

**RYK Medical College**

Department of Medical Education



Study Guide

**Module 6: GIT & Nutrition 1 (Block 4)**

Academic Year 2025-26

(5 Weeks & 3 Days)

Integrated and Modular Curriculum

Second Year M.B.B.S

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**LIST OF ABBREVIATIONS**

|  |  |  |  |
| --- | --- | --- | --- |
| A | Anatomy | **HCL** | Hydrochloric acid |
| ABG | Arterial blood gas | **H&E** | Hematoxylin and eosin |
| Ag | Aging | **HL** | Hematopoietic and lymphatic |
| AKI | Acute kidney injury | **HMP** | Hexose monophosphate |
| ALT | Alanine transaminase | **HNSS** | Head & neck special senses |
| AMP | Adenosine Monophosphate | **ICF** | Intra cellular fluid |
| ANS | Autonomic nervous system | **IL** | Interleukin |
| AST | Aspartate transaminase | **IN** | Inflammation |
| AV | Atrioventricular | **INR** | International normalized ratio |
| B | Biochemistry | **IUD** | Intrauterine device |
| Bhs | Behavioral sciences | **IUGR** | Intra uterine growth restriction |
| C | Civics | **JVP** | Jugular venous pressure |
| CBC | Complete blood count | **LDH** | Lactate dehydrogenase |
| C-FRC | Clinical-Foundation Rotation Clerkship | **M** | Medicine |
| CK | Creatine kinase | **MALT** | Mucosa associated lymphoid tissue |
| CM | Community medicine | **MCH** | Mean corpuscular hematocrit |
| CNS | Central nervous system | **MCV** | Mean corpuscular volume |
| CO | Carbon monoxide | **MRI** | Magnetic resonance imaging |
| CO2 | Carbon dioxide | **MS** | Musculoskeletal |
| COPD | Chronic obstructive pulmonary disease | **MSD** | Musculoskeletal disorders |
| COX | Cyclooxygenase | **NEAA** | Non essential amino acids |
| CPR | Cardio pulmonary resuscitation | **NMJ** | Neuromuscular junction |
| CT | Computed tomography | **NS** | neurosciences |
| CV | Cardiovascular | **O** | Ophthalmology |
| CVA | Cerebral vascular accident | **Or** | Orientation |
| DALY | Disability adjusted life year | **P** | Physiology |
| DCMLS | Dorsal column medial lemniscus system | **Pa** | Pathology |
| DLC | Differential leukocyte count | **PAF** | Platelet activating factor |
| DNA | Deoxy ribonucleic acid | **PBL** | Problem based learning |
| ECF | Extra cellular fluid | **PCR** | Polymerase chain reaction |
| ECG | Electrocardiography | **PDGF** | Platelet derived growth factor |
| ECP | Emergency contraceptive pill | **Pe** | Pediatrics |
| EEG | Electroencephalogram | **PEM** | Protein energy malnutrition |
| EnR | Endocrinology and reproduction | **PERLs** | Professio Ethics Research Leadership |
| ENT | Ear Nose Throat | **PH** | Pharmacology |
| ER | Emergency room | **PNS** | Peripheral nervous system |
| F | Foundation | **Psy** | Psychiatry |
| FEV1 | Forced expiratory volume 1 | **PVC** | Premature ventricular contraction |
| FM | Forensic medicine | **QALY** | Quality adjusted life years |
| FVC | Forced vital capacity | **QI** | Quran & Islamiat |
| GFR | Glomerular filtration rate | **R** | Renal |
| GIT | Gastrointestinal tract | **Ra** | Radiology |
| GMP | Guanosine monophosphate | **RBCs** | Red blood cells |
| GO | Gynecology and obstetrics | **SA** | Sinoatrial |
| RDA | Recommended dietary allowance | **TCA** | Tricarboxylic acid cycle |
| Re | Respiratory | **TNA** | Tumor necrosis factor |
| RFLP | Restriction fragment length polymorphism | **USG** | Ultrasonography |
| RMP | Resting membrane potential | **UTI** | Urinary tract infection |
| RNA | Ribonucleic acid | **WBCs** | White blood cells |
| S | Surgery |  |  |
| GTO | Golgi tendon organ |  |  |

**CURRICULUM FRAME WORK FOR 2nd YEAR M.B.B.S**

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| **Curriculum framework** |
| **Year 01** | **Modules** | **Block 1** | **Block 2** | **Block 3** |
| * Foundation -1
* Hematopoietic & Lymphatic
 | * Musculoskeletal and locomotion - 1
 | * Cardiovascular -1
* Respiratory - 1
 |
| PERLS-1, Quran-1, Islamiat, Civics, Pakistan Studies, English |
| C-FRC -1(Clinical-Foundation, Rotation, Clerkship) |
|  |
| **Year 02** | **Modules** | **Block 4** | **Block 5** | **Block 6** |
| * GIT & Nutrition-1
* Renal – 1
 | * Endocrinology & Reproduction – 1
* Head & Neck, Special senses
 | * Neurosciences – 1
* Inflammation - 1
 |
| PERLS-2, Quran Pak-2, Islamiat, Civics, Pakistan Studies, English |
| C-FRC -2(Clinical-Foundation, Rotation, Clerkship) |
|  |
| **Year 03** | **Modules** | **Block 7** | **Block 8** | **Block 9** |
| * Foundation – 2
* Infectious Diseases
* Neoplasia
* Musculoskeletal & Locomotion - 2
 | * Hematopoietic, Immunity & Transplant
* Cardiovascular - 2
 | * Respiratory – 2
* Forensic Medicine
* Community Medicine & Family Health - 1
 |
| PERLS - 3, Quran Pak – 3 |
| C-FRC -3 (Clinical-Foundation, Rotation, Clerkship) |
|  |  |  |
| **Year 04** | **Modules** | **Block 10** | **Block 11** | **Block 12** |
| * Renal – 2
* Endocrinology & Reproduction – 2
* GIT & Nutrition-2
* Neurosciences - 2
 | * Maternal & Child Health
* Ophthalmology
* Otorhinolaryngology
 | * Community Medicine & Family Health-2
* Psychiatry & Behavioral Sciences
 |
| PERLS – 4, Quran Pak – 4, Electives & BLS Workshops |
| C-FRC - 4 (Clinical-Foundation, Rotation, Clerkship) |
|  |
| **Year 05** | **Modules** | * Gynecology & Obstetrics
* Pediatrics
* Medicine & Allied
* Surgery & Allied
 |
| C-FRC -5 (Clinical-Foundation, Rotation, Clerkship) |

**INTRODUCTION TO STUDY GUIDE**

**WHAT IS A STUDY GUIDE?**

This study guide is prepared for the students of 2nd year MBBS RYKMC for the session 2025-26 affiliated with University of Health Sciences Lahore (UHS). The learners (2nd year MBBS students) will be able to:-

* Organize the learning program module for the session 2025-26.
* Manage their studies as per guidance provided throughout the module.
* Learn the assessment tools, rules & regulations governing the module.

**THE STUDY GUIDE:**

* Communicates information on organization and management of the module. This will help the student to contact the right person in case of any difficulty.
* Defines the objectives which are expected to be achieved at the end of the module.
* Identifies the learning strategies such as lectures, small group teachings, clinical skills, demonstration, tutorial and case based learning that will be implemented to achieve the module objectives.
* Provides a list of learning resources such as books, computer assisted learning programs, web- links, and journals for students to consult in order to maximize their learning.
* Highlights information on the contribution of continuous and Term examinations on the student’s overall performance.
* Includes information on the assessment methods that will be held to determine every student’s achievement of objectives.
* Focuses on information pertaining to examination policy, rules and regulations.

**MODULE INTRODUCTION**

**Module/ course Name:** Module 6, (Block 4) GIT & Nutrition - 1

**Block duration:** 10 weeks & 1 day (GIT & Nutrition-1 = 5 weeks & 3 days) (Renal-1 = 4 weeks & 3 days)

**Module duration**: 05 weeks & 3 days

**Year:** 2nd Year MBBS

**Start Date:** ---/---/2026

**End Date:** ---/---/2026

**Departments** = Anatomy, Physiology, Biochemistry, pharmacology, pathology, community medicine, clinical skill foundation (hospital), medicine, surgery, gynecology & obstetrics, pediatrics, behavioral sciences, Quran/Islamiat & Pakistan studies.

**Daily timings:** 8:00 AM to 4:00 PM

**No. of hours:** 8 hours per day (20 min tea break & 40 min prayer/lunch break)

**Teaching hours:** 07 per day/35 hours per week

**Test dates: ---/---/2026, ---/---/2026, ---/---/2026**

**End module MCQ exam:**  ---/---/2026 (Theory), ---/---/2026 (OSPE, OSCE, OSVE etc)

**Interactive/ active learning session details**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Subjects** | **TBL** | **PBL** | **CBL** | **SGD** | **Tutorial** | **Demo/Diss** |
| **Anatomy** | **×** | **×** | **×** | **×** | × | 3+1 |
| **Physiology** | **×** | **×** | **×** | **×** | **×** | **×** |
| **Biochemistry** | **×** | **×** | **×** | **×** | **×** | **×** |
| **Surgery** | **×** | **×** | **1** | **×** | **×** | **×** |
| **Pathology** | **×** | **×** | **×** | **×** | **×** | **×** |
| **Medicine** | **×** | **×** | **1** | **×** | **×** | **×** |
| **Pediatrics** | **×** | **×** | **1** | **×** | **×** | **×** |

**Module themes**

 Oral cavity & Esophagus (O &E)

 Walls of Abdomen & Peritoneum

 Stomach

 Small intestine

 Large intestine (Cecum, Appendix, Colon, Rectum & Anal Canal)

 Liver & Biliary tree

 Pancreas & Spleen

 Nutrition

**Clinical relevance**

 Diseases of oral cavity, esophagus and stomach

 Diseases of small and large intestine

 Diseases of hepatobiliary system

 Diseases related to malnutrition

**YEAR 2 & MODULE COMMITTEES**

**Year 2 committee**

* Prof Dr Tariq M Rehan (HOD DME) (Principal)
* Prof Dr Tehseen Iqbal (HOD Physiology) (Vice. Principal)
* Prof Dr Ghaffar Ansari (HOD Anatomy), Prof Dr Zia ur Rehman Alvi
* Prof Dr Dr Shafqat Nazeer (HOD Biochemistry)
* Prof Dr Abdul Hakeem (HOD Pathology)
* Prof Dr M Amir Rafique (HOD Pharmacology)
* Prof Dr Javed Akhter (HOD Community Medicine)
* Prof Dr M saleem (HOD Forensic medicine)

**Module committee**

* Dr Raja Faisal Zulfiqar (Anatomy)
* Dr Rahil Adil (Physiology)
* Dr khalida anwar (Biochemistry)
* Dr Naqeeb (Pathology)
* Dr Ali Hussain (community medicine)

**PBL, TBL & CBL Committee**

* Prof Dr Tariq M Rehan (HOD DME) (Principal)
* Prof Dr Tehseen Iqbal (HOD Physiology) (Vice. Principal)
* Prof Dr Ghaffar Ansari (HOD Anatomy), Prof Dr Zia ur Rehman Alvi
* Prof Dr Dr Shafqat Nazeer (HOD Biochemistry

**Mentoring committee**

* Prof Dr Abdul Hakeem (HOD Pathology)
* Prof Dr M Amir Rafique (HOD Pharmacology)
* Prof Dr Javed Akhter (HOD Community Medicine)
* Prof Dr M saleem (HOD Forensic medicine)

**Module coordinator:**

* Anatomy: Dr Zia Ur Rehman Alvi
* Biochemistry: Dr Dost M kalhoro
* Physiology: Dr Sadia Javiad
* Pharmacology: Dr Tesneem Yasmin
* Pathology: Dr Zartashia Khan
* Community medicine: Dr Ali Hussain
* Medicine: Dr Abdul Waheed
* Surgery: Dr Jahangeer
* Pediatrics: Dr Masood
* Gynecology & obstetrics: Dr Farhat Yasmeen
* Behavioral sciences: Dr Mehwish Adnan

**Planning committee:** Department of medical education.

**TEACHING FACULTY**

* Anatomy: Prof Dr Ghaffar Ansari, Prof Dr Zia ur Rehman Alvi, Dr Raja Faisal
* Biochemistry: Dr Khalida Anwar, Dr Dost M kalhoro
* Physiology: Prof Dr Tehseen Iqbal, Dr Rahila Adil, Dr Sadia
* Pharmacology: Dr M Amir Rafique
* Pathology: Prof Dr Abdul Hakeem, Dr Syed Naqeeb Ali
* Community Medicine: Dr Ali Hussain,
* Medicine: Dr Abdul waheed
* Surgery: Dr Jahangeer
* Pediatrics: Dr Masood
* Gynecology & Obstetrics: Dr Farhat Yasmeen
* Behavioral Sciences: Dr Mahwish Adnan
* Holy Quran & Islamiyat: Mr Jaffar
* Pakistan studies: Mr Jaffar
* Civics: Dr Majid

**TEACHING METHODOLOGIES/STRATEGIES**

* Large group interactive sessions
* Tutorials
* Demonstrations
* Lab practical
* Simulations
* Team based learning
* Case based learning
* Problem based learning
* Small group discussions
* Clinical skills foundation

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| **VENUE: GIT & Nutrition -1 module** |
| **GROUPING** | **LECTURES** | **PBL/CBL** | **SMALL GROUP DISCUSSION** |
| **Group A** (1-33)**Group B** (34-66)**Group C** 67-100) | Anatomy → LH - 05Physiology → LH - 02Biochemistry → LH - 01Pathology → LH 04Pharmacology → LH 03Com medicine → LH 03Rest of all → LH 02 | Anatomy → DR - 05Physio → DR - 02Biochem → DR - 01Patho → DR 04Pharma → DR 03Com med → DR 06 | SGD room2nd floor |
| **TEAM BASED LEARNING** |
| * Multi - purpose hall
* Skill lab
* Corresponding lab
 |
| **(PRACTICALS)** |
| Corresponding labs |
|  |

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| **(Week 1) Block 4 , Module 6: GIT & Nutrition 1: / /2025-26 to / /2025-26** |
| **Days** | **8:00 am****9:00 am** | **9:00 am****10:00 am** | **10:00****10:20 am** | **10:20 am****11:20 am** | **11:20 am****12:20 pm** | **12:20 pm****01:20 pm** | **01:20****02:00 pm** | **02:00 pm - 4:00 pm** |
| **Monday** | **Anatomy (E&PND)** Dr G.AnsariGIT-A-014 (a) | **Physiology**Dr Tehseen.IGIT-P-001 (a) | **Tea break** | **Anatomy Demonstration****Groups A (Histo)**GIT-A-018**Group B (Gr.A)** GIT-A-001**Group C (Gr.A)** GIT-A-002 | **Biochemistry**Dr Shafqat.NGIT-B-001 (a) | **Prayer & Lunch break** | **Practical/Skill Lab 1****Group A Anatomy (P-1)****Group B Skill Lab – 1****Group C Biochem (P-1)** |
| **Tuesday** | **Anatomy (E&PND)** Dr G.Ansari GIT-A-014 (b) | **Physiology**Dr Raheela.AGIT-P-001 (b) | **Anatomy Demonstration****Groups A (Gr.A)** GIT-A-001**Group B (Histo)**GIT-A-018**Group C (Gr.A)** GIT-A-001 | **Biochemistry** Dr Javed.IGIT-B-001 (b) | **Practical/Skill Lab 1****Group A Skill Lab – 1****Group B Biochem (P-1)****Group C Anatomy (P-1)** |
| **Wednesday** | **Anatomy (E&PND)** Dr G.Ansari GIT-A-015 (a) | **Physiology**Dr Sadia.JGIT-P-002 (a) | **Anatomy Demonstration****Groups A (Gr.A)** GIT-A-002**Group B (Gr.A)** GIT-A-002**Group C (Histo)**GIT-A-018 | **Biochemistry** Dr Khalida.AGIT-B-002 (a) | **Practical/Skill Lab 1****Group A Biochem (P-1)****Group B Anatomy (P-1)****Group C Skill Lab - 1** |
| **Thursday** | **Anatomy (E&PND)** Dr G.AnsariGIT-A-015 (b) | **Physiology** Dr M Irfan SRGIT-P-002 (b) | **Anatomy (G)**Dr ZR.AlviGIT-A-002 (c) | **Biochemistry** Dr Dost.MKGIT-B-002 (b) | **Pharmacology** Dr Zameer.ASGIT-Ph-001 | **Civics**Meaning & NatureDr A Majid | **Islamiat**Principles of IslamMiss Kanwal |
| **Friday** | **Anatomy (E&PND)** Dr G.AnsariGIT-A-016 (a) | **Biochemistry**Dr Shafqat.NGIT-B-003 (a) | **Anatomy (G)** Dr Faisal.RGIT-A-003 (a) | **Biochemistry** Dr Javed.IGIT-B-003 (b) | **Pathology** Dr HakeemGIT-Pa-001 | **PERLs** 2-01ProfessionalismDr M Tariq K | **SELF DIRECTED LEARNING** |

