STUDY GUIDE PATHOLOGY

BLOCK 8

INTEGRATED MODULAR SYSTEM

ACADEMIC SESSION, 2026

3rd YEAR MBBS

GUJRANWALA MEDICAL COLLEGE

GUJRANWALA

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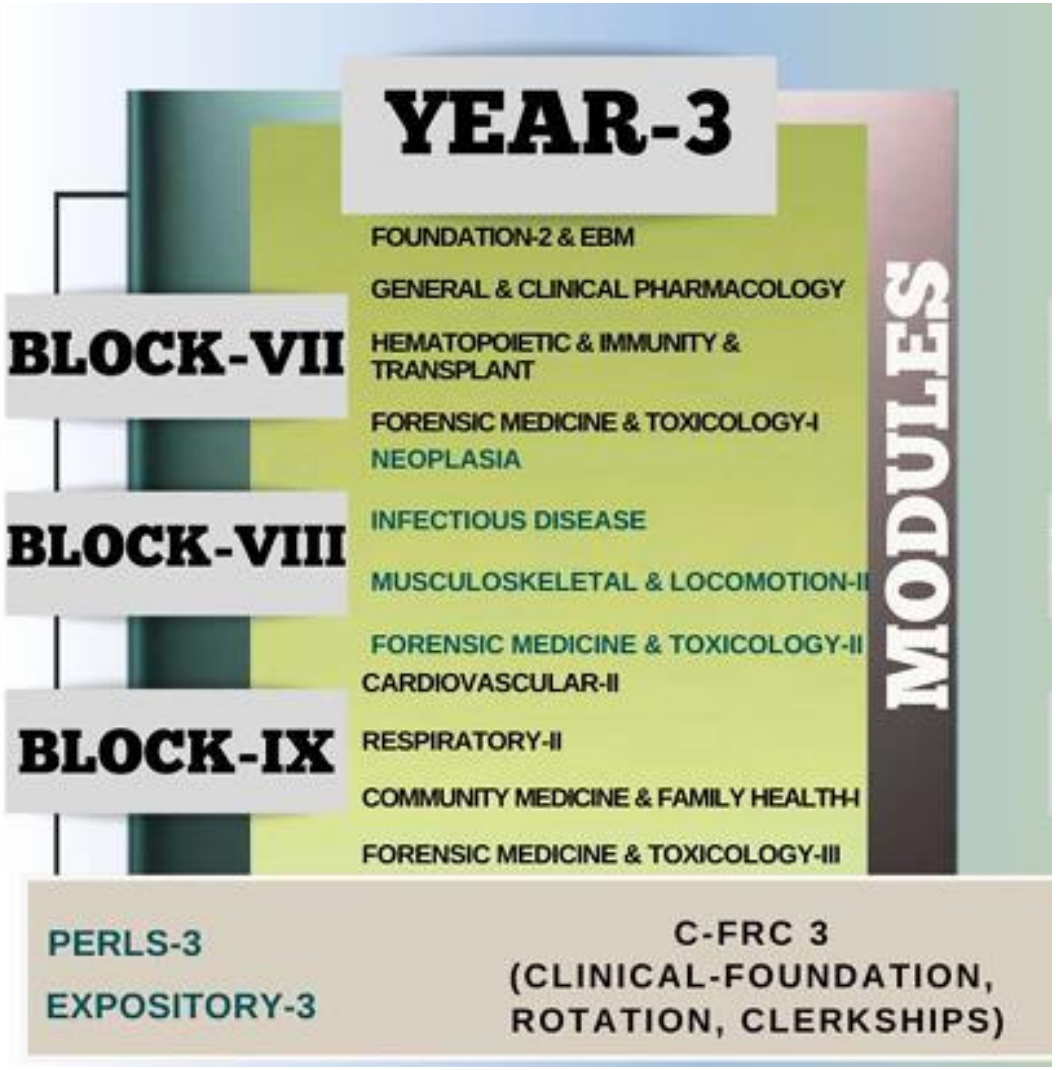
YEAR-3
BLOCK-VII
BLOCK-VIII
BLOCK-IX
FOUNDATION-2 & EBM
GENERAL & CLINICAL PHARMACOLOGY
HEMATOPOIETIC & IMMUNITY & TRANSPLANT
FORENSIC MEDICINE & TOXICOLOGY-I
NEOPLASIA
INFECTIOUS DISEASE
MUSCULOSKELETAL & LOCOMOTION-II
FORENSIC MEDICINE & TOXICOLOGY-II
CARDIOVASCULAR-II
RESPIRATORY-II
COMMUNITY MEDICINE & FAMILY HEALTH-I
FORENSIC MEDICINE & TOXICOLOGY-III
MODULES
PERLS-3
EXPOSITORY-3
C-FRC 3
(CLINICAL-FOUNDATION, ROTATION, CLERKSHIPS)

Study Hours of

Block-8

Module No.	Module Weeks	Recommended Hours
16	1.5	21
17	03	70
18	02	07

	Module	Topics	Theory hours	Practical hours	Total hours
Block 08	**16 Neoplasia**	Neoplasia	15	06	21
	17 Infectious diseases	Microbiology	53	10+02+05 (Infection control+ Biosafety)	70
	18 MSK II	Diseases of MSK	02	05	07

List of Faculty in Pathology Department

Sr. No.	Dr. Name	Designation	Contacts
1.	Prof. Dr. Rehma Dar	HOD Pathology	0323-4691588
2.	Dr. Aisha Hameed	Associate Professor	0305-4984461
3.	Dr. Waqar Azeem	APMO	0323-7554353
4.	Dr. Yasir Shabbir	Senior Demonstrator	0322-5652836
5.	Dr. Hira Batool	Demonstrator	0334-3402278
6.	Dr. Manal Tariq	Demonstrator	0321-6422199
7.	Dr. M. Sajjad	Demonstrator	0333-8130954
8.	Dr. Ahmed Mushtaq	Demonstrator	0322-5676926
9.	Dr. Fatima Chatta	Demonstrator	0342-6069344
10.	Dr. Sana Ijaz	Demonstrator	0321-6619820
11.	Dr. Ammara Farooq	Demonstrator	0321-7175276

Department of Pathology

Gujranwala Medical College,

Gujranwala.

No. Path._____/ GMC Dated____/____/2026

3RD YEAR MBBS (SESSION 2025-26) GMC, GUJRANWALA.

WEEKLY DISTRIBUTION OF BATCHES FOR PRACTICAL / TUTORIAL / SGD SESSIONS OF BLOCK-8
(DEPARTMENT OF PHARMACOLOGY, PATHOLOGY & FORENSIC MEDICINE.

Students are requested to note please.

Days/Departments	Pharmacology	Pathology	Forensic Medicine
Monday	AB	CD	E
Tuesday	BC	DE	A
Wednesday	CD	EA	B
Thursday	DE	AB	C
Saturday	EA	BC	D

New Batches.
Batch A= 1-25
Batch B= 26-50
Batch C= 51-77
Batch D: 78-102
Batch E: 103-134

Prof. Dr. Rehma Dar
Incharge 3rd Year MBBS

Dr. Aisha Hameed
Incharge of Module & Block-8 for 3rd Year MBBS

Schedule of Block 8 Clinical Rotations

Weeks	Surgery	Medicine	Pulmonology and Pediatrics [1*]	Orthopedics and Gynecology [2*]
1st and 2nd week	Batch C	Batch D	Batch A	Batch B
3rd and 4th week	Batch D	Batch A	Batch B	Batch C
5th and 6th week	Batch A	Batch B	Batch C	Batch D
7th and 8th week	Batch B	Batch C	Batch D	Batch A

1* Monday and Wednesday will be Pediatrics Rotation

Tuesday,Thursday and Saturday will be Pulomonology

2* Monday and Wednesday will be Gynecology Rotation

Tuesday,Thursday and Saturday will be Orthopedics

Code	Specific Learning Outcomes	Topic	Teaching Tool/ Teaching Technique	Skill Targeted	Assessment Methods
N-Pa-001	Define neoplasia, Nomenclature and difference between benign and malignant tumors based on morphological and functional characteristics and epidemiology of cancer.	Nomenclature. benign and malignant tumours.	Lecture	Knowledge Comprehension	Multiple Choice Questions
N-Pa-002	Understand the molecular basis of cancer and pathogenesis of neoplasia, including the role of genetic mutations, oncogenes, tumor suppressor genes, mechanisms of cell cycle dysregulation, apoptosis evasion, angiogenesis in tumor progression and metastasis Differentiate Carcinomas, Sarcomas and lymphoreticular neoplasm	Difference between carcinoma and sarcoma and pathways of spread of malignant tumours.	Lecture	Knowledge Comprehension	OSPE
N-Pa-003	Carcinogenic agents with their cellular interactions.	Carcinogenesis	Lecture	Knowledge Comprehension	MCQs
N-Pa-004	Describe the role of diagnostic tools like biopsy, histopathology with IHC (Immuno-histochemistry) and special stains and molecular diagnostics with common tumor markers.	Tumor Makers	Problem-based Learning	Critical Thinking	Short Answer Questions
N-Pa-005	Grading and staging of tumors and treatment strategies	Grading and Staging Invasion and metastasis	Lecture	Knowledge Comprehension	MCQs
	Understand the concept of invasion and metastasis				
	Basic tumor markers				
N-Pa-006	Molecular basis of cancer	Molecular basis of cancer	Lecture	Knowledge Comprehension	Multiple Choice Questions
N-Pa-007	Define and describe Paraneoplastic syndrome and associate with neoplastic lesions.	Paraneoplastic syndrome	Small Group Discussion	Analytical and Diagnostic Skills	OSPE

N-Pa-008	Morphological features of Benign and Malignant tumours (Gross and Microscopic features)	Nomenclature, Difference between	Practical Lab Session	Laboratory and Technical Skills	OSPE

	Common Benign tumours (Lipoma, Leiomyoma, Fibroadenoma of Breast) Carcinoma in situ (DCIS & Bowens disease) Common Malignant tumours (Adenocarcinoma, Squamous cell carcinoma)	benign and malignant tumours			
N-Pa-009	Tumour grade and stage in malignant tumours Adenocarcinoma / Squamous cell carcinoma (including tumour invasion and metastasis)	Clinical aspects of Neoplasia	Problem-based Learning	Critical Thinking	MCQs
ID-Pa-001	Explain the morphological, pathological and diagnostic aspects of: • Staphylococci. • Streptococci • Clostridia • Bacillus • Corynebacterium • Listeria and Gardnerella Explain the morphological, pathological and diagnostic aspects of; • Gonococci and meningococci • E. coli and salmonella, • Shigella, vibrio, proteus, • Pseudomonas, H.pylori , campylobacter • Spirochetes, Mycobacteria • Chlamydia, rickettsia, actinomycetes	Bacterial Infectious Agents	Lecture	Knowledge/Comprehension	Case Presentation
ID-Pa-002	Explain the life cycles and diagnostic aspects of; • W. bancrofti, D.medinensis, loa loa • Tenia saginata, tenia solium, echinococcus granolosus, D.latum, H.nana • Giardia, entamoeba and plasmodium • Leishmania, toxoplasma, trypanosomes, naegleria.	Parasitic infectious agents	Lecture	Knowledge/ Comprehension	Assignment

ID-Pa-003	Explain the morphological, pathological and diagnostic aspects of ; • Dermatophytes, malassezia fur fur, Spoorthi, Histoplasma,	Fungal Infections	Lecture	Knowledge/ Comprehension	OSPE
	Explain the morphological, pathological and diagnostic aspects of ; • coccidioiodes, paracoccidioiodes, blastomyces, candida, mucor, aspergillus, cryptococcus				
ID-Pa-004	Explain the morphological, pathological and diagnostic aspects of; • Adeno virus, papilloma virus, polyoma virus, papova virus • Pox virus, herpes, hepadna • Picornavirus, hepevirus, calicivirus, reovirus	Viral Infectious Agents	Problem-based Learning	Critical Thinking	OSPE, MCQs
	Explain the morphological, pathological and diagnostic aspects of; • Retrovirus, flaviviruses, togaviruses • Coronavirus, delta virus, paramyxovirus, rhabdovirus, orthomyxovirus, filovirus				
ID-Pa-005	Enlist organisms producing CNS infections.	Microorganism s producing CNS infections	Lecture	Knowledge Comprehension	Multiple Choice Questions
	Correlate clinically the following bacteria via their virulence factors, transmission, pathogenesis, laboratory diagnosis in CNS infections; • Strept. pneumoniae • Strept. agalactiae • Nisseria meningitidis • Haemophilus influenzae • E. coli • L. monocytogenes • Myocbacterium tuberculosis				
	Correlate clinically the following microbes via their virulence factors, transmission, pathogenesis, laboratory diagnosis in CNS infections; • Enteroviruses • Mumps • Herpes simplex • Adenovirus • C. neoformans • Rabies • Herpes simplex • Malaria • Toxoplasma • Negleria				

	Compare CSF findings of viral and bacterial meningitis.				
ID-Pa-006	Enlist organisms producing diarrhea & food poisoning.	Microorganism s producing GIT infections	Lecture	Knowledge/Comprehension	Case Presentation
	Correlate clinically the following microbes via their virulence factors, transmission, pathogenesis, laboratory diagnosis in GIT infections; • E. coli • B.cereus • Salmonella • Shigella • Vibrio cholerae& other Vibrio species • Helicobacter pylori • Camplylobacter jejuni • Clostridium species • Entamoeba histolytica				
	Correlate clinically the following microbes via their virulence factors, transmission, pathogenesis, laboratory diagnosis in GIT infections • Giardia lamblia • Cryptosporidium parvum • Diphyllobothrium latum • Hymenolepis nana • Ancylostoma duodenale • Necator americanus • Ascaris lumbricoides • Entrobius vermicularis • Trichiuris trichiura • Trichinella spiralis • Polio • Hepatitis A, E • Norwalk & Rotavirus				
	Correlate clinically the following viruses via their virulence factors, transmission, pathogenesis, laboratory diagnosis in acute & chronic hepatitis; Hepatitis A, B, C, D, E, G				
	Correlate clinically the virulence factors, transmission, pathogenesis, laboratory diagnosis of Entamoeba & Echinococcus in liver infections.				

ID-Pa-007	Correlate clinically the virulence factors, transmission, pathogenesis, laboratory diagnosis of organism causing genital tract infections; • Nisseria gonorrhoea • Treponema pallidum • Chlamydia trachomatis • Mycoplasma hominis • Candida albicans • Trichomonas vaginalis • Gardnerella vaginalis • Hepatitis B • HIV • Herpes simplex –II	Sexually transmitted infections	Small group discussions	Teamwork	Assignment
ID-Pa-008	Discuss important properties of: • Rickettsia, • Leptospira& Brucella, • anthrax, plague. • Francisella, bartonella	ZOONOTIC infections	Lecture	Knowledge Comprehension	Multiple Choice Questions
ID-CM-001	Analyze the local & global burden of Tuberculosis Identify the risk factors of TB Identify prevention and control measures for Pulmonary TB in line with WHO strategies for control of TB Appreciate significance of TB DOTS therapy for TB control	Tuberculosis	Problem-based Learning	Critical Thinking	MCQs
ID-CM-002	Discuss the global burden of hepatitis Discuss the importance of awareness & screening of hepatitis. Analyze effective prevention methods for each type of hepatitis Discuss role of vaccination Explain public health initiatives for prevention and control of hepatitis Describe the measures for prevention of vertical transmission of Hep B virus from mother to child transmission.	Hepatitis	Lecture	Knowledge/Comprehension	OSVE
ID-CM-003	Evaluate the Global Polio Eradication Initiative	Polio	Lecture	Knowledge/Comprehension	

	Analyze the historical and current global impact of poliomyelitis vaccination efforts.				Multiple Choice Questions
	Evaluate the effectiveness of different poliovirus vaccines (OPV and IPV) and vaccination schedules.				
	Discuss community health strategies for poliovirus surveillance, outbreak response & vaccination campaigns				
	Describe End game strategy by WHO for Polio eradication				
ID-CM-004	Discuss the global distribution of measles, mumps, Rubella and their occurrence in different population groups	Measles, Mumps, Rubella	Case-based Learning	Clinical Reasoning	Practical Examination
	Describe the mode of transmission (airborne droplets) and the highly contagious nature of measles, mumps, Rubella				
	Recognize the role of vaccination coverage and herd immunity in controlling outbreaks of measles, mumps, Rubella				
	Discuss public health strategies for prevention and control of measles, mumps, Rubella including vaccination campaigns, surveillance, and outbreak response.				
ID-CM-005	Describe the goals and objectives of the Expanded Program of Immunization in Pakistan. Identify the key vaccines included in the EPI schedule.	EPI	Case-based Learning	Clinical Reasoning	Practical Examination
	Analyze the strategies employed to implement the EPI in various communities.				
	Evaluate the role of healthcare workers, community leaders, and families in promoting immunization.				
	Identify the common barriers to immunization coverage in Pakistan				
	Discuss enhance vaccination uptake.				
	Discuss recent developments in the EPI, Pakistan				

	Analyze the potential impact of global health initiatives on the EPI's progress.				
ID-CM-006	Describe the role of vaccination in preventing diphtheria, including the DTP (Diphtheria, Tetanus, Pertussis)	Diphtheria	Small Group Discussion	Analytical and Diagnostic Skills	OSPE
	Identify the recommended vaccine schedule for children and adults.				
	Analyze community-based vaccination campaigns				
	Analyze public awareness programs & school health initiatives to control its transmission.				
ID-CM-007	Identify the global distribution of tetanus, including endemic areas & populations at higher risk	Tetanus	Small Group Discussion	Analytical and Diagnostic Skills	OSPE
	Describe the role of tetanus vaccination (Td or Tdap) in children.				
	Describe the role of tetanus vaccination in adults.				
	Discuss the significance of booster doses				
	Discuss the importance of timely immunization after potential exposure to contaminated wounds				
	Discuss the importance of educating the community about wound care.				
	Discuss the significance of seeking medical attention for injuries.				
ID-Pa-009	Define pyrexia of unknown origin.	Pyrexia of unknown origin	Problem-based Learning	Critical Thinking	MCQs
	Describe the investigations of a patient with pyrexia of unknown origin.				
ID-Pa-013	Discuss the signs, symptoms, diagnosis and treatment of septic and aseptic meningitis.	CNS	Tutorial Session	Communication Skills	Case Presentation
	Discuss the signs, symptoms, diagnosis and treatment of septic and aseptic encephalitis.				

ID-GO-002	Discuss the differential diagnosis of bacterial, parasitic and fungal vaginosis/vaginitis and their treatment	Genital tract	Lecture	Knowledge Comprehension	Assignment
ID-Pe-001	Discuss the signs symptoms diagnosis and treatment of neonatal meningitis.	CNS	Lecture	Knowledge Comprehension	Multiple Choice Questions
ID-Pe-002	Discuss the signs symptoms diagnosis and treatment of diarrhea in infants.	GIT	Small Group Discussion	Analytical and Diagnostic Skills	OSPE
ID-Pe-003	Discuss the clinical diagnosis and treatment of childhood respiratory tract infections.	RTI	Lecture	Knowledge Comprehension	Viva Voce
ID-S-001	Discuss the treatment of carbuncle, necrotizing fasciitis and gas gangrene	Skin Infections	Problem-based Learning	Critical Thinking	
ID-Pa-009	Define hospital acquired infections (HAI)	Infection prevention & control	Lecture	Knowledge Comprehension	Multiple Choice Questions
	Discuss various types of HAI				
	Enlist bacteria and fungi associated with HAI				
	Describe the main routes of transmission of HAI in detail				
	Discuss the etiology and prevention of VAP (ventilator associated pneumonia)				
	Discuss the etiology and prevention of hospital acquired UTI				
	Discuss the etiology and prevention of nosocomial diarrhea				
	Discuss the etiology and prevention of central line associated infections				
	Discuss various methods of hospital sanitation				
	Define antimicrobial surfaces and enlist the microorganisms that are frequently present on touch surfaces				
	Describe the various preventive techniques to reduce the HAI				
ID-Pa-010	Define biosafety and biosafety levels according to WHO? Enlist the bio risk organisms in each of biosafety levels? What are 4 levels of biosafety? Discuss the safety	Bio-risk management (BRM)	Small Group Discussion	Analytical and Diagnostic Skills	OSPE

	protocols of BSL 1? Discuss the safety protocols of BSL 2? Discuss the safety protocols of BSL 3? Discuss the safety protocols of BSL 4? Define biological waste? categorize the biological wastes (HAZARDOUS, NON HAZARDOUS, SHARPS)? Describe procedures for segregation, storage, treatment and disposal of biological waste? Define spill management and discuss the steps for the management of a laboratory spill? Define PPE and discuss the situations under which PPE should be used by the health care professionals. Discuss the SOP of transportation of biological samples? Define and briefly discuss bio risk management?				
ID-Pa-011	Identify the stained slides* of gram positive and gramnegative bacteria (staphylococci, streptococci, Neisseria, Strept. pneumoniae, E. coli, proteus and acid fast bacilli). (*if slides will not be available, photographic slides should be used	Staining	Practical Lab Session	Laboratory and Technical Skills	OSPE
ID-Pa-012	Interpret the culture sensitivity reports and antibiogram of gram positive and gram-negative bacteria.	Laboratory Reporting	Practical Lab Session	Laboratory and Technical Skills	OSPE
ID-Pa-013	Identify and describe the organisms that grow on the Blood agar, Chocolate agar, nutrient agar, TCBS, MacConkey media, LJ media. CLED, TSI, UREASE, CITRATE. blood culture bottle and anaerobic jar	Culture Sensitivity	Practical Lab Session	Laboratory and Technical Skills	Practical Examination
ID-Pa-014	Identify the ova, cysts and trophozoites of protozoans, helminths, cestodes and schistosomes.	Stool Examination	Practical Lab Session	Laboratory and Technical Skills	OSPE
ID-Pa-015	Perform and interpret the catalase test, coagulase test and oxidase test.	Laboratory Tests	Practical Lab Session	Laboratory and Technical Skills	OSPE
MS2-Rh-005	Define Systemic Inflammatory Vasculitis. Describe the pathophysiology of Systemic Inflammatory Vasculitis.	Systemic Inflammatory Vasculitis	Lecture	Knowledge/Comprehension	Case Presentation

	Identify types of Systemic Inflammatory Vasculitis.				
	Explain risk factors for Systemic Inflammatory Vasculitis.				
	Describe clinical features of Systemic Inflammatory Vasculitis.				
	Identify diagnostic tests for Systemic Inflammatory Vasculitis.				
MS2-Rh-006	Define Autoimmune Rheumatic Diseases (e.g., SLE, Sjogren's, Systemic Sclerosis).	Autoimmune Rheumatic Diseases	Case-based Learning	Clinical Reasoning	Practical Examination
	Describe the pathophysiology of Systemic Lupus Erythematosus (SLE).				
	Identify clinical manifestations of Sjogren's Syndrome.				
	Explain the pathophysiology of Systemic Sclerosis.				
	Explain diagnostic criteria for Autoimmune Rheumatic Diseases.				
	Differentiate Autoimmune Rheumatic Diseases from each other.				
MS2-Orth-006	Discuss pathophysiology of muscle strains and ligament sprains.	Sports Injuries	Lecture	Knowledge/Comprehension	Case Presentation
MS2-Pa-001	Discuss the etiology, pathophysiology, morphology, clinical manifestations and diagnostic criteria of Rheumatoid Arthritis (RA)	MSK Diseases & Tumors	Case-based Learning	Clinical Reasoning	Practical Examination
	Discuss the etiology, pathophysiology, morphology, clinical manifestations and diagnostic criteria of Osteoarthritis (OA)				
	Discuss the etiology, pathophysiology, morphology, clinical manifestations and diagnostic criteria of Crystal Arthritis (Gout/Pseudogout				
	Discuss the etiology, pathophysiology, morphology, clinical manifestations and diagnostic criteria of Autoimmune Rheumatic Diseases				

	Identify bone tumors, cartilaginous and soft tumors and their clinical features. Discuss the etiology, pathophysiology, morphology, clinical manifestations and diagnostic criteria of Bone tumours, cartilaginous and soft tumors				
MS2-Pa-002	Interpret various investigations related to joint diseases including: i. Complete Blood Count (CBC) ii. Erythrocyte Sedimentation rate (ESR) iii. C-reactive protein (CRP) iv. Creatine Kinase (CK) v. Rheumatoid factor (RF) vi. Antinuclear antibody (ANA) vii. Anti-Neutrophil Cytoplasmic Antibodies (ANCA) viii. Serum uric acid level	Test Interpretation	Practical Lab Session	Laboratory and Technical Skills	OSPE
MS2-Pa-003	Interpret related cultures for diagnosis for infections	Test Interpretation	Practical Lab Session	Laboratory and Technical Skills	OSPE
For2-Tr-008	Describe the pathophysiology of injuries. Explain effects of injuries on the body.	Pathophysiology of Injuries	Lecture	Knowledge Comprehension	Multiple Choice Questions
For2-Tr-009	Elaborate different methods (naked eye examination, microscopic examination, histochemical and biochemical methods) for determination of age of wound. Describe different methods (naked eye examination, microscopic examination, histochemical and biochemical methods of determination of ante mortem/ post mortem nature (vital reaction) of a wound	Timing of injury / ante mortem, post mortem nature of wound	Small Group Discussion	Analytical and Diagnostic Skills	OSPE
For2-Tr-010	Link Sequelae of trauma to its original cause and search for the relationship of sequelae to pre-existing disease.	Ewing's postulates	Lecture	Knowledge/Comprehension	Viva Voce
For2-Tr-011	Give a detailed account of battered baby or Caffey syndrome from a medicolegal point of view. Diagnose a case of a battered baby on the basis of different injuries sustained by a battered baby	Battered baby syndrome	Problem-based Learning	Critical Thinking	MCQs

For2-Tr-012	Define torture. Explain reasons, types and complications of torture. Describe medicolegal aspects of torture.	Torture	Case-based Learning	Clinical Reasoning	Practical Examination
For2-Tr-013	Examine and prepare Medico-legal report of an injured person with different etiologies in a simulated/supervised environment.	Medicolegal certification of injury	Lecture	Knowledge/Comprehension	Case Presentation
For2-Tr-014	Define fire arms and ballistics. Classify fire arm. Explain different parts of fire arm weapons. Describe ammunition used in firearms. Explain chain of events of firing	Internal Ballistics	Lecture	Knowledge/Comprehension	Assignment
For2-Tr-015	To explain the factors affecting the trajectory of bullet after its exit from the muzzle end.	External Ballistics	Lecture	Knowledge Comprehension	Multiple Choice Questions
For2-Tr-016	Interpret wound complex produced by a rifled and nonrifled weapons at different ranges. Calculate the distance of fire from the wound examination. Differentiate between entry and exit wounds of fire arms. Explain medicolegal importance of fire arm injuries.	Terminal Ballistics	Lecture	Knowledge/Comprehension	OSPE
For2-Tr-017	Identify gun powders and ammunition used through different methods.	Gun Powders	Practical Lab Session	Laboratory and Technical Skills	Viva Voce
For2-Tr-018	Describe mechanics of blast injuries. Explain effects of blast injuries on human body. Describe medicolegal aspects of blast injuries	Blast Injuries	Problem-based Learning	Critical Thinking	Short Answer Questions
For2-Tr-019	Explain mechanism of injuries to soft and bony tissues of head, neck, chest, abdomen and limbs. Describe effects of injuries to head, neck, chest, abdomen and limbs. Describe medicolegal aspects of regional injuries	Regional Injuries	Case-based Learning	Clinical Reasoning	Practical Examination
For2-Tr-020	Classify transport accidents. Describe different factors involved in the causation of RTA. Classify and describe different patterns of injuries sustained by pedestrians and occupants of the vehicles	Transportation Injuries	Lecture	Knowledge/Comprehension	Case Presentation

	Explain medicolegal significance and prevention of RTA.				

Asessment Policy

- Internal Assessment: 10% weightage, totalