology

- Pancreatic Disorders

Topics included in paper 2

- Hepatology including Biliary Disorders
- GI Radiology and Other diagnostic modalities
- Gastrointestinal Oncology
- Parenteral and Enteral Nutrition

The candidates who pass in theory papers, will be eligible to appear in the clinical & viva voce.

OSCE & Clinical Examinations • Eligibility A candidate shall be eligible for the OSCE & Clinical Examination after passing theory examination. He can avail three consecutive clinical examinations after passing a final theory examination of his own discipline. A candidate availing/missed all the three consecutive chances of clinical examination after passing a theory examination, he shall appear again in the theory examination.

OSCE	8-12 Stations	100	5 to 6 min per Station	60 % in Aggregate and not less than 55 % in Any Paper
Long Case		100	50 Minutes	
Short Cases		100	40 (10 Minutes per Station)	

OSCE 100 Marks

10 stations each carrying 10 marks of 5 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
Thesis Examination with Defence **100 Marks**

6. Only those candidates, who pass in theory papers, will be eligible to appear in the Oral & Practical/ Clinical Examination.
7. The candidates, who have passed written examination but failed in Oral & Practical/ Clinical Examination, will re-appear only in Oral & Practical / Clinical examination.
8. 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.
9. The candidate with 80% or above marks shall be deemed to have passed with distinction.
10. Log Book/Assignments: Throughout the length of the course, the performance of the candidate shall be recorded on the Log Book.
11. The Supervisor shall certify every year that the Log Book is being maintained and signed regularly.
12. The Log Book will be developed & approved by the Advanced Studies & Research Board.
13. An internal evaluation will be maintained by the head of Department and to be successful in final MD examination the candidate have adequate/pass marks in internal evaluation.
14. The performance of the candidate shall be evaluated on annual basis, e.g., 40 marks for each year in six years MD Gastroenterology course. The total marks for Log Book shall be 100.The log book shall reflect the performance of the candidate on following parameters:
15. Year wise record of the competence of skills.
16. Year wise record of the assignments.
17. Year wise record of the evaluation regarding attitude & behaviour
18. Year wise record of journal club / lectures / presentations / clinico-pathologic conferences attended & / or made by the candidate.

19. The candidate should produce at least 3 research papers during his/her training program.

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 MD examination. Log book should include adequate number of diagnostic and therapeutic procedures(GI Endoscopies) 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: ----------

Supervisor ----------

Roll No. ----------

The procedures shall be entered in the log book as per format

Residents should become proficient in performing the related procedures (pg.12,13,46,47). After observing the technique, they will be observed while performing the procedure and, when deemed competent by the supervising physician, will perform it independently. They will be responsible for obtaining informed consent, performing the procedure, reviewing the results with the pathologist and the attending physician and informing the patient and, where appropriate, the referring physician of the results.

Procedures Performed

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

Gastroenterological Emergencies Handled

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

Case 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	Name of Patient, Age, Sex & Admission No.	Diagnosis	Procedure Performed	Supervisor's Signature

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

4. Submission / Evaluation of Synopsis

1. The candidates shall prepare their synopsis as per guidelines provided by the Advanced Studies & Research Board, available on SZABMU website and approved by the hospital/University Ethical Committee.
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 2nd year of MD 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 Head of the Department/Supervisor.

5.Submission of Thesis

1. Thesis shall be submitted by the candidate duly recommended by the Supervisor.
2. The thesis should be produced and submitted in a reasonable time after the acceptance of synopsis. 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.

6.Thesis Examination

1. All candidates admitted in MD course shall appear in Part-II thesis examination at the end of 6th year of their training course.
2. Only those candidates shall be eligible for thesis evaluation who have passed MTA 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 Internal Medicine and related fields 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 date notified by controller of examination. The controller of examination shall make appropriate arrangements for the conduct of theses defence examination in consultation with the supervisor.
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.

7. Award of MD Gastroenterology Degree

After successful completion of the structured courses of MD Gastroenterology and qualifying MTA and Part-II and thesis examinations, the degree with title MD Gastroenterology shall be awarded.

CURRICULUM OUTLINE

1. BASIC AND ALLIED SCIENCES FOR MD GASTROENTEOLOGY:

Student is expected to acquire comprehensive knowledge of Anatomy, Physiology, Pathology (Microbiology), Biochemistry, Pharmacology relevant to the clinical practice appropriate for Gastroenterology

1.Anatomy

- General Organization of the Body
    - Anatomical nomenclature
    - Terms of position
    - Divisions of the body according to the regions and organ systems
    - Detailed Anatomy of the organ systems, their blood supply, nerve supply, lymphatic drainage and important gross relations to other organs
    - Developmental Anatomy and associated common congenital abnormalities
    - Cell biology, cell cycle, cellular differentiation and proliferation
    - Tissues of Body: Light and electron microscopic details, structural basis of function, regeneration and degeneration of the organ systems
    - General Features of Human Development
    - Features of mitotic and meiotic modes of cell division. Genetic consequences of meiotic division
    - Abnormal miototic and meiotic divisions of clinical importance
    - Gametogenesis: origin of germ cells
    - Early Embryonic Development
    - ƒ Cleavage, morula and blastocyst formation and implantation. Formation of the three primary germ layers
    - List of the derivatives of the respective germ layers
    - Period of the Growing Fetus
    - Various stages and salient features of the fetus development
    - Extraembryonic Membranes

- Development, functions and anomalies of yolk sac, amnion, chorion, allantois, umbilical cord and placenta
- Development of the External Body Form
- Shaping of the abdomen and pelvis. Common developmental anomalies associated with this.
- Teratogenesis
- Factors known to be involved in the development of congenital anomalies. Concept of critical periods
-

- Structural and Functional Organization of the Tissues of Body.
  - Classification of tissues and identification of various tissues in routine histological preparations under the light microscope.

- The Epithelial Tissue
  - General structure, functions and classification of epithelia their location in the body.
  - General characters of serous and mucous membranes
  - General structural features of exocrine and endocrine glands
  - The Connective Tissue
  - Cartilage
- Structure of bone marrow.
  - Cell lines seen in haemopoiesis.
  - Factors required for bone growth
- The Muscular Tissue
  - Structural and functional differences between the smooth skeletal and cardiac types of muscle.
  - Fine structure of skeletal and cardiac muscle fibers, and its relationship to the mechanism of contraction
  - Specialized conducting tissue of the heart.
- The Neural Tissue
  - The neuron, morphology of the perikaryon and its processes
  - Coverings of the axons in the peripheral nerves and the central nervous system.
  - Types of neuroglia and their functions
  - Process of myelination in the peripheral nerves and the central nervous system.

- Axon terminals and synapses. Nerve fiber degeneration and regeneration

- Organ of Taste
  - Structure of taste buds and location
  - Gestation receptors, gustatory pathway and its termination
- Gastrointestinal System
  - Development of the gastrointestinal tract and common developmental anomalies e.g. oesophageal fistulae, Meckel's diverticulum, atresias.
  - Rectal and associated urinary bladder anomalies related to partitioning of the cloaca.
  - Rotation of gut, physiological herniation and its withdrawal and related anomalies.
  - Development and partitioning of the coelomic cavity and formation of the diaphragm.
  - Parts, relations, functional correlation with structure, common pattern of blood supply, nerve supply and lymphatic drainage of the mouth, tongue and salivary glands, oesophagus, stomach, small intestine, appendix, colon (including caecum), rectum, anal canal, liver, gallbladder, bile ducts and pancreas.
- Urinary System
  - Development of the urinary system and common developmental anomalies.
  - Morphology, including microscopic structure of the nephron.
  - Relations, common pattern of blood supply, nerve supply and lymphatic drainage of the kidneys, ureters, urinary bladder, urethra and prostate
- Body Cavities
  - Abdominal, thoracic, pelvic cavity
  - A general description of the boundaries, land marks and surface anatomy of the internal organs and dermatomes of the body cavities
  - General disposition, morphology, relations, blood and nerve supply, lymph nodes and areas of drainage of the viscera contained in these cavities
  - Identification of bony outlines on plain X-ray.

Gross and Surface Anatomy

- Organs of the alimentary canal
- Layers of gastrointestinal tract
- Mucosa
- Submucosa
- Muscularis
- Serosa

Structure and functional anatomy of:

- *Oral cavity*
    - Teeth
    - Tongue
    - Taste buds
    - Pharynx
- Buccal glands
- Parotid glands
- Submandibular glands
- Sublingual glands
- *Esophagus*
- Sphincters
- Musculature
- Circulation an innervation
- *Stomach*
- Sphincters
    - Cardiac
    - Pyloric
- Secretions
- Mucus
- Enzymes
- Circulation and innervation
- *Small intestine*
- Divisions
    - Duodenum

    - Jejunum
    - Ileum
    - Mesentery
- Structural modifications
    - Plica circularis
    - Villi
    - Microvilli
- Innervation
- *Large intestine*
- Divisions
    - Cecum
    - Colon
    - Rectum
    - Anal canal
- Muscularis
- Mucosa
- Glands
- Circulation
- *Liver and gall bladder*
- Location and lobes of liver
- Ductular system of gall bladder
- Portal and hepatic venous system.
- Pancreas
- Head, body and tail of pancreas
- Ductal system and secretions

2. Physiology

Cellular organization, structure function correlations and physiological alterations in the endocrine organ systems of body.

Structural and Functional Organization of the Cells of the Body

Concept of cells as the structural, functional and genetic units of the body.

- Composition of protoplasm, division into cytoplasm and nucleus.
- Role of macromolecules in the structural organization of the cell.
- Cell components with their role in cell function.

- Diversity of cell morphology as related to the varied functional demands. Physical activities of the living cells, intracellular movements, cellular locomotion, endocytosis and exocytosis.
- Basic concepts of the principles of transport through cell membrane, membrane potential and action potential.
- The cell cycle and cell division.
- Energy balance, metabolism & nutrition
- Uses of cell and tissue cultures.
- DNA and RNA structure and protein synthesis.

Gastrointestinal function:

- General functions of the gastrointestinal system
    - Motor functions
    - Reservoir function
    - Digestion and absorption
    - Emptying function
- Regulation of gastrointestinal function
- Motility: mastication, swallowing, gastric motility, intestinal motility and gall bladder motility.
- Secretory activity: formation, composition, function and control of salvia, gastric, pancreatic, bile and intestinal secretions.
- Control of secretions
    - Cephalic phase
    - Gastric phase
    - Intestinal phase
    - Interdigestive phase
- GIT hormones controlling activities: Functions of the stomach, pancreas, gall bladder, liver and large intestine.
- Formation and composition of faeces, haustral churning, slow peristalsis, mass peristalsis, mechanism of defecation.
- Circulation of bile. Principles and assessment of liver function tests. Interpretation of data, diagnostic tests.
- Hyperbilirubinaemia and congenital hyperbilirubinaemias.
- Hunger and thirst centers of the brain
- Control of hunger, appetite and its disorders.

Biochemistry

- Membrane biochemistry and signal transduction
- Gene expression and the synthesis of proteins
- Bioenergetics; fuel oxidation and the generation of ATP
- Enzymes and biologic catalysis
- Tissue metabolism

VITAMINS

- Classification, components, sources, absorption and functions (physiological and biochemical role).
- Daily requirements, effects of deficiency and hypervitaminosis.
- Salient morphologic features of diseases related to deficiency or excess of vitamins.

MINERALS

- Sources of calcium, phosphorous, iron, iodine, fluorine, magnesium and manganese.
- Trace elements and their clinical importance.
- Absorption and factors required for it.
- Functions and fate.

METABOLISM

ƒMetabolic rate and basal metabolic rate

ƒ Factors influencing metabolic rate, principles of measurement.

Lipids

ƒClassification of simple, derived and compound lipids.

ƒDietary sources.

ƒDigestion, absorption, utilization and control.

ƒFatty acid oxidation with steps involved.

ƒKetogenesis and its significance.

ƒLipotropic factors and their actions. Lipoproteins, types and importance.

Proteins and Amino Acids

- Classification and dietary sources of proteins.
- Digestion, absorption, utilization and control.

- Fate of amino acids.
- Urea formation with steps involved.
- Functions and effects of deficiency.
- Nucleoproteins:
- Structure and metabolism.
- Pigment Metabolism
- Basic concept of endogenous and exogenous pigments.
- Causes of pigmentation and depigmentation.
- Disorders of pigment metabolism, inherited disorders, acquired disorders from deficiency or excess of vitamins, minerals, fats, carbohydrates, proteins etc.

Balanced Diet

- Requisites of an adequate diet.
- Role of carbohydrates, fats, proteins, minerals, vitamins and water in diet.
- Principles of nutrition as applied to medical problems
- Biotechnology and concepts of molecular biology with special emphasis on use of recombinant DNA techniques in medicine and the molecular biology of cancer

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3. 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
- Drug use in pregnancy and in children
- Autonomic Pharmacology
- Basic concepts of pharmacokinetics and dynamics of:
- Pharmacology of drugs used in GI disorders e.g. antacids, motility drugs, anti H. pylori therapy, drugs controlling other GI secretions, Ulcerative colitis and immunosuppressive drugs.
- Immunopharmacology
- Chemotherapy
- Antibacterial, antimycobacterial, antiviral, antifungal and antiparasitic
- Vitamins and Antioxidants

5. Pathology

Pathological alterations at cellular and structural level along with brief introduction of Basic Microbiology and Haematological pathology as related to medicine.

Cell Injury and adaptation

•Reversible and Irreversible Injury

•Fatty change, Pathologic calcification

•Necrosis and Gangrene

•Atrophy, Hypertrophy, Hyperplasia, Metaplasia, Aplasia

Inflammation

Acute inflammation

- Cellular components and chemical mediators of acute inflammation
- Exudates and transudate
- Sequelae of acute inflammation

Chronic inflammation

- Etiological factors and pathogenesis
- Distinction between acute and chronic (duration) inflammation
- Histologic hallmarks
- Types of chronic inflammation, non-granulomatous and granulomatous, and their causes

Haemodynamic disorders

- Etiology, pathogenesis, classification and morphological and clinical manifestations of Edema, Haemorrhage, Thrombosis, Embolism, Infarction & Hyperaemia
- Shock; classification etiology, and pathogenesis, manifestations.
- Describe the compensatory mechanisms involved in shock
- Describe the pathogenesis and possible consequences of thrombosis
- Describe the difference between arterial and venous emboli

Neoplasia

ƒDysplasia and Neoplasia
ƒBenign and malignant neoplasms
ƒEtiological factors for neoplasia
ƒDifferent modes of metastasis
ƒTumor staging system and tumor grade

Immunity and Hypersensitivity

- Immunity
- Immune response
- Diagnostic procedures in a clinical microbiology laboratory
- Protective immunity to microbial diseases
- Tumour immunology
- Immunological tolerance, autoimmunity and autoimmune diseases.
- Transplantation immunology
- Hypersensitivity
- Immunodeficiency disorders
- Immunoprophylaxis & Immunotherapy

Haematopathology

ƒNormal blood picture & variation in disease
ƒ

Microbiology

- A brief account of the classification of microorganisms.
- Role of Microbes In Various Human Diseases
- Infection source Bacterial Growth and Death
- Names, habitat, modes of transmission/infection, pathogenic mechanism and pathological changes produced by bacteria, commonly causing human diseases in Pakistan
- Names of bacteria and diseases produced by bacteria not commonly found in Pakistan.
- Morphology: Identification of various shapes of bacteria and viruses under the microscope.
- Distribution, size, motility, reproduction and functions of bacteria and viruses.
- Gram staining and AFB staining, Culture of blood and fluid; details regarding methodology in collection, transportation and preservation.
- Culture media for common pathogens and methods of culture.
- Special culture media. Basis of sensitivity tests
- Fungal Diseases
- Names, general morphological features, and diseases produced by fungi commonly found in Pakistan, including dermatophytes; maduromycosis and opportunistic infections. Important Parasites.
- Names and modes of infection of parasitic diseases commonly found in Pakistan including amoebiasis, malaria, leishmaniasis, ascariasis, cestodiasis, ankylostomiasis, giardiasis, hydatid disease and guinea worm disease.
- Important Viruses
- Sterilization and disinfection
- Immunization
- Nosocomial Infections
- Use of investigation and procedures in laboratory
- Saliva, stool, cerebrospinal fluid(CSF), pus, aspirates

5. 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. Behavioral Sciences

1. Bio-Psycho-Social (BPS) Model of Health Care
2. Use of Non-medicinal Interventions in Clinical Practice
   - Communication Skills
   - Counselling
   - Informational Skills
3. Crisis Intervention/Disaster Management
4. Conflict Resolution
5. Breaking Bad New
6. 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
7. Delivery of Culturally Relevant Care and Cultural Sensitivity

8. 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

2. INTEGRATED GENERAL MEDICAL COMPONENT OF MD GASTROENTEROLOGY

Resident should get exposure in the following organ and system competencies (listed below) while considering and practicing each system in terms of: -

- Medical ethics
- Professional values, student teachers relationship
- Orientation of in-patient, out-patients and Gastroenterological labs
- Approach to the patient
- History taking
- General physical examination
- Systemic examination
- Routine investigations
- Special investigations
- Diagnostic and therapeutic procedures

Course Contents:

1. Cardiovascular Medicine

- *Common and / or important Cardiac Problems:*
- Arrhythmias
- Ischaemic Heart Disease: acute coronary syndromes, stable angina, atherosclerosis
- Heart Failure
- Hypertension – including investigation and management of accelerated hypertension
- Valvular Heart Disease
- Endocarditis
- Aortic dissection
- Syncope
- Dyslipidaemia
- *Clinical Science:*
- Physiological principles of cardiac cycle and cardiac conduction

- Pharmacology of major drug classes: beta blockers, alpha blockers, ACE inhibitors, Angiotensin receptor blockers (ARBs), anti-platelet agents, thrombolysis, inotropes, calcium channel antagonists, potassium channel activators, diuretics, anti-arrhythmics, anticoagulants, lipid modifying drugs, nitrates, centrally acting anti-hypertensives

2. Dermatology;

- *Common and / or Important Problems:*
- Cellulitis
- Cutaneous drug reactions
- Psoriasis and eczema
- Skin failure: eg erthryoderma, toxic epidermal necrolysis
- Urticaria and angio-oedema
- Cutaneous vasculitis
- Herpes zoster and Herpes Simplex infections
- Skin tumours
- Skin infestations
- Dermatomyositis
- Scleroderma
- Lymphoedema
- *Clinical Science:*
- Pharmacology of major drug classes: topical steroids, immunosuppressants

3. Diabetes & Endocrine Medicine

- *Common and / or Important Diabetes Problems:*
- Diabetic ketoacidosis
- Non-acidotic hyperosmolar coma / severe hyperglycaemia
- Hypoglycaemia
- Care of the acutely ill diabetic
- Peri-operative diabetes care
- *Common or Important Endocrine Problems:*
- Hyper/Hypocalcaemia
- Adrenocortical insufficiency
- Hyper/Hyponatraemia
- Thyroid dysfunction
- Dyslipidaemia
- Endocrine emergencies: myxoedemic coma, thyrotoxic crisis, Addisonian

- crisis, hypopituitary coma, phaeochromocytoma crisis
- *Clinical Science:*
- Outline the function, receptors, action, secondary messengers and feedback of hormones
- Pharmacology of major drug classes: insulin, oral anti-diabetics, thyroxine, anti-thyroid drugs, corticosteroids, sex hormones, drugs affecting bone metabolism

4. Renal Medicine

- *Common and / or Important Problems:*
- Acute renal failure
- Chronic renal failure
- Glomerulonephritis
- Nephrotic syndrome
- Urinary tract infections
- Urinary Calculus
- Renal replacement therapy
- Disturbances of potassium, acid/base, and fluid balance (and appropriate
- acute interventions)
- *Clinical Science:*
- Measurement of renal function
- Metabolic perturbations of acute, chronic, and end-stage renal failure and associated treatments

5. Respiratory Medicine

- *Common and / or Important Respiratory Problems:*
- COPD
- Asthma
- Pneumonia
- Pleural disease: Pneumothorax, pleural effusion, mesothelioma
- Lung Cancer
- Respiratory failure and methods of respiratory support
- Pulmonary embolism and DVT

- Tuberculosis
- Interstitial lung disease
- Bronchiectasis
- Respiratory failure and cor-pulmonale
- Pulmonary hypertension
- *Clinical Science:*
- Principles of lung function measurement
- Pharmacology of major drug classes: bronchodilators, inhaled corticosteroids, leukotriene receptor antagonists, immunosuppressants

6. Allergy

- *Common or Important Allergy Problems*
- Anaphylaxis
- Recognition of common allergies; introducing occupation associated allergies
- Food, drug, latex, insect venom allergies
- Urticaria and angioedema
- *Clinical Science*
- Mechanisms of allergic sensitization: primary and secondary prophylaxis
- Natural history of allergic diseases
- Mechanisms of action of anti-allergic drugs and immunotherapy
- Principles and limitations of allergen avoidance

7. Hematology

- Bone marrow failure: causes and complications
- Bleeding disorders: DIC, haemophilia
- Thrombocytopaenia
- anticoagulation treatment: indications, monitoring, management of over-treatment
- Transfusion reactions
- Anaemia: iron deficient, megaloblastic, haemolysis, sickle cell,
- Thrombophilia: classification; indications and implications of screening
- Haemolytic disease
- Myelodysplastic syndromes

- Leukaemia
- Lymphoma
- Myeloma
- Myeloproliferative disease
- Inherited disorders of haemoglobin (sickle cell disease, thalassaemias)
- Amyloid
- *Clinical Science:*
- Structure and function of blood, reticuloendothelial system, erythropoietic tissues

8. Immunology

- *Common or Important Problems:*
- Anaphylaxis (see also 'Allergy')
- *Clinical Science:*
- Innate and adaptive immune responses
- Principles of Hypersensitivity and transplantation

9. Infectious Diseases

- *Common and / or Important Problems:*
- Fever of Unknown origin
- Complications of sepsis: shock, DIC, ARDS
- Common community acquired infection: LRTI, UTI, skin and soft tissue infections, viral exanthema, gastroenteritis
- CNS infection: meningitis, encephalitis, brain abscess
- HIV and AIDS including ethical considerations of testing
- Infections in immuno-compromised host
- Tuberculosis
- Anti-microbial drug monitoring
- Endocarditis
- Common genito-urinary conditions: non-gonococcal urethritis,
- gonorrhoea, syphilis
- *Clinical Science:*
- Principles of vaccination

- Pharmacology of major drug classes: penicillins, cephalosporins, tetracyclines, aminoglycosides, macrolides, sulphonamides, quinolones, metronidazole, anti-tuberculous drugs, anti-fungals, anti-malarials, anti-helminthics, anti-virals

10. Medicine in the Elderly

- *Common or Important Problems:*
- Deterioration in mobility
- Acute confusion
- Stroke and transient ischaemic attack
- Falls
- Age related pharmacology
- Hypothermia
- Continence problems
- Dementia
- Movement disorders including Parkinson's disease
- Depression in the elderly
- Osteoporosis
- Malnutrition
- Osteoarthritis
- *Clinical Science:*
- Effects of ageing on the major organ systems
- Normal laboratory values in older people

11. Musculoskeletal System

- *Common or Important Problems:*
- Septic arthritis
- Rheumatoid arthritis
- Osteoarthritis
- Seronegative arthritides
- Crystal arthropathy
- Osteoporosis – risk factors, and primary and secondary prevention of complications of osteoporosis
- Polymyalgia and temporal arteritis
- Acute connective tissue disease: systemic lupus erythematosus,

- scleroderma, poly- and dermatomyositis, Sjogren's syndrome, vasculitides
- *Clinical Science:*
- Pharmacology of major drug classes: NSAIDS, corticosteroids, immunosuppressants, colchicines, allopurinol, bisphosphonates

12. Neurology

- *Common or Important Problems:*
- Acute new headache
- Stroke and transient ischaemic attack
- Subarachnoid haemorrhage
- Coma
- Central Nervous System infection: encephalitis, meningitis, brain abscess
- Raised intra-cranial pressure
- Sudden loss of consciousness including seizure disorders (see also above syncope etc)
- Acute paralysis: Guillian-Barré, myasthenia gravis, spinal cord lesion
- Multiple sclerosis
- Motor neuron disease
- *Clinical Science:*
- Pathophysiology of pain, speech and language
- Pharmacology of major drug classes: anxiolytics, hypnotics inc. benzodiazepines, antiepileptics, anti-Parkinson's drugs (anti-muscarinics, dopaminergics)

13. Psychiatry

- *Common and /or Important Problems:*
- Suicide and parasuicide
- Acute psychosis
- Substance dependence
- Depression
- *Clinical Science:*
- Principles of substance addiction, and tolerance

- Pharmacology of major drug classes: anti-psychotics, lithium, tricyclic antidepressants, mono-amine oxidase inhibitors, SSRIs, venlafaxine,
- donepezil, drugs used in treatment of addiction (bupropion, disulpharam, acamprosate, methadone)

14. Cancer and Palliative Care

- *Common or Important Gastroenterology Problems:*
- Hypercalcaemia
- SVC obstruction
- Spinal cord compression
- Neutropenic sepsis
- Common cancers (presentation, diagnosis, staging, treatment principles):
- lung, bowel, breast, prostate, stomach, oesophagus, bladder)
- *Common or Important Palliative Care Problems:*
- Pain: appropriate use, analgesic ladder, side effects, role of radiotherapy
- Constipation
- Breathlessness
- Nausea and vomiting
- Anxiety and depressed mood
- Clinical Science:
- Principles of oncogenesis and metastatic spread
- Apoptosis
- Principles of staging
- Principles of screening
- Pharmacology of major drug classes in palliative care: anti-emetics, opioids, NSAIDS, agents for neuropathic pain, bisphosphonates, laxatives, anxiolytics

15. Clinical Genetics

- *Common and / or Important problems:*
- Down's syndrome
- Turner's syndrome

- Huntington's disease
- Haemochromatosis
- Marfan's syndrome
- Klinefelter's syndrome
- Familial cancer syndromes
- Familial cardiovascular disorders
- *Clinical Science:*
- Structure and function of human cells, chromosomes, DNA, RNA and cellular proteins
- Principles of inheritance: Mendelian, sex-linked, mitochondrial
- Principles of pharmacogenetics
- Principles of mutation, polymorphism, trinucleotide repeat disorders
- Principles of genetic testing including metabolite assays, clinical examination and analysis of nucleic acid (e.g. PCR)

16. Clinical Pharmacology

- *Common and / or Important problems:*
- Corticosteroid treatment: short and long-term complications, bone protection, safe withdrawal of corticosteroids, patient counselling regarding avoid adrenal crises
- Specific treatment of poisoning with:
    - Aspirin,
    - Paracetamol
    - Tricyclic anti-depressants
    - Beta-blockers()
    - Carbon monoxide
- Opiates
    - Digoxin
    - Benzodiazepines
- *Clinical Science:*
- Drug actions at receptor and intracellular level
- Principles of absorption, distribution, metabolism and excretion of chemotherapeutic and palliative drugs
- Effects of genetics on drug metabolism

- Pharmacological principles of drug interaction
- Outline the effects on drug metabolism of: pregnancy, age, renal and liver impairment

Investigation Competencies

- *Outline the Indications for, and Interpret the Following Investigations:*
- Basic blood biochemistry: urea and electrolytes, liver function tests, bone biochemistry, glucose, magnesium
- Inflammatory markers: CRP / ESR
- Arterial Blood Gas analysis
- Cortisol and short Synacthen test
- HbA1C
- Lipid profile
- Amylase
- Full blood count
- Coagulation studies
- Haemolysis studies
- D dimer
- Blood film report
- Blood / Stool / urine culture
- Fluid analysis: peritoneal, ascitic
- Abdominal and pelvic radiograph
- *More Advanced Competencies;*
- Viral hepatitis serology
- HIV testing
- Ultrasound
- Detailed imaging: Barium studies, CT, CT Gastroenterological angiography, high resolution CT, MRI
- Ambulatory blood pressure monitoring

Procedural Competencies

- The trainee is expected to be competent in performing the following procedures by the end of core training. The trainee must be able to outline the indications for these interventions. For invasive procedures, the trainee must recognize the indications for the procedure, the importance of valid consent, aseptic technique, safe use of local anaesthetics and minimization of patient discomfort.
- Venepuncture
- Cannula insertion, including large bore
- Ascitic tap and aspiration
- Abdominal paracentesis
- Central venous cannulation
- Initial airway protection: chin lift, Guedel airway, nasal airway, laryngeal mask
- Basic and, subsequently, advanced cardiorespiratory resuscitation
- Urethral catheteriza

3. GASTROENTEROLOGY SPECIALTY TRAINING CURRICULUM

Specific Program Content

1. Specialized training in Gastroenterology
2. GI Endoscopy training schedule
3. Compulsory rotations
4. Research & thesis writing

1. Speciality Training in Gastroenterology:

Following topics are mainly covered in it

Upper Gastrointestinal Disorders

Common gastrointestinal manifestations:

- Anorexia and weight loss
- Nausea and Vomiting
- Cyclical vomiting in adults and idiopathic nausea
- Dysphagia and non cardiac chest pain
- Upper abdominal pain/dyspepsia
- Peptic ulcer type dyspepsia
- Gall bladder type dyspepsia
- Non ulcer dyspepsia
- Steatorrhoea Malabsorption
- Gastrointestinal Bleeding
- Evaluation of anaemia
- Iron deficiency anaemia
- Macrocytic anaemia
- Short bowel syndrome/ ileostomy diarrhea
- Acute abdominal pain
- Chronic abdominal pain
- The spectrum of functional bowel disorders including burden of disease, sub types and etiological factors.
- Oesophageal Dysmotility

- Functional dyspepsia -
- Epigastric pain syndrome
- Postprandial distress syndrome
- Irritable bowel syndrome and its subtypes
- Diarrhea/Constipation
- Obstructive defecation, proctalgia fugax
- Change in bowel habit
- Rectal bleeding and perianal fistulae
- Jaundice
- Hepatosplenomegaly and abdominal swelling
- Abdominal masses including cysts
- Confusion progressing to liver failure

Miscellaneous

- Gastrointestinal tuberculosis
- HIV and the GIT, hepatobiliary and pancreatic systems
- GIT and liver in systemic diseases
- Cutaneous manifestations of GI diseases
- Gastrointestinal side effects of drugs especially NSAIDs
- Management of GI emergencies in the acutely ill patient including ileus
- Foreign body management

Esophageal Disorders

- Motility of the esophagus and motor disorders
- Mechanism of deglutition and dysphagia
- Achalasia, diffuse esophageal spasm and other spastic disorders,
- Non-cardiac chest pain
- Approach to a patient with dysphagia
- Gastro-esophageal reflux disease
- Barrett's esophagitis
- Corrosive intake and injuries of esophagus
- Tumors of the esophagus
- Esophageal webs, membranes and diverticulum
- Management of benign and malignant esophageal strictures
- Dysplasia and endoscopic management
- Rumination syndrome, belching, aerophagia, Hiccups, evaluation
- Esophagus and systemic diseases
- Infectious diseases of the esophagus
- Foreign bodies in the esophagus and stomach
- Esophageal perforation
- Drug induced esophagitis

Gastric Disorders

- Structure (anatomy) and function (physiology) of stomach
- Physiology of acid and bicarbonate secretion in health and diseases
- Defence mechanisms against acid and pepsin
- Gastroduodenal motor function in health and diseases.
- Gastritis (nonspecific and specific)
- Helicobacter pylori infection
- Peptic ulcer
- Dyspepsia
- Stress and stomach
- Gastric hypersecretory states including Zollinger Ellison syndrome
- Ulcer complications and their management
- Surgery for peptic ulcer
- Post gastrectomy complication
- Bezoars
- Stomach malrotation and volvulus
- Tumors of the stomach, carcinomas, lymphoma gastric polyps and gastric neuroendocrine tumors.
- Diverticuli and hernia’s of the stomach

LOWER GASTROINTESTINAL DISORDERS

Small Intestinal Disorders

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- Motility of the small intestine
- Congenital anomalies
- Normal absorption of the nutrients
- Intestinal electrolyte absorption and secretion
- Malabsorption syndromes

- Pathophysiology, manifestations and approach
  - Celiac sprue
  - Infection related diseases
- Intestinal microflora in health and diseases
- Tropical sprue
- Whipple's disease
- Infectious diarrhoea and food poisoning
- Parasitic diseases
- Small intestinal ulcers
- Short bowel syndrome and intestinal transplantation.
- Eosinophilic gastroenteritis
- Food allergies
- Intestinal obstruction
- Intestinal pseudo-obstruction and scleroderma
- functional GI disorders
- Disorders of nutrient assimilation/malnutrition
- Acute appendicitis
- Malrotation of the gut
- Bezoars
- Management of diarrhea
- Meckels diverticulum
- Obscure GI bleeding; small bowel bleeding
- GI lymphomas
- Small intestinal tumors

Colonic Disorders

- Motility of the colon and disorders of motility
- Irritable bowel syndrome
- Congenital anomalies
- Megacolon
- Constipation
- Colonic pseudo-obstruction
- Fecal incontinence
- Antibiotic associated diarrhoea
- Inflammatory bowel disease
    - Ulcerative colitis
    - Crohn's disease
    - Indeterminate colitis
    - Diversion colitis
- Ileostomies, colostomies and their management
- Diverticular disease and complications/diverticulitis
- Radiation entero-colitis
- Colonic polyps and polyposis syndromes
- Malignant diseases of the colon
- Colon cancer and screening
- Polyp surveillance, malignant polyps/serrated adenomas
- pelvic floor dysfunction; evaluation and management
- Endoscopic resection of colorectal polyps, guidelines and management
- Familial colorectal cancer
- Evidence based guidelines for post-colon cancer management and guidelines

DISEASES OF THE RECTUM AND ANUS

- Rectal prolapse
- Rectal foreign body
- Solitary Rectal Ulcer Syndrome
- Rectal polyps and cancer
- Fecal incontinence and evaluation, fecal impaction
- Hemorroids
- Anal pain
- Anal fissure
- Anal Sepsis, Abscess, Fistula
- Anal cancer
- Anal warts
- Pruritis ani
- Anal stenosis
- Pilonidal disease

Other small bowel and colonic diseases

- Constipation and pelvic floor dysfunction
- Small bowel bacterial overgrowth syndrome
- Collagenous and microscopic colitis
- Non specific ulcerations of the colon
- Malakoplakia
- Pneumatoses cystoids intestinalis
- Microscopic colitis
- Radiation colitis and enteritis
- Solitary rectal ulcer syndrome
- Diversion colitis
- Graft vs host disease
- Cathartic colon
- Melanosis coli
- Chemical colitis
- Colitis cystica profunda
- Endometriosis

Gastrointestinal immune disorders and infections

- Retroviral, mycotic, and parasitic diseases
- C-difficile infection and management of recurrent disease
- Celiac sprue
- Eosinophilic GI disorder/allergic GI disorder
- GI involvement in autoimmune disorders

Vascular Diseases of the GI Tract

- Mesenteric ischemia
- Acute ischemic colitis/chronic mesenteric ischemia
- Portal venous thrombosis
- Small and large bowel (Ectopic) Varices
- Dieulafoy`s lesions

Gastroenteropancreatic Neuroendoscrine tumors

- Carcinoid tumors and carcinoid syndrome
- Gastrinoma and Zollinger Ellison syndrome
- VIPoma
- Glucagonoma
- Insulinoma
- Statinoma
- PPoma
- Others

Pediatric Gastroenterology

- Approach to Paediatric Gastrointestinal, hepatobiliary and pancreatic problems will include all topics covered in adult gastroenterology
- IBD issues in pediatric population
- Neonatal jaundice, and cholestasis
- Common pediatric gastrointestinal problems:
- Abdominal pain, constipation, diarrhea, cystic fibrosis necrotizing enterocolitis, Meckel's diverticulum, intestinal intussusception, and mid-gut volvulus.
- GI complications of malignancy and treatment
- Rickets and other systemic disorders in GI and liver diseases

Geriatric Gastroenterology

- Will cover all aspects of diseases of GI and hepatobiliary diseases in geriatric age group
- Endoscopic gastrostomy tube risks and complications
- Evaluation and risks of endoscopic procedures in elderly
- Effect of aging on gastrointestinal tract and common GI illness in elderly population

Parenteral and Enteral Nutrition

- General indications and contraindications for parenteral and enteral nutrition.
- Utility of central and peripheral parenteral nutrition including advantages and disadvantages.

- IV access utilized in parenteral nutrition.
- Major components of nutritional assessments and demonstrate the calculations for the usual requirements of fluids, carbohydrates, protein, fat and calories.
- Parenteral nutrition formula for a given patient.
- Advantages and disadvantages of total nutrient admixture system.
- Application of transitional therapy as it applies to parenteral nutrition.
- Rationale and benefit of early enteral feeding.
- Differences in macronutrients available in enteral formulas.
- Benefits that enteral products with fiber provide.
- Advantages/disadvantages of polymeric, partially hydrolyzed and disease specific formulas.
- Formula osmolarity and its effect on enteral feeding tolerance.
- Indications and advantages and disadvantages of the following access routes: nasogastric, gastrostomy and jejunostomy.
- Difference between continuous and intermittent feedings, including advantages, disadvantages and general administration protocols.
- Complications of parenteral and enteral nutrition including mechanical, gastrointestinal, infectious and metabolic.
- Monitoring guidelines for parenteral and enteral nutrition.

Gastrointestinal Oncology

- **Principles of chemotherapy**
- **Principles of radiation therapy**
- **Surgery for GI and hepatobiliary malignancy**

- ***Esophageal cancer***

- Risk factors
- Indications for endoscopy in diagnosis and staging
- Indications for nutritional support
- Importance of combined modality therapy
- Role of palliative chemotherapy and other supportive measures
- ***Gastric cancer***
- Risk factors
- Major surgical approaches to the disease and potentially curative role of combined modality therapy

- Role of palliative chemotherapy and other supportive measure
- ***Colon cancer***
- Risk factors and rationale for screening of colorectal cancer, as well as its chemoprevention
- Role of genetic testing in colorectal cancer
- Surgical staging
- Indications for adjuvant therapies in colon and rectal cancers and role of chemotherapy in advanced metastatic disease
- Heritable types of colon cancer and differences in their pattern of spread and management
- ***GI stromal tumors***
- ***HIV related malignancy***
- ***Anal cancer***
- Association of human papilloma virus and anal cancer
- Role of combined modality therapy in organ preservation
- ***Hepatobilliary cancers***
- Epidemiology and risk factors
- Role of alpha-fetoprotein in diagnosis, response assessment and screening of hepatobilliary cancers
- Indications for curative role of surgery in localized disease
- Role of systemic and intra-arterial chemotherapy
- ***Pancreatic cancer***
- Risk factors
- Genetic aspects of pancreatic cancer
- Role of endoscopy
- Role of molecular diagnosis
- Curative role of surgery in rare patients and palliation in others
- Palliative role of chemotherapy in advanced disease

Techniques used in the investigation of gastrointestinal cancers

- Flow cytometry
- Polymerase chain reaction assays
- Mutation analysis
- Methylation assays
- DNA sequencing and linkage analysis
- Immunohistochemistry

Clinical Pharmacology of Gastrointestinal Disorders:

- Structure/activity relationships and physiochemical properties relating to agents used in the treatment of following common GI disorders:
- Dosage schedules used in the treatment and maintenance of peptic ulcer disease and NSAID-induced ulcers.
- Anti-secretory effects of H2-receptor antagonists, proton pump inhibitors, anticholinergics, and prostaglandins, antacids and antibacterials in the treatment and management of peptic ulcer disease and NSAID-induced ulcers.
- Significance of side effects/adverse reactions and drug interactions of anti-ulcer medications.
- Rational pharmacologic treatment plan for preventing the complications of stress related mucosal damage
- Monitoring plan, including efficacy and toxicity profile for the prophylactic regimen chosen.
- Mechanism of action, doses, adverse drug reactions, drug interactions, clinical efficacy for the available drug therapy for GERD.
- Pharmacotherapy for H-pylori disease
- Pharmacology of hemostatic drugs-somatostatin,octreotide, vasopressin, terlipressin, beta blockers, nitrates and others
- Classifications and histological abnormalities of drug induced liver disease
- Treatment modalities for hepatic diseases and complications.
- Pharmacology of drugs used for viral hepatitis A,B,C,D,E.

- Pharmacotherapay of wilson’s disease, alpha 1 antitrypsin disease, autoimmune hepatitis, hemachromatosis and other metabolic disorders of liver.
- Pharmacology of drugs used for the treatment of NAFLD, NASH
- Prophylaxis including doses for acute viral hepatitis.
- Drugs causing acute pancreatitis.
- Role of non-pharmacologic and pharmacologic treatment modalities in the management of acute and chronic pancreatitis.
- Appropriate pharmacologic treatments for the management of fluid
- depletion, electrolyte derangements, pain, chronic nutritional deficiencies and malabsorption experienced by patients with acute and chronic pancreatitis.
- Structure/activity relationships and physiochemical properties relating to agents used in the treatment of pancreatitisRole of corticosteroids and sulfasalazine in managing IBD with indications for this agent in IBD, proposed mechanism(s) of action, recommend dosages at various stages of the disease and untoward effects associated with their use.
- Immunosuppressives (i.e. azathioprine, cyclosporine), infliximab, immune adjuvants (i.e. levamisole), mast cell stabilizers (i.e., cromolyn sodium) in the treatment of IBD.
- Metronidazole and antidiarrheal agents such as anticholinergics, antispasmodics and bile salt binding resins in IBD.
- Proposed mechanism of action, site of action, efficacy and side effects of the following antiemetic drugs:
    - Phenothiazines
    - Benzodiazepines
    - Antihistamines
    - Anticholinergics
    - Ondansetron
    - Cannabinoids
    - Metoclopramide
    - Corticosteroids
- Potential benefits of combining two or more antiemetic agents and give examples
- Drugs that are known to cause constipation and diarrhea.

- Non-pharmacologic management of complications or causes of diarrhea and constipation.
- Mechanisms of action, doses, adverse effects, and drug interactions of medications used in the management of diarrhea and constipation.
- Appropriate questions to ask a patient being assessed for diarrhea or constipation.

GI Radiology

- Reading and interpreting the common x-ray films including X-ray films of the abdomen
- Barium studies
- ERCP films
- MRCP
- ultrasound examination
- CT scans
- CT Colonography
- CT enterography
- MR scans
- Angiography
- PET Scan
- Radio-isotope studies for diagnosis of GI and hepatobiliary diseases

Endoscopic Training

f

- Endoscopes and accessories
- Sterilization of endoscopes and accessories
- Other electrosurgical instrument
- Consent and pre-procedure patient evaluation
- Sedation and monitoring
- Esophagogastroduedenoscopy (EGD)
- Anoproctoscopy
- Rigid and flexible sigmoidoscopy
- Colonoscopy

ADVANCE ENDOSCOPIC TECHNIQUE

- Capsule endoscopy
- Double balloon enteroscopy,
- Push Enteroscopy
- Narrow band imaging and confocal /high magnification endoscopy.

- Chromoendoscopy
- EMR & ESD
- Endocytoscopy
- Pit pattern diagnostic technique
- Anticoagulants and antiplatelet agents and GI endoscopy
- Complications of endoscopic procedures.

Clinical/Laboratory Tests for GI Structure and Function

- Oesophageal, gastric and ano-rectal function tests ; oesophageal pH monitoring, oesophageal and ano- rectal motility/manometry, gastric emptying studies
- Gastric secretion tests ; relevance of 24h intragastric H+ concentration, maximal acid output, effect of pentagastrin and gastrin releasing peptide
- Tests for malabsorption ; SeHCAT, PABA, lactose breath H2, lactulose breath H2, faecal elastase
- Tests for inflammation ; serological and nuclear medicine testing including Tc WBC scans
- Radiological evaluation ; Plain x-rays of abdomen, barium studies of GI tract CT, MRI and ultrasound
- Histopathology evaluation ; Histological features of common gastrointestinal and liver disease with appreciation of the histological findings in discussion with histopathologists

HEPATOLOGY

Hepatic Disorders

- Functions of the liver
- Microcirculation of liver
- Liver function tests
- Acute viral hepatitis
- Chronic hepatitis
- Treatment of viral hepatitis (B and C)
- Fulminant hepatic failure
- Subacute hepatic failure
- Alcoholic liver disease
- Autoimmune hepatitis
- Non-alcoholic fatty liver disease
- Cirrhosis of liver
- Complication of chronic liver disease
- Ascites
- Spontaneous bacterial peritonitis and hepatorenal syndrome in liver failure
- Hepatic Encephalopathy
- Portal hypertension and variceal bleeding
- Extrahepatic portal vein obstruction
- Hepatic venous outflow tract obstruction
- Tips in the management of complications of liver disease
- Fibrocystic diseases of the liver
- Non cirrhotic portal fibrosis
- Drug and toxin induced liver disease
- Pregnancy related hepatobiliary disease
- Cholestatic syndromes
- Gibert's disease

- Dubin Johnson syndrome
- Rotor's syndrome
    - Criggler najjar syndrome
    - Primary and secondary sclerosing cholangitis
    - primary biliary cirrhosis
    - Metabolic liver diseases
    - Hereditary hemochromatosis

- Alpha-1 antitrypsin deficiency
- Wilson's disease
- Glycogen storage diseases
- Gaucher disease
- Porphyria
- Infections of the liver
- Pyogenic and Amebic liver Abscess
- Liver in congestive heart failure
- Vascular disorders of liver (Budd-Chiari and ischemic/hypoxic hepatitis)
- Perioperative evaluation and management of liver disease patient
- Liver transplantation and artificial liver support
- Pre-transplant evaluation
- Management and evaluation of post-transplant patients
- Hepatocelluar carcinoma/other hepatic malignancy
- Liver imaging modalities
- Liver biopsy

Biliary Tract Disorders

- Physiology of bile formation and excretion
- Enterohepatic circulation
- Bilirubin metabolism.
- Approach to a patients with jaundice
- Gallstones, its complications, and management
- Acute acalculous cholecystitis
- Miscellaneous disorders of the gallbladder
- Acute cholangitis
- Benign biliary stasis
- CBD impaction by worms and obstructive jaundice
- Benign and malignant neoplasms of the biliary system.
- Endoscopic management of biliary obstruction.
- Motility and dysmotility of the biliary system and sphincter of Oddi dysfunction
- Primary and secondary sclerosing cholangitis
- Congenital diseases of the biliary systems
- Choledochal cysts
- Caroli's disease
- Cholangiocarcinoma

Pancreatic Disorders

- Pancreatic function tests
- Acute pancreatitis
- Recurrent acute pancreatitis
- Chronic pancreatitis
- Idiopathic pancreatitis
- Nutritional support in acute and chronic pancreatitis
- Radiologic evaluation of pancreas and biliary tract
- Biliary dyskinesia/sphincter of Oddi dysfunction
- Pancreas divisum
- Molecular genetic of hereditary pancreatic disorders
- Malignancies of the pancreas(Exocrine and endocrine)
- Cystic fibrosis and other childhood disorders of the pancreas
- Hereditary pancreatitis
- Pancreatic transplantation

2. Compulsory rotations in the relevant fields for 1-2 months

Clinical training experiences are described below:

1. Radiation Gastroenterology

The resident shall learn to prescribe and monitor the different doses and methods of radiation therapy in management of different types of malignancies.

2. Organ Transplantation

This popular rotation shall provide residents with an intense introduction to the selection of transplant candidates and the management of these patients after transplantation. Residents shall work with a dedicated group of organ transplant physicians and learn the indications, contraindications and the relative protocols and precautions required for these transplantations.

3. Gastroenterological Rehabilitation Rotation

This rotation shall expose residents to issues in rehabilitation of patients with chronic gastroenteric diseases

4. Elective experiences in Pathology and Laboratory Medicine as well as Radiology and Infectious diseases centre

for 1 month each in the relevant departments

3. ENDOSCOPY TRAINING SCHEDULE

OBJECTIVES

The objective of endoscopic training program is to provide trainees;
- With critical supervised instruction in GI endoscopy
- To ensure quality care to patients to improve endoscopic decision making
- To achieve technical proficiency
- To learn about specific and appropriate indications and contraindications
- To enable them to decide about diagnostic and therapeutic alternatives
- Perform a procedure safely, completely and expeditiously
- Correct interpretation of endoscopic finding
- Integration of endoscopic findings/therapy into patient management plan
- Recognize the risk factors attendant to endoscopic procedure
- Be able to recognize and manage complications
- To know about personal and procedural limits
- To know when to request help
- To know about safe and appropriate use of moderate sedation

LEVELS OF TRAINING

LEVEL 1:

Includes performance of routine GI endoscopic procedures.
Esophagogastroduodenoscopy
(EGD),
including treatment of non-variceal
and variceal hemorrhage ,

Esophageal dilatation

Anoproctoscopy and Rigid Sigmoidoscopy
Flexible sigmoidoscopy

Colonoscopy
Including polypectomy and hemostasis

PEG placement

LEVEL 2:

Includes performance of both advanced diagnostic and therapeutic procedures like ERCP, EUS, enteroscopy, EMR etc.

Esophageal , pyloric and colonic endoscopic stent placement

ERCP

Including sphincterotomy
Stone retrieval
Biliary and pancreatic stent placement

EUS
Enteroscopy

Capsule Endoscopy

Faculty:

Endoscopy training instructors should be well trained, experienced and skilled in endoscopy. Endoscopy instructors should have an aptitude for teaching.

ENDOSCOPY EXPERIENCE:
GUIDELINES FOR ENDOSCOPIC TRAINING IN ROUTINE

PROCEDURE	**NUMBERS**
EGD	130
Including treatment of Non-variceal Hemorrhage	20
Variceal hemorrhage	20
Esophageal dilatation	20
RIGID SIGMOIDOSCOPE	20
FLEXIBLE SIGMOIDOSCOPE	30
COLONOSCOPY	140
Including polypectomy& hemostasis	30
PEG PLACEMENT	15
ERCP	150
Including sphincterotomy	
Stone retrieval	
Biliary and pancreatic stent placement	
ENTEROSCOPY	25
CAPSULE ENDOSCOPY	
EUS	20

ENDOSCOPY TRAINING SCHEDULE

Endoscopy training will start at the inception of 4 year specialty Gastroenterology training program. Residents will be rotated to endoscopy room after 6 month of working in Gastroenterology ward and OPD and attending GE emergencies.

•During the 2nd year residents will be provided hands on endoscopy training of level 1.

- During the third year, residents will do level 1 endoscopy independently (in the presence of a senior resident endoscopist in the endoscopy room) and will be provided supervised exposure of level 2 training.

- During Final year of specialty training program (6th year), the resident will perform both Level 1 and Level 2 endoscopy independently.

4. RESEARCH/ THESIS WRITING

RESEARCH/ THESIS WRITING

Residents should spare adequate time for research and publication purpose. The major research project will be Thesis project. This should be completed well in time. Adequate data collection should be made as per university rules. In addition to thesis, the students will be encouraged to produce research papers in collaboration with their colleagues and teaching staff.

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

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 2 to 3 clinical research studies 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.

Publications

Each resident will be encouraged to produce atleast 3 papers under supervision and submit for publication in a peer-reviewed journal. This will include original research papers and case study/reports related to Gastrointestinal and Hepatobiliary systems.

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

The field of Gastroenterology demands an active academic daily routine. The daily routine has been designed for the active participation of students at all levels.

Following teaching modalities will be employed;

1. Bed-side teaching daily rounds
2. Lectures/ tutorials
3. Journal clubs
4. Grand rounds
5. Pathology and radiology meetings
6. Monthly specialty academic meeting
7. Endoscopy Audit
8. Intra departmental rotations
9. Hands-on Endoscopy training
10. Rotation to Accident and Emergency center and Medical and Surgical ICUs
11. Self-study, assignments and use of internet
12. Long and Short cases presentations

In additions to the conventional teaching methods, interactive strategies like conferences will also be introduced to improve both communication and clinical skills in upcoming consultants.

1. **Daily Bedside rounds**

   Daily bedside round will be conducted in the Gastroenterology division by a senior consultant. It is mandatory for all residents (and house officers) to attend it. Residents will present their cases which will be discussed during rounds. Bedside clinical teaching will be done with history presentation, clinical methodology and management plan discussion.

2. **Lectures and tutorials**

   A daily teaching session will be conducted each morning. Topical lectures will be delivered under the supervision of faculty.

3. **Journal clubs**

   Each week a journal club will be conducted. An article from a reputed international journal like American journal of Gastroenterology, GUT, NEJM, CPSP journal and PMRC journal will be discussed.

4. Grand rounds

Every Wednesday one of the medical specialty will host a grand round. All GE residents will be bound to attend it . Attendence will be mandatory and kept in the student's internal evaluation record and the Log Book. Every 7th week Gastroenterology division will host the grand round. A resident will present history, clinical examination and lab investigaions with diagnosis and then discuss the topic. One of the faculty member will supervise this presentation.

5. Pathology and Radiology meetings

A weekly clinical meeting will be held in collaboration with pathology department where important biopsies done during the previous weeks will be discussed. Residents will be taught about different laboratory diagnostic tests.

A similar weekly meeting will be held with Radiology department where GI X-rays, USG, CT scans, MRI scans and ERCP films and other related tests will be discussed.

Attendence to both meetings will be mandatory

6. Monthly specialty meeting

Every month one of the Gastroenterology units of the Rawalpindi-Islamabad twin cities teaching hospital will host a meeting. Important case scenario's will be presented, analyzed and discussed by senior faculty. All residents will be encouraged to attend.

7. Endoscopy audit

Endoscopy audit will be conducted once a week. Video recording of endoscopies done during the preceding week will be reviewed. The residents will be encouraged to ask questions regarding endoscopic findings and techniques.

8. Intra-departmental rotations

All residents will be rotated on weekly basis to wards (2 weeks), GE Outpatient department (one week), and GI Endoscopy room (One week). In outpatient department residents will attend patients with acute and chronic gastrointestinal and hepatobiliary problems under supervision and independently according to their level of training.

9. Hands-on Endoscopy training:

During rotation in endoscopy room, residents will be provided hands-on endoscopy training.

10. Rotation to Accident and Emergency center and Medical and Surgical ICUs

Residents will be provided adequate opportunity to attend emergency room, and medical and surgical ICUs, where they will learn Emergency and intensive care patient management and various interventional procedures. They will also attend call from different other medical and surgical specialities durng their call duties. This will broaden their exposure and experience.

EVALUATION & ASSESSMENT STRATEGIES

Assessment

It will consist of action and professional growth oriented *student-centeredintegrated 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 degrees for successful completion of courses.

ANNEXURE A

Supervisor Evaluation Form

Date: _____Supervisor's Name: _____

Your Name:_____ Signature: _____

Evaluations of supervisors by Trainee's are an important process for providing supervisors with an assessment of the quality of their work. Annual supervisor assessments can be used to compliment a supervisor for doing a good job. Annual assessments can also identify areas for improvement. Evaluations can strengthen communications between supervisors and trainee's.

Trainees have three options for evaluating supervisors:

1) Completing the Evaluation of Supervisor form.
2) Writing a signed memo evaluating the supervisor.
3) Meeting with the supervisor's department head.

Evaluations received by the deadline (January 15) will be incorporated into the annual review of the supervisor. Forms and/or signed memos should be sent to the Human Resources department.

* * *

(E=Excellent, G=Good, S=Satisfactory, N=Needs Work, U=Unsatisfactory, Ø=No Opinion)

Performs Supervisory Functions

Provides on-going positive and negative feedback	**E**	**G**	**S**	**N**	**U**	**Ø**
Makes expectations known	**E**	**G**	**S**	**N**	**U**	**Ø**
Is tactful and considerate	**E**	**G**	**S**	**N**	**U**	**Ø**
Promotes teamwork and good working relationships	**E**	**G**	**S**	**N**	**U**	**Ø**
Recognizes and addresses concerns in a timely manner	**E**	**G**	**S**	**N**	**U**	**Ø**
Delegates authority appropriately	**E**	**G**	**S**	**N**	**U**	**Ø**
Provides training of new employees	**E**	**G**	**S**	**N**	**U**	**Ø**
Provides direction of work	**E**	**G**	**S**	**N**	**U**	**Ø**
Communicates openly and honestly with peers, staff and administration	**E**	**G**	**S**	**N**	**U**	**Ø**

Comments: _____

_____

Comments: _____

Recognizes contributions	**E**	**G**	**S**	**N**	**U**	**Ø**
Motivates workers	**E**	**G**	**S**	**N**	**U**	**Ø**
Provides relaxed yet efficient work atmosphere	**E**	**G**	**S**	**N**	**U**	**Ø**
Encourages staff development	**E**	**G**	**S**	**N**	**U**	**Ø**

Acknowledges own limitations and mistakes	**E**	**G**	**S**	**N**	**U**	**Ø**
Maintains a positive work attitude	**E**	**G**	**S**	**N**	**U**	**Ø**
Uses time efficiently and effectively	**E**	**G**	**S**	**N**	**U**	**Ø**
Demonstrates a good work ethic	**E**	**G**	**S**	**N**	**U**	**Ø**

SA = strongly agree

A = agree

N = neither agree/disagree

D = disagree

SD = strongly disagree

The information was presented effectively	SA	A	N	D	SD
The information presented was practical	SA	A	N	D	SD
The program provided a good working knowledge of the subject matter presented	SA	A	N	D	SD
The program has allowed me to acquire practical skills and knowledge to manage my business more effectively and efficiently	SA	A	N	D	SD
The program attended was sufficient for my purpose	SA	A	N	D	SD

Develops Innovative Procedures

Is receptive to new ideas	**E**	**G**	**S**	**N**	**U**	**Ø**
Is receptive to questions	**E**	**G**	**S**	**N**	**U**	**Ø**
Encourages initiative and innovation	**E**	**G**	**S**	**N**	**U**	**Ø**

Comments: _____

III. Maintain Positive Works Enivrement