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| **(Week 2) Block 4 , Module 6: GIT & Nutrition 1: / /2025-26 to / /2025-26** |
| **Days** | **8:00 am****9:00 am** | **9:00 am****10:00 am** | **10:00****10:20 am** | **10:20 am****11:20 am** | **11:20 am****12:20 pm** | **12:20 pm****01:20 pm** | **01:20****02:00 pm** | **02:00 pm - 4:00 pm** |
| **Monday** | **Anatomy (G)**Dr Imran.A GIT-A-003 (b) | **Physiology**Dr Tehseen.IGIT-P-003 (a) | **Tea break** | **Anatomy (H)**Dr ZR.AlviGIT-A-019 (a) | **Biochemistry**Dr Khalida.AGIT-B-004 (a) | **Behavioral sciences**Dr Mehwish AGIT-BhS001 | **Prayer & Lunch break** | **Practical 2**Group A **Anatomy (P-2)**Group B **Physiology (P-1)**Group C **Biochemistry (P-2)** |
| **Tuesday** | **Anatomy (G)**Dr Faisal.RGIT-A-004 (a) | **Physiology**Dr Raheela.AGIT-P-003 (b) | **Anatomy (G)**Dr Imran.AGIT-A-004 (b) | **Biochemistry**Dr Dost.MKGIT-B-004 (b) | **PERLs**2-02ProfessionalismDr M Tariq K | **Practical 2**Group A **Physiology (P-1)**Group B **Biochemistry (P-2)**Group C **Anatomy (P-2)** |
| **Wednesday** | **Civics**Significance & utilityDr A Majid | **Physiology**Dr Sadia.JGIT-P-004 (a) | **Anatomy (G)**Dr ZR.AlviGIT-A-004 (c) | **Biochemistry**Dr Shafqat.NGIT-B-005 (a) | **Behavioral sciences**Dr Mehwish AGIT-BhS002 | **Practical 2**Group A **Biochemistry (P-2)**Group B **Anatomy (P-2)**Group C **Physiology (P-1)** |
| **Thursday** | **Islamiat**Islamic stateMiss Kanwal | **Physiology**Dr M Irfan SRGIT-P-004 (b) | **Anatomy (G)**Dr Faisal.RGIT-A-005 (a) | **Biochemistry**Dr Javed.IGIT-B-005 (b) | **PERLs**2-03ProfessionalismDr M Tariq K | **Clinical Skill Foundation 1**(Please refer to skill lab manual for wards and groups distribution of CSF) |
| **Friday** | **Holy Quran**Importanc of human lifeDr A Majid | **Biochemistry**Dr Khalida.AGIT-B-006 (a) | **Anatomy (G)** Dr Imran.AGIT-A-005 (b) | **Biochemistry**Dr Dost.MKGIT-B-006 (b) | **Community Medicine** Dr Ali.HGIT-CM001 | **PERLs**2-04ProfessionalismDr M Tariq K | **English 6-1**Miss Anum |

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| **(Week 3) Block 4 , Module 6: GIT & Nutrition 1: / /2025-26 to / /2025-26** |
| **Days** | **8:00 am****9:00 am** | **9:00 am****10:00 am** | **10:00****10:20 am** | **10:20 am****11:20 am** | **11:20 am****12:20 pm** | **12:20 pm****01:20 pm** | **01:20****02:00 pm** | **02:00 pm - 4:00 pm** |
| **Monday** | **Anatomy (G)**Dr ZR.Alvi GIT-A-006 (a) | **Physiology**Dr Tehseen.IGIT-P-005 (a) | **Tea break** | **Biochemistry**Dr Shafqat.NGIT-B-007 (a) | **Aging**Dr A Yar MGIT-CM-001 | **Pak studies**Pak movementMr Jaffar | **Prayer & Lunch break** | **Practical/Skill Lab 3**Group A **Anatomy (P-3)**Group B **Skill Lab - 2**Group C **Biochem (P-3)** |
| **Tuesday** | **Anatomy (G)**Dr Faisal.RGIT-A-006 (b) | **Physiology**Dr Raheela.AGIT-P-005 (b) | **Biochemistry**Dr Javed.IGIT-B-007 (b) | **English 6-2**Miss Anum | **Behavioral sciences**Dr Mehwish AGIT-BhS003 | **Practical/Skill Lab 3**Group A **Skill Lab – 2**Group B **Biochem (P-3)**Group C **Anatomy (P-3)** |
| **Wednesday** | **Anatomy (H)**Dr Imran.AGIT-A-020 (a) | **Physiology**Dr Sadia.JGIT-P-006 (a) | **Biochemistry**Dr Khalida.AGIT-B-008 (a) | **Holy Quran**JihadDr A Majid | **Pakistan studies6-2**Mr Jaffar | **Practical/Skill Lab 3**Group A **Biochem (P-3)**Group B **Anatomy (P-3)**Group C **Skill Lab – 2** |
| **Thursday** | **Anatomy (G)**Dr ZR.Alvi GIT-A-006 (c) | **Biochemistry**Dr Dost.MKGIT-B-008 (b) | **Anatomy (G)**Dr Faisal.RGIT-A-007 (a) | **Biochemistry**Dr Shafqat.NGIT-B-009 (a) | **Pathology**Dr NaqeebGIT-Pa-002 | **Clinical Skill Foundation 2**(Please refer to skill lab manual for wards and groups distribution of CSF) |
| **Friday** | **Anatomy (G)**Dr Imran.AGIT-A-007 (b) | **Biochemistry**Dr Javed.IGIT-B-009 (b) | **Anatomy (G)**Dr ZR.Alvi GIT-A-008 (a) | **Biochemistry**Dr Khalida.AGIT-B-010 (a) | **Behavioral sciences**Dr Mehwish AGIT-BhS004 | **Group A** Anatomy (Dissection)**Group B & C** Self directed learning |

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| **(Week 4) Block 4 , Module 6: GIT & Nutrition 1: / /2025-26 to / /2025-26** |
| **Days** | **8:00 am****9:00 am** | **9:00 am****10:00 am** | **10:00****10:20 am** | **10:20 am****11:20 am** | **11:20 am****12:20 pm** | **12:20 pm****01:20 pm** | **01:20****02:00 pm** | **02:00 pm - 4:00 pm** |
| **Monday** | **Anatomy (E&PND)** Dr G.Ansari GIT-A-016 (b) | **Physiology**Dr M Irfan SRGIT-P-006 (b) | **Tea break** | **Biochemistry**Dr Dost.MKGIT-B-010 (b) | **Anatomy (H)**Dr Faisal.RGIT-A-020 (b) | **Biochemistry**Dr Shafqat.NGIT-B-011 (a) | **Prayer & Lunch break** | **Practical 4**Group A **Anatomy (P-4)**Group B **Physiology (P-2)**Group C **Biochemistry (P-4)** |
| **Tuesday** | **Anatomy (G)**Dr Imran.AGIT-A-008 (b) | **Physiology**Dr Tehseen.IGIT-P-007 (a) | **Biochemistry**Dr Javed.IGIT-B-011 (b) | **Anatomy (G)**Dr ZR.Alvi GIT-A-008 (c) | **Biochemistry**Dr Khalida.AGIT-B-012 (a) | **Practical 4**Group A **Physiology (P-2)**Group B **Biochemistry (P-4)**Group C **Anatomy (P-4)** |
| **Wednesday** | **Biochemistry**Dr Dost.MKGIT-B-012 (b) | **Physiology**Dr Raheela.AGIT-P-007 (b) | **Biochemistry**Dr Shafqat.NGIT-B-013 (a) | **Anatomy (G)**Dr Faisal.RGIT-A-009 (a) | **Biochemistry**Dr Javed.IGIT-B-013 (b) | **Practical 4**Group A **Biochemistry (P-4)**Group B **Anatomy (P-4)**Group C **Physiology (P-2)** |
| **Thursday** | **Anatomy (E&PND)** Dr G.Ansari GIT-A-017 (a) | **Anatomy (G)**Dr Imran.AGIT-A-009 (b) | **Biochemistry**Dr Khalida.AGIT-B-014 (a) | **Anatomy (G)**Dr ZR.AlviGIT-A-010 (a) | **Biochemistry**Dr Dost.MKGIT-B-014 (b) | **CLASS TEST**(All Subjects) |
| **Friday** | **Biochemistry**Dr Shafqat.NGIT-B-015 (a) | **Anatomy (G)**Dr Faisal.R GIT-A-010 (b) | **Biochemistry**Dr Javed.IGIT-B-015 (b) | **Anatomy (G)**Dr Imran.AGIT-A-010 (c) | **Biochemistry**Dr Khalida.AGIT-B-016 (a) | **Group B** Anatomy (Dissection)**Group A & C** Self directed learning |

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| **(Week 5) Block 4 , Module 6: GIT & Nutrition 1: / /2025-26 to / /2025-26** |
| **Days** | **8:00 am****9:00 am** | **9:00 am****10:00 am** | **10:00****10:20 am** | **10:20 am****11:20 am** | **11:20 am****12:20 pm** | **12:20 pm****01:20 pm** | **01:20****02:00 pm** | **02:00 pm - 4:00 pm** |
| **Monday** | **Anatomy (E&PND)** Dr G.Ansari GIT-A-017 (b) | **Physiology**Dr Sadia.JGIT-P-008 (a) | **Tea break** | **Anatomy (H)**Dr ZR.AlviGIT-A-021 (a) | **Physiology**Dr M Irfan SRGIT-P-008 (b) | **Biochemistry**Dr Dost.MKGIT-B-016 (b) | **Prayer & Lunch break** | **Practical/Skill Lab 5**Group A **Anatomy (P-5)**Group B **Skill Lab - 3**Group C **Biochemistry (P-5)** |
| **Tuesday** | **Anatomy (G)**Dr Faisal.R GIT-A-011 (a) | **Physiology**Dr Tehseen.IGIT-P-009 (a) | **Anatomy (G)**Dr Imran.A GIT-A-011 (b) | **Physiology**Dr Raheela.AGIT-P-009 (b) | **Biochemistry**Dr Shafqat.NGIT-B-017 | **Practical/Skill Lab 5**Group A **Skill Lab – 3**Group B **Biochemistry (P-5)**Group C **Anatomy (P-5)** |
| **Wednesday** | **Anatomy (G)**Dr ZR.Alvi GIT-A-012 (a) | **Physiology**Dr Sadia.JGIT-P-010 (a) | **Biochemistry**Dr Javed.IGIT-B-018 | **Anatomy (G)**Dr Faisal.RGIT-A-012 (b) | **Biochemistry**Dr Khalida.AGIT-B-019 | **Practical/Skill Lab 5**Group A **Biochemistry (P-5)**Group B **Anatomy (P-5)**Group C **Skill Lab – 3** |
| **Thursday** | **Anatomy (H)**Dr Imran.AGIT-A-021 (b) | **Physiology**Dr M Irfan SRGIT-P-010 (b) | **Anatomy (G)**Dr ZR.Alvi GIT-A-012 (c) | **Practical/Skill Lab 6**Group A **Anatomy (P-6)**Group B **Physiology (P-3)**Group C **Skill Lab - 4** | **Clinical Skill Foundation 3**(Please refer to skill lab manual for wards and groups distribution of CSF) |
| **Friday** | **Anatomy (G)**Dr Faisal.RGIT-A-013 (a) | **Biochemistry**Dr Dost.MKGIT-B-020 | **Biochemistry**Dr Shafqat.NGIT-B-021 | **Anatomy (G)**Dr Imran.AGIT-A-013 (b) | **Biochemistry**Dr Javed.IGIT-B-022 | **Community Medicine** Dr Ali.HGIT-CM002 | **Behavioral sciences**Dr Mehwish AGIT-BhS005 |

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| **(Week 6) Block 4 , Module 6: GIT & Nutrition 1: / /2025-26 to / /2025-26** |
| **Days** | **8:00 am****9:00 am** | **9:00 am****10:00 am** | **10:00****10:20 am** | **10:20 am****11:20 am** | **11:20 am****12:20 pm** | **12:20 pm****01:20 pm** | **01:20****02:00 pm** | **02:00 pm - 4:00 pm** |
| **Monday** | **Anatomy (G)**Dr ZR.Alvi GIT-A-014 (a) | **Biochemistry**Dr Khalida.AGIT-B-023 | **Tea break** | **Practical/Skill Lab 6**Group A **Physiology (P-3)**Group B **Skill Lab - 4**Group C **Anatomy (P-6)** | **Self directed learning** | **Prayer & Lunch break** | **Practical/Skill Lab 6**Group A **Skill Lab – 4**Group B **Anatomy (P-6)**Group C **Physiology (P-3)** |
| **Tuesday** | **Anatomy (G)**Dr Faisal.RGIT-A-014 (b) | **Biochemistry**Dr Dost.MKGIT-B-024 | **Anatomy (G)**Dr Imran.A GIT-A-014 (c) | **CBL****Group A** Surgery**Group B** Medicine**Group C** Pediatrics | **Clinical Skill Foundation 4**(Please refer to skill lab manual for wards and groups distribution of CSF) |
| **Wednesday** | **CBL****Group A** Medicine**Group B** Pediatrics**Group C** Surgery | **CBL****Group A** Pediatrics**Group B** Surgery**Group C** Medicine | **Community Medicine** Dr Ali.HGIT-CM003 | **Group C** Anatomy (Diss)**Group A & B** Self directed learning |
| **Thursday** | **End of Module Exam**  | **End of Module Exam** | **End of Module Exam** |
| **Friday** | **End of Module Exam**  | **End of Module Exam**  | **End of Module Exam** |

**DISTRIBUTION AND DURATION OF TEACHING ACTIVITIES**

|  |
| --- |
| Block 4, Module 6: GIT & Nutrition 1  |
| Subject  | **Hours theory**  | **Hours****practical** | **SGD/TBL/Diss****PBL/CBL/Demo** | **Total hours** |
| Anatomy | 31 (G.A)+8 (E+PND)+5 Histology=**44** | 6 practical= 12 hours | 3 Demo+1 Diss = 8hours | **64** |
| Physiology | 20 | 3 practical = 06 hours | X | **26** |
| Biochemistry | 40 | 5 practical = 10 hours | X | **50** |
| Pharmacology | 01 | X | X | **1** |
| Pathology | 02 | X | X | **2** |
| Medicine/Gastrology | X | X | 1 CBL = 02 hours | **2** |
| Surgery | X | X | 1 CBL = 02 hours | **2** |
| Pediatrics | X | X | 1 CBL = 02 hours | **2** |
| Community Medicine | 03 | X | X | **3** |
| Aging | 01 | X | X | **1** |
| Behavioral Sciences | 05 | X | X | **5** |
| PERLs | 04 | X | X | **4** |
| Clinical skill Foundation (CSF) | X | 04 = 08 hours | X | **8** |
| Skill lab | X | 04 = 08 hours | X | **8** |
| Holy Quran | 02 | X | X | **2** |
| Islamiat | 02 | X | X | **2** |
| Pakistan studies | 02 | X | X | **2** |
| Civics | 02 | X | X | **2** |
| English 1 | 02 | X | X | **2** |
| Self directed learning | 06 | X | X | **06** |
| Class test combine | 02 | X | X | **2** |
| Total | **138** | **44** | **14** | **196** |
| Total  | **7 hours/day = 35 hours/week × (5 weeks & 3 days) = 196 hours** |

**LEARNING OUTCOMES**

* To describe gross and microscopic anatomy of different parts of gastrointestinal system and associated organs
* To describe the embryological development of different parts of gastrointestinal system and associated organs
* To describe the functional anatomy and physiology of different parts of gastrointestinal system and associated organs
* To describe the motility, secretary and digestive function of gastrointestinal system
* To describe the biochemical aspects of carbohydrate metabolism
* To discuss pathological aspect and management of gastrointestinal related diseases
* To discuss the pharmacological treatment of diarrhea
* To discuss the psychosocial impact of gastrointestinal diseases in society
* To discuss the preventive measures related to gastrointestinal diseases
* To comprehend concept of balanced diet and malnutrition

**AIMS**

The **Gastrointestinal Tract and Nutrition Module** aims to:

1. Understand the structure, function, and regulation of the gastrointestinal system.
2. Identify common gastrointestinal and nutritional disorders and their pathophysiology.
3. Develop skills in diagnosing and managing GI and nutrition-related conditions.
4. Interpret clinical signs, lab tests, and imaging related to the GI system.
5. Promote ethical, patient-centered care and teamwork in managing digestive health.

**MODULE RATIONAL**

Gastrointestinal system is an integral part of human body which is primarily related to

consumption, digestion and assimilation of food to provide nutrition and calories on regular basis to human body which are essential for basic functioning of each organ of human beings. We will study in detail regarding different parts of gastrointestinal system, their functional, embryological and histological anatomy, physiological and biochemical aspects of its functioning. Students will also be briefly introduced to clinical and pathological aspects, pharmacological interventions and preventive measures of common diseases related to the system.

We have assigned six (6) weeks in academic calendar of 2nd year curriculum of MBBS to Gastrointestinal Module. We have divided our module into eight (8) themes. For every theme, anatomy, physiology, biochemistry, pathology, pharmacology, community medicine, behavioral sciences, general medicine and surgery will need to plan for integrated teaching of students for better comprehension and understanding of subject. We have outlined learning outcomes for each discipline along with allocated time to be taught.

**IMPLEMENTATION TORS**

* The time calculation for completion of modules and blocks is based on 35 hours per week. Total hours of teaching, learning and formative/summative internal assessment to be completed in a year are 1260.
* The hours mentioned within each module are the mandatory minimum required. The rest of the hours are left to the discretion of the institution that can be used in teaching, learning and assessment as per decision of the institutional academic council.
* The content and the intended learning outcomes written are mandatory, to be taught, at the level required, as the end year assessment will be based on these.
* However, the level of cognition can be kept at a higher level by the institution.
* The Table of Specifications provided will be used for the three papers of the Second professional examination. The same table of specifications should be used for the respective three block exams for internal assessment.

**LEARNING OBJECTIVES OF BLOCK-4**

**GIT & NUTRITION-I MODULE LOS**

**NORMAL STRUCTURE**

**GROSS ANATOMY**

**Human Anatomy**

**GIT-A-001**: Oral cavity and Oropharynx

* Describe the gross anatomical features of oral cavity with its neurovascular supply and lymphatic drainage
* Discuss the location, anatomical features, relations and vascular supply of tonsils: nasopharyngeal, palatine and lingual.
* Discuss the skeletal framework of hard palate with its neurovascular supply and lymphatic drainage
* Describe the gross anatomical features of soft palate with its neurovascular supply and lymphatic drainage
* Describe the attachments, nerve supply and actions of muscles of soft palate ∙ Describe the structure of tongue with attachments of muscles, blood supply, nerve supply and lymphatic drainage
* Discuss the anatomical basis of injury to hypoglossal nerve
* Describe anatomical features, relations and neurovascular supply of parotid gland and its duct, mentioning the structures entering and exiting the gland ∙ Discuss the clinical correlates of parotid gland: parotiditis, Mumps, Frey’s syndrome, parotid duct injury and parotid tumor surgery with its complications. ∙ Describe the Waldeyer’s ring
* Describe anatomical features, relations and neurovascular supply of submandibular and sublingual glands with their ducts
* Name the parts of pharynx giving their extent, anatomical features, structure, neurovascular supply and lymphatic drainage
* Name the pharyngeal constrictor muscles defining their attachments, innervation and structure traversing the gaps between adjacent muscles.

**GIT-A-002:** Anterior abdomen wall

* Describe the planes and quadrants of abdomen
* Draw and label the cutaneous innervation and dermatomes of anterior abdominal wall and anterolateral Abdominal wall and describe the clinical correlates (Abdominal pain, Muscle rigidity, Referred pain, anterior abdominal nerve block)
* Describe the fascia of anterior abdominal wall with its clinical significance
* Describe anterolateral abdominal wall arteries, veins and lymphatics and related clinical correlates—Caput Medusae
* Describe the attachments, nerve supply and actions of muscles of anterior abdominal wall
* Identify the muscles of anterolateral abdominal wall on anatomical model and/or cadaver
* Describe the extent, formation and contents of rectus sheath
* Give the formation and extent of inguinal ligament
* Describe the formation of superficial and deep inguinal rings and conjoint tendon ∙ Locate the position of superficial and deep inguinal rings on simulated subject or Cadaver
* Describe the extent, boundaries and contents of inguinal canal
* Define the following hernias: umbilical, epigastric, incisional, Spigelian, lumbar, femoral, internal and inguinal
* Differentiate between direct and indirect inguinal hernias
* Describe the location of abdominal surgical incisions
* Mark the abdominal incisions on simulated patient/subject and explain their anatomical basis
* List the structures and coverings of spermatic cord

**GIT-A-004:** Peritoneum

* Trace the horizontal and vertical peritoneal reflections
* Describe the relationship of viscera to the peritoneum
* Describe the gross anatomical features of the following:
* Mesentery
* Omentum
* Peritoneal ligaments
* Peritoneal fold
* Peritoneal sac
* Recesses
* Spaces and Gutters
* Describe the nerve supply of peritoneum
* Describe the anatomical basis and manifestations of the following: o Peritonitis and ascites
* Peritoneal adhesions (and adhesiostomy)
* Abdominal paracentesis

**GIT-A-005:** Esophagus

* Describe the extent of esophagus, its constrictions, neurovascular supply and lymphatic drainage
* Discuss the anatomical basis of esophageal varices, achalasia andgastro esophageal reflux disease (GERD)

**GIT-A-006:** Stomach

* Describe the location, position, parts, external and internal structure, relations, vascular and nerve supply and lymphatic drainage of stomach
* Draw and label a diagram illustrating the lymphatic drainage of stomach Describe the clinical presentation and the anatomical basis and manifestations of the following conditions: Carcinoma of stomach and peptic ulcers
* Identify and demonstrate the parts, external and internal features of stomach on anatomical model and cadaver

**GIT-A-007:** Small & large Intestine

* Describe the location, position, parts, relations, neurovascular supply and lymphatic drainage of duodenum
* Describe the anatomical basis and manifestations of the following conditions: o Duodenal Ulcers
	+ - * Ileal diverticulum
			* Diverticulosis
			* Large bowel cancer
			* Appendicitis
			* Volvulus
			* Intussusception
* Demonstrate the various positions of appendix
* Identify and demonstrate the parts and external features of small and large intestines on anatomical model and cadaver

**GIT-A-008:** Liver

* Describe the origin, course, branches (tributaries in case of veins) and distribution of the blood vessels of GIT
* Describe the formation, tributaries and drainage of hepatic-portal vein Discuss the sites and vessels contributing in portosystemic anastomosis Describe the clinical picture and anatomical basis for the blockage of porto-systemic anastomosis
* Identify the blood vessels supplying GIT on anatomical model and cadaver Describe location, lobes, important relations, peritoneal ligaments, blood supply, lymphatic drainage, nerve supply, related clinical correlates of liver and subphrenic spaces.

**GIT-A-009:** Biliary System

* Describe components of Biliary tree, hepatic-duct and bile duct
* Describe relations, functions, blood supply, lymphatic drainage and nerve supply of gallbladder
* Describe related clinical correlates- gall stones, biliary colic, cholecystectomy, gallbladder gangrene

**GIT-A-010:** Pancreas

* Describe the location, surfaces, peritoneal reflections, relations, neurovascular supply and lymphatic drainage of pancreas
* Describe the anatomical basis and manifestations of pancreatitis and pancreatic cancer
* Identify the parts of the pancreas

**GIT-A-011:** Spleen

* Describe the location, surfaces, peritoneal reflections, relations, neurovascular supply and lymphatic drainage of spleen
* Describe the anatomical basis and manifestations of splenic trauma and splenomegaly Identify the borders, surfaces and Impressions of spleen
* Demonstrate the correct anatomical positioning of spleen

**GIT-A-012:** Sigmoid colon, rectum & anal Canal

* Describe the gross anatomical features, peritoneal relations, blood supply, nerve supply and lymphatic drainage of sigmoid colon, rectum and anal canal Describe the anatomical basis for Sigmoidoscopy, rectal prolapse, rectal examination, rectal cancer and hemorrhoids

**GIT-A-013:** Surgical Intervention

* Outline the anatomical basis and surgical treatment plan for the following diseases:
* Esophageal Injuries
	+ - * Gastric Carcinoma
			* Intestinal Obstruction
			* Pancreatic Carcinoma
			* Obstructive Jaundice
			* Gall Stones

**EMBRYOLOGY & POST-NATAL DEVELOPMENT**

**Embryology**

**GIT-A-014:** Oral Cavity

* Describe the development of tongue
* Describe the embryological basis of tongue tie
* Describe the development of palate
* Describe the embryological basis of various facial clefts
* Identify the parts of the developing tongue and palate

**GIT-A-015:** Foregut

* Describe the formation and divisions of gut tube
* Describe the development of mesenteries
* Describe the development of esophagus
* Describe the embryological basis of esophageal atresia and/or tracheoesophageal fistula
* Describe the development and rotation of stomach
* Describe the embryological basis of pyloric stenosis
* Describe the development of duodenum, liver and gall bladder
* Describe the embryological basis of intrahepatic and extrahepatic biliary atresia Describe the development of pancreas
* Describe the embryological basis of annular pancreas

**GIT-A-016:** Midgut

Describe the embryological basis of the following

* mobile cecum
* volvulus
* retro colic hernia
* omphalocele
* gastroschisis
* Describe the embryological basis of Meckel’s diverticulum
* Describe the embryological basis of;
* Gut rotation defects
* Gut atresia and stenosis

**GIT-A-017:** Hindgut

* Describe the development of hindgut
* Describe the embryological basis of;
* Rectourethral and rectovaginal fistulas
* Recto anal fistulas and atresia
* Imperforate anus
* Congenital megacolon
* Identify the parts of the developing foregut, midgut and hindgut originating from the endoderm

**MICROSCOPIC ANATOMY (HISTOLOGY & PATHOLOGY)**

**Histology**

**GIT-A-018:** Oral Cavity & Esophagus

* Describe the light microscopic structure of;
* Lips
* Tongue including lingual papillae and taste buds
* Oral Cavity (Cheeks, Teeth gums, hard & Soft palate)
* Describe the histological structure of parotid, submandibular and sublingual glands. Compare and contrast the histological structures of parotid, submandibular and sublingual glands.
* Describe the serous and mucous acini and give histological differences between the two.
* Describe the structure and location of serous demilunes.
* Describe histology of oropharynx
* Relate the characteristics of various layers of GIT with their function Describe the light microscopic structure of esophagus
* Tabulate the histological differences between different parts of esophagus Describe the histological changes associated with reflux esophagitis and Barrett’s esophagus

**GIT-A-019:** Stomach

* Describe the light microscopic structure of stomach
* Describe the role of parietal cells in pernicious anemia

**GIT-A-020:** Small Intestine

* Describe the light microscopic structure of
* Duodenum
* Jejunum
* Ileum
* Discuss the histological basis of celiac disease
* Discuss the histological basis of Crohn’s disease

**GIT-A-021:** Large Intestine

Describe the light microscopic structure of

* Colon
* Appendix
* Rectum
* Define colorectal cancer, anal abscess, hemorrhoids

**PRACTICAL:**

**Histology Practical**

**GIT-A-022:** Oral Cavity

* Identify, draw and label the histological sections of tongue and lips and enumerate points of identification

**GIT-A-023:** Salivary Gland

* Identify, draw and label the histological sections of salivary glands (Submandibular, Sublingual and Parotid)

**GIT-A-024:** Upper GIT

* Identify, draw and label the histological structure of the esophagus and enumerate points of identification
* Identify, draw and label the histological structure of stomach and enumerate points of identification

**GIT-A-025:** Small Intestine

* Identify, draw and label the histological structure of small intestine (Duodenum, Jejunum, and Ileum) and enumerate points of identification

**GIT-A-026:** Large Intestine

* Identify, draw and label the histological structure of large intestine and enumerate points of identification

**GIT-A-027:** Organs associated with GIT

* Identify, draw and label the histological sections of Gall bladder, liver and enumerate points of identification
* Identify, draw and label the histological sections of pancreas and enumerate points of identification

**GIT-A-028:** Lymphatic tissue associated with GIT

* Identify, draw and label the histological sections of Palatine tonsil, appendix, peyer’s patches and enumerate points of identification

**MEDICAL PHYSIOLOGY**

* **GIT-P-001:** General Principles of GIT Function- Motility, Nervous Control & Blood Flow Classify the components of enteric nervous system
* Discuss the location and significance of myenteric plexus
* Describe the Meissner’s plexus
* Differentiate between myenteric and Meissner’s plexuses
* Explain the mechanism of developing slow wave
* Explain the mechanism of developing spike potential
* Enlist the factors that depolarize & hyperpolarize the GIT membrane Enlist the excitatory & inhibitory neurotransmitters of enteric nervous system Explain the role of sympathetic & parasympathetic nervous system in controlling GIT function.
* Enlist the gastrointestinal reflexes & explain the functions of these reflexes Enlist the hormones acting on GIT, their stimuli, site of release and actions Enumerate different types of movements that occur in GIT
* Discuss the functions and control of GIT movements
* Discuss the effect of gut activity and metabolic factors on GIT blood flow Explain the nervous control of GIT blood flow

**GIT-P-002:** Oral Cavity & Esophagus

* Trace the reflex arc of mastication Oral Cavity & Esophagus
* Explain the process and importance of chewing reflex
* Enlist the stages of swallowing
* Describe the mechanism of voluntary stage of swallowing
* Trace the reflex arc of involuntary stage of swallowing
* Enlist the steps involved in involuntary stage of swallowing
* Explain the effect of swallowing on respiration
* Discuss the mechanism of esophageal stage of swallowing
* Enlist causes of dysphagia integrates with Surgery
* Explain the types and role of different peristalsis originating in esophagus Discuss the role of Lower Esophageal Sphincter (Gastroesophageal)
* Discuss the pathophysiology of achalasia & Mega esophagus
* Enlist the features and treatment of achalasia

**GIT-P-003:** Stomach

* Explain storage function of stomach
* Describe the basic electrical rhythm of stomach wall
* Explain the role of pyloric pump and pyloric sphincter in gastric emptying

**GIT-P-004:** Small Intestine

* Enumerate and explain the hormones and movements of small intestine Explain the term “peristaltic rush”
* Explain the functions of ileocecal valve and sphincter (integrates with Medicine) Enumerate the types of intestinal sprue (integrates with Medicine) Enlist the features of intestinal sprue (integrates with Medicine)
* Explain the consequences of sprue on the body (integrates with Medicine)

**GIT-P-005:** Large Intestine

* Enumerate the types of movements taking place in colon
* Explain the mechanism of developing movements of colon and their control through Gastrocolic and Duodenocolic Reflexes
* Enlist the defecation reflexes
* Explain the mechanism of defecation reflex
* Trace the reflex arc of defecation
* Name the other autonomic reflexes that affect bowel activity
* Explain the pathophysiology of constipation (integrates with Medicine) Discuss the causes of diarrhea
* Describe the cause of Hirschsprung’s disease (integrate with Medicine)

**GIT-P-006:** Liver

* Explain the functions of liver
* Differentiate between liver and gall bladder bile and the hormones acting on them Enumerate the causes and composition of developing gall stones (Integrate with Surgery)

**GIT-P-007:** Pancreas

* Explain function and secretions of pancreas
* Enlist the causes and pathophysiology of acute and chronic pancreatitis (Integrate with Medicine)
* Enumerate the features of acute pancreatitis and explain the physiological basis of each feature of pancreatitis (Integrate with Medicine)

**GIT-P-008:** Vomiting Reflex

* Describe the stages of vomiting act
* Trace the reflex arc of vomiting
* Explain the role of chemoreceptor trigger zone for initiation of vomiting by drugs or by motion sickness

**GIT-P-009:** Malnutrition (Integrated with Medicine and Gastroenterology)

* Define Malnutrition
* Identify various causes of malnutrition
* Identify the risk factors of malnutrition
* Outline treatment strategies

**GIT-P-010:** Acute & Chronic Diarrhea

* Define Acute Diarrhea
* Define Chronic Diarrhea
* Enlist various causes for acute and chronic diarrhea

**PRACTICALS**

**PHYSIOLOGY**

**GIT-P-011:** Cranial nerve

Demonstrate Cranial nerves V, IX & X testing

**BIOCHEMISTRY**

**GIT-B-001:** Biochemistry of GIT/

* GIT secretions & digestion and absorption of dietary Carbohydrates
* Give the composition and importance of saliva and related clinical disorder (xerostomia) Give the composition and importance of gastric juice with special reference to mechanism of HCl secretion and related clinical disorders (achlorhydria, gastric ulcer)
* Give the composition and importance of pancreatic juice, bile and succus entericus and related clinical disorders (pancreatitis, cystic fibrosis, cholelithiasis).
* Describe digestion and absorption of dietary carbohydrates along with inherited and acquired disorders (lactose intolerance, sucrase-isomaltase deficiency).

**GIT-B-002:** Carbohydrate metabolism/Entry of glucose into cells

* Elaborate key features of various transport systems for
* entry of glucose into cells.

**GIT-B-003:** Carbohydrate metabolism/Hormonal control of BSL**s**

* Enlist the hormones that play important roles in regulating carbohydrate metabolism.
* Elaborate the metabolic effects of these hormones.
* Infer the consequences of deficiency and excess of these
* Hormones

**GIT-B-004:** Carbohydrate metabolism/Glycolysis

* Describe the glycolytic pathway along with its regulation and significance. Compare key features of aerobic and anaerobic glycolysis.
* Calculate the number of ATP produced during aerobic and anaerobic glycolysis. Explain hemolytic anemia in subjects with pyruvate kinase deficiency based on your biochemical knowledge.
* Clearly differentiate between substrate level phosphorylation and oxidative phosphorylation

**GIT-B-005:** Carbohydrate metabolism/Metabolic fates of pyruvate

* Discuss the metabolic fates of pyruvate.
* Describe the transport of pyruvate from cytosol to mitochondria.
* Elaborate the reaction catalyzed by pyruvate dehydrogenase complex (PDH) along with regulation and significance.
* Enlist inherited and acquired causes of lactic acidosis and give biochemical explanation for lactic acidosis in each condition.

**GIT-B-006:** Carbohydrate metabolism/Kreb’s Cycle

* Describe the TCA cycle along with regulation & significance. Calculate the energy yield of TCA

**GIT-B-007:** Carbohydrate metabolism/Gluconeogenesis

* Define gluconeogenesis and enumerate gluconeogenic substrates (precursors)
* Delineate the reactions involved in synthesis of glucose from various gluconeogenic substrates.
* Elaborate the regulation and importance of gluconeogenesis.
* Explain the significance of Cori cycle and glucose alanine cycle

**GIT-B-008:** Carbohydrate metabolism/Glycogen metabolism

* Illustrate the reactions of glycogenesis, glycogenolysis along with their regulation and significance
* Enlist various types of glycogen storage diseases (GSDs)
* Infer the key biochemical and clinical features of various GSDs from the respective enzyme deficiencies.

**GIT-B-009:** Carbohydrate metabolism/HMP Hexose Monophosphate Pathway

* Describe the reactions and regulation of Hexose Mono Phosphate Pathway (HMP). Discuss the importance of HMP shunt
* Explain hemolytic anemia in subjects suffering from G6PD deficiency. Diagnose G6PD (glucose-6-phosphate dehydrogenase) deficiency based on given data

**GIT-B-010:** Carbohydrate metabolism/Uronic acid pathway & sorbitol pathway

* Describe the reactions, regulation, and biomedical importance of uronic acid pathway and sorbitol pathway

**GIT-B-011:** Carbohydrate metabolism/Metabolism of galactose & fructose

* Outline the reactions involved in metabolism of galactose and fructose.
* Infer the key biochemical and clinical features of galactosemia, essential fructosuria, and hereditary fructose intolerance (HFI) from the respective enzyme deficiencies.
* Explain hypertriacylglycerolemia, hypercholesterolemia, and hyperuricemia associated with fructose loading of liver.

**GIT-B-012:** Carbohydrate metabolism/Ethanol metabolism

* Outline the reactions involved in ethanol metabolism.
* Explain how ethanol consumption causes hypoglycemia and fatty liver.

**GIT-B-013:** Respiratory chain & oxidative phosphorylation/ETC

* Diagrammatically illustrate the organization of electron transport chain (ETC) depicting the flow of electrons
* Enlist the components of complex I, II, III, and IV
* Enumerate clinically important inhibitors of electron transport chain and mention their site of action.

**GIT-B-014:** Respiratory chain & oxidative phosphorylation/ATP synthesis

* Elaborate the structure of ATP synthase (complex V).
* Explain how the free energy generated by the transport of electrons by ETC is used to produce ATP from ADP + Pi (i.e. chemiosmotic hypothesis)
* Elaborate the effect of Oligomycin and uncouplers on ATP production.
* Describe the effect of arsenic poisoning on carbohydrate metabolism and ATP production.
* Elaborate the glycerol 3-P shuttle and malate-aspartate shuttle for the transfer of reducing equivalents from cytosol into the mitochondria.

**GIT-B-015:** Nutrition/Balanced diet:

* Define and classify nutrients into macro and micronutrients.
* Elaborate the concept and importance of Balanced Diet
* Enlist the components of balanced diet and elaborate the importance of each component.

**GIT-B-016**: Nutrition/Special nutritional requirements (Integrate with Community Medicine)

* Delineate special nutritional requirements during pregnancy, lactation, growth, and old age.
* Suggest dietary advice for patients suffering from diabetes mellitus, hypertension, obesity, renal disease, lactose intolerance, gluten enteropathy, hypercholesterolemia, and hemorrhoids**.**

**GIT-B-017:** Nutrition/PEM (Integrate with Community Medicine/Pediatrics)

* Enlist causes and types of Protein Energy Malnutrition (PEM).
* Differentiate between Kwashiorkor and Marasmus based on the given data
* Enlist symptoms and signs
* Outline treatment strategies

**GIT-B-018:** Nutrition/Caloric requirements

* Define energy balance.
* Compare the energy content of macro nutrients and alcohol.
* Suggest a simple method for estimation of caloric requirements of sedentary adults, moderately active adults, and very active adults

**GIT-B-019:** Nutrition/BMR

* Define basal metabolic rate (BMR)
* Elaborate the effect of various physiological and pathological factors on BMR.

**GIT-B-020:** Nutrition/BMI & Obesity (Integrate with Community medicine)

* Define body mass index (BMI).
* Categorize individuals into underweight, normal, overweight, obese, and morbidly obese based on theirs BMI values.
* Elaborate the role of genetic, environmental, and behavioral factors in determining body weight.
* Clearly differentiate between upper body obesity and lower body obesity.
* Enlist health risks associated with obesity

**GIT-B-021**: Vitamins/Energy releasing vitamins & vitamin E and K

* Describe sources, Recommended Dietary Allowance (RDA), biochemical functions, deficiency, and toxicity of vitamin B1, B2, B3, B5 and B7.
* Describe sources, RDA, biochemical functions, deficiency, and toxicity of vitamin E and vitamin K.

**GIT-B-022:** Minerals

* Define and classify minerals according to their daily requirements. Give sources, functions and biomedical importance of Na, K and Cl.
* Describe sources, functions and biomedical importance of Mg, Se, I, F, Cu, Cr, Mn, Mo, Zn and Co.

**GIT-B-023:** Malnutrition (Integrated with Pediatrics)

* Define Marasmus and Kwashiorkor
* **GIT-B-024:** Acute & Chronic Hepatitis (Integrated with Medicine & Gastroenterology)
* Define Acute Hepatitis
* Define Chronic Hepatitis
* Enlist various causes for acute and chronic hepatitis
* Describe various symptoms and signs of chronic hepatitis
* Outline treatment strategies

**PRACTICAL**

**BIOCHEMISTRY**

**GIT-B-025**: Estimations of blood/urine analytes

* Estimate blood glucose level by glucose oxidase method and interpret the results
* Determine blood glucose level by glucometer and interpret the result.
* Perform Glucose tolerance test (GTT) and interpret the results.
* Determine urine glucose by dipstick method and interpret the result.
* Estimate serum amylase and interpret the result.

**GIT-B-026**: Interpretation of results

* Interpret the results of Lactose tolerance test.

**GIT-B-027:** Determination & interpretation of results

* Determine BMI of given subject and interpret the results

**AGING**

**COMMUNITY MEDICINE**

**GIT-CM-001:**

* Preventive Medicine in Geriatrics
* Identify causes and risk factors for malnutrition in elderly
* Outline treatment strategies

**PATHOPHYSIOLOGY AND PHARMACOTHERAPEUTICS**

**PHARMACOLOGY**

**GIT-Ph-001**: Anti Diarrheal Drugs

* Classify anti diarrheal drugs and describe the pharmacokinetics, mechanism of action, pharmacological effects, uses and adverse effects

**GIT-Pa-001:** Peptic Ulcer

* Describe the etiology, pathogenesis, morphology and clinical features of peptic ulcer disease

**GIT-Pa-002:** Infectious agents causing diarrhea

* Enumerate common infectious agents of diarrheal diseases
* Discuss pathogenesis and clinical features of common pathogens

**DISEASE PREVENTION & IMPACT**

**BEHAVIORAL SCIENCES**

**GIT-BhS-001:** Health related behaviors

* Identify health related behaviors and apply principles of learning to modify eating and addictive patterns

**GIT-BhS-002:** Health related believes

* Discuss health belief model and its application in managing common presentations related to gastrointestinal system
* Explain the transtheoretical model of changing behaviors to modify the diseases pattern

**GIT-BhS-003**: Management of Obesity

* Describe motivational interviewing and outline a management plan to help the individuals with obesity and diabetes to lose weight

**GIT-BhS-004:** Medically Un described Symptoms

* Describe and distinguish Medically Un described Symptoms (MUS)
* Describe the association of psychosocial factors with MUS
* Outline the principles of management plan according to biopsychosocial model
* Describe role of Cognitive Behavioral Therapy (CBT)

**GIT-BhS-005:** Role of nutritional deficiencies in mental development

* To identify effect on mental development of nutritional deficiencies

**COMMUNITY MEDICINE**

**GIT-CM-001:** Epidemiology of communicable diseases (Intestinal infection)

* Describe prevention and control of polio, viral hepatitis A, cholera, typhoid and food poisoning
* Describe prevention and control of amoebiasis, ascariasis, hook worm infestation

**GIT-CM-002:** Preventive medicine in pediatrics

* Describe the advice to be given for breast feeding, weaning and childhood
* Discuss risk factors, prevention and management of pediatrics protein energy malnutrition (PEM)

**GIT-CM-003:** Nutrition & Health

* Describe balanced diet for adult and obesity
* Plot and interpret growth chart for children under 5 years of age
* Describe prevention and control of deficiency of Vitamin A and D

**CLINICAL SKILLS FOUNDATION**

**CFRC-2 GIT and Nutrition-1**

* Demonstrate steps of abdominal examination
* Demonstrate the procedure of shifting dullness
* Identify organs on X-ray abdomen
* Assess dehydration in infant/young child and explain procedure of making home made ORS

**OPERATIONAL DEFINITIONS**

|  |
| --- |
| **Large group interactive session (LGIS)** |
| Lecture format is the most widely used approach to teaching especially in a large class size with average attention span of 20-30 mins. Interactive lecturing involves a two-way interaction between the presenter and the participants. Interactive methods like brain storming buzz group, simulation, role play, and clinical cases can be used.**Significance of its usage**Relaxed environment, diverse opinions, Increase attention & motivation. Independence & group skills. Cost effective. Suitable for taking advantage of available  |
| **Team Based learning** |
| TBL is a uniquely powerful form of small group learning. It provides a complete coherent framework for building a flipped course experience. There are four essential elements of TBL which include:Teams must be properly formed and managed (5-7 students) Getting students readyApplying course concepts Making students accountable.**Significance of its usage**Students are more engaged.Increased excitement in TBL classroom Teams outperforms best members.Students perform better in final and standardized exams. |
| **Problem Based Learning (PBL)** |
| It is an instructional student-centered approach in which students work in small groups on a health problem, identifying their own educational needs and being responsible for the acquisition of the knowledge required to understand the scenario. **Significance of its usage**Teamwork, Critical evaluation of literature, Self-directed learning and use of resources Presentation skills Leadership |
| **Case Based Learning (CBL)** |
| It is an inquiry structured learning experience utilizing live or simulated patient cases to solve, or examine a clinical problem, with the guidance of a teacher and stated learning objectives.**Significance of its usage**Induce a deeper level of learning by inculcating critical thinking skills. Flexibility on use of caseStudents acquire insightful information. Stay abreast with novel advancements in healthcare. |
| **Tutorial** |
| Tutorial is a class or short series of classes, in which one or more instructors provides intensive instruction on some subject to a small group. Its purpose is to explore point of view and guide towards directed, reflective learning skills.**Significance of its usage**Develop and assess the extent of background knowledge of students, which enables them to properly understand concepts which may not have been understood in lectures.Develop problem-solving skills. Develop practice of self-learning. Reduced time to understand the topic. |
| **Skill lab** |
| It refers to specifically equipped practice rooms functioning as training facilities offering hands on training for the practice of clinical skills within non-threatening environment prior to their real-life application This applies to both basic clinical skills as well as complex surgical skills.**Significance of its usage**Controlled, anxiety-free, and risk-free learning environment to students. A platform for repeated practice for mastery in relevant clinical skills Increase the preparedness of student learners before transitioning to the real hospital setting.Build strong communication skills.Enable learners to make critical decisions. |
| **Lab practical** |
| Lab practical involve things like identifying a structure, a type of stain through a microscope, a problem with a preparation, reading biochemical test results and answering safety questions. These simulations allow students to attempt the experiments in the laboratory in a risk-free way that provides the opportunity to make mistakes and learn how to correct them using the immediate feedback generated. **Significance of its usage**Enhance mastery of subject matter. Develop scientific reasoning. Develop practical skills. Develop teamwork abilities. |
| **Demonstration** |
| The demonstration method in teaching can be defined as giving a demo or performing a specific activity or concept. It is a teaching-learning process carried out in a systematic manner.**Significance of its usage**Promotes learning and correlates theory with practice. Sharpens the observation skills.Sustain interests in learning environment. Helps teacher to evaluate students response |
| **Reflective writing** |
| It is a metacognitive process that occurs before, during and after the situation with the purpose of developing greater understanding of both the self and situation so that future encounters with the situation are informed from previous encounters.Significance of its usage Questioning attitude and new perspectives. Areas for change and improvement. Respond effectively to new challenges. Critical thinking and coping skills |
| **Bedside teaching** |
| Teaching and learning that occurs with actual patient as the focus. It occurs in wards, emergency departments, operating rooms, and high dependency units.Significance of its usage Stimulus of clinical contact Psychomotor skills Communication skills Language skills Interpersonal skills Professional attitudes and empathy Role modeling |
| **Simulation** |
| Person, device or set of conditions, which attempts to present education and evaluation of problems authentically. The student or trainee is required to respond to the problems as she/he would under natural circumstances.Significance of its usage Safety for patients Liberty to make mistakes. Manageable/variable complexity of tasks Opportunity to develop self-efficacy before real patient encounter. Repeatability of tasks Learning at different pace is permissible |
| **Clinical case based conference** |
| Clinical Case based conferences allow clinicians and medical students to present difficult case material and include discussions of diagnostic, clinical formulation, and/or treatment issues.Significance of its usage Provides detailed (rich qualitative) information. Provides insight for further research. Permitting investigation of otherwise impractical (or unethical) situations. |
| **Ward rounds** |
| It is a composite clinical practice to review inpatients’ management and progress, to make decisions about further investigations, treatment options and discharge from hospital. It is an opportunity for clinicians, students, and patients to participate in education and training at bedside.Significance of its usage Patient management skills History taking Physical examination Time management skills Communication skills |
| **Case presentations** |
| It is a teaching method which provides descriptive information about a clinical patient scenario and to share this educational experience with the general medical and scientific community. It prepares students for clinical practice, using authentic clinical cases by linking theory to practice with the help of inquiry-based learning methods.Significance of its usage Cultivate the capacity for critical analysis. Judgement and Decision making Facilitate creative problem solving. Allow students to develop realistic solutions to complex problems |

**ASSESSMENT POLICY**

A student must get pass marks in every discipline (i.e. obtain minimum 50%) in the aggregate theory marks. He/ She must also get minimum of 50% in the aggregate of the practical exams in order to pass. A student must get an aggregate of 50% marks in both theory and practical in order to be declared as pass or fail in that discipline.

**Attendance**

As per RYK Medical College, University of health sciences and Pakistan Medical & Dental Council guide lines, students are instructed to attend all the lectures, small group discussions, labs, clinical ward attachments and all other instructional activities.

**80% attendance is mandatory to sit in End of module examination and Annual examination. No student will be allowed to appear in examination, if the attendance is short.**

**Table of specifications (TOS)**

|  |
| --- |
| **Block 6 – Table of Specifications** |
| **Theme** | **Subject** | **Written Exam** | **Oral/Practical/Clinical Exam** |
| **MCQ** **(1 Mark each)** | **SEQ****(5 Mark each)** | **Total**  **Marks** | **OSPE****(8 marks each observed)** | **OSCE****(8 marks each observed** | **OSVE****(16 marks each observed)** | **Marks** |
| **Normal structure** | Anatomy applied/clinical | 24 | 03 | 39 | 03 | - | 01 | 40 |
| **Normal function** | Physiology applied/clinical | 26 | 03 | 41 | 03 | - | 01 | 40 |
| Biochemistry applied/clinical | 09 | 01 | 14 | 01 | - | 01 | 24 |
| **Disease burden & prevention** | Community medicine & public health | 04 | - | 04 | - | - | - | - |
| Behavioral sciences | 03 | - | 03 | - | - | - | - |
|  **Pathophysiology & pharmacotherapeutics**  | Pathology  | 12 | - | 12 | - | - | - | - |
| Pharmacology | 07 | - | 07 | - | - | - | - |
| **CFRC** | CF-2-3 | - | - | - | - | 01 | - | 08 |
| **PERLs** | PERL-2-3 | - | - | - | - | 01 | - | 08 |
| **Total** |  | **85** | **7×5=35** | **120** | **07 stations ×08=56** | **02 stations×8=16** | **03 stations ×16=48** | **120** |

**ASSESSMENT SCHEDULE, OSPE/OSCE/OSVE & PRACTICAL SCHEME**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Station # 5****OSPE****Observed****Anatomy** | **→** | **Station # 6****Rest Station** | **→** | **Station # 7****OSCE****Observed****PERLs** | **→** | **Station # 8****Structured****OSVE****Biochemistry** |
| **↑** | **OSPE/OSCE/OSVE Scheme Map (BLOCK 4)** | **↓** |
| **Station # 4****Structured****OSVE****Anatomy** |

|  |  |  |
| --- | --- | --- |
| **Subject** | **Total Stations**  | **Station #** |
| **Anatomy OSPE Stations** | 3 | 1-5-10 |
| **Anatomy OSVE Station** | 1 | 4 |
| **Physiology OSPE stations** | 2 | 2-9 |
| **Physiology OSVE station** | 1 | 13 |
| **Biochemistry OSPE stations** | 2 | 3-11 |
| **Biochemistry OSVE station** | 1 | 8 |
| **C-FRC OSCE station** | 1 | 12 |
| **PERLS OSCE station** | 1 | 7 |
| **Rest stations** | 2 | 6-14 |
| **Total stations** | **14** |

 | **Station # 9****OSPE****Observed****Physiology** |
| **↑** | **↓** |
| **Station # 3****OSPE****Observed****Biochemistry** | **Station # 10****OSPE****Observed****Anatomy** |
| **↑** | **↓** |
| **Station # 2****OSPE****Observed****Physiology** | **Station # 11****OSPE****Observed****Biochemistry** |
| **↑** | **↓** |
| **Station # 1 OSPE****Observed****Anatomy** | **START****&****END** | **Station # 14****Rest Station** | **←** | **Station # 13****Structured****OSVE****Physiology** | **←** | **Station # 12****OSCE****Observed****C-FRC** |

|  |  |  |  |
| --- | --- | --- | --- |
| **DATE** | **EXAMINATION** | **TIME** | **VENUE** |
| ---/---/2026 | Theory | --:-- to --:-- | Roll no 1 - 50 (multipurpose hall) |
| Roll no 51 – 100 (skill lab) |
| ---/---/2026 | OSPE/OSCE/OSVE | --:-- to --:-- | Roll no 1 – 50 (multipurpose hall) |
| ---/---/2026 | OSPE/OSCE/OSVE | --:-- to --:-- | Roll no 51–100 (multipurpose hall) |

**ASSESSMENT TOOLS & SAMPLE QUESTIONS**

**ASSESSMENT TOOLS:**

**Single best type** also known as MCQs (Multiple Choice Questions)

**MCQ:**

 A BCQ has a statement or clinical scenario of five options (likely answers).

**Correct answer carries one mark, and incorrect ‘zero mark’. There is NO negative marking.**

Students mark their responses on specified computer-based sheet designed for RYKMC.

**Sample BCQs:**

A 25 year old male patient presented with complains of productive cough, breathlessness and wheezing. He has been diagnosed with chronic obstructive pulmonary disease.

The most common risk factor for the disease is:

a) Air pollution

b) Coal mining

c) Glass industries

d) Pharmaceutical industries

 e) Tobacco smoke

**OSPE, OSVE, OSCE & Practical:** Please consult the proposed plan

* It may comprise between 12- 25 stations.
* The content may assess application of knowledge, or practical skills.
* Student will complete task in defined time at one given station.
* All the students are assessed on the same content by the same examiner in the same allocated time.
* A structured examination will have observed, unobserved, interactive and rest stations.

**Observed and interactive stations:**

They will be assessed by internal or external examiners through the task or viva.

**Unobserved station (Static):**

It will be static station in which students will have to answer the questions related to the given pictures, models or specimens on the provided response sheet.

**Rest station**: It is a station where no task is given, and during this time student can organize his/her thoughts.

**BOOKS AND RECOMMENDED READINGS**

**Anatomy**

* Gray’s anatomy.
* Langman’s medical embryology.
* Snell’s clinical anatomy.
* Snell’s clinical neuroanatomy. Walter kluwer.
* Laiq H.S Medical histology. Paramount books.
* Laiq H.S general anatomy. Paramount books.
* Wheater’s functional histology.

**Physiology**

* Guyton AC and Hall text book of medical physiology, W,B sunders & co.
* Essentials of medical physiology by Mushtaq Ahmad.

Ganong Physiology.

**Biochemistry**

* Harper’s biochemistry by Robert k murray, daryl k, granner McGraw-hill.
* Lippincott’s illustrated reviews biochemistry Champe, P.C & Harvey.
* ABC of clinical genetics by H.M Kingston.

**Pathology**

* Pathologic basis of disease by Vinay kumar, abul K, Abbas WB saunders.
* Pocket companion to pathologic basis of diseases,Richard Mitchall, vinary.
* General pathology by walter. Churchil livingstone.

**Pharmacology**

* Basic and clinical pharmacology by katzung, MCGraw-hill
* Pharmacology by champe and Harvey, Lippincott Williams & wilkins.

**Behavioral sciences**

* Hand book of behavioral sciences by prof Mowadat H Rana 3rd edition
* Medical and psychosocial aspects of chronic illness and disability Donna R.

**Community medicine**

* Parks textbook of preventive and social medicine, K park
* Public health and community medicine Ilyas, Ansari

**Surgery**

* Bailey & love short practice of surgery

**Medicine**

* Davidson’s principles and practice of medicine

**Islamiyat/Pakistan studies**

* Standard islamiyat (compulsory) for B.A, B.sc, M.A, M.sc by professor M. sharif islahi
* Pakistan studies (compulsory) for B.A, B.sc,B.com, Medical/Engineering by prof Shah Jahan

**End of Module/ Block examination will be conducted on ---/---/ 2025/26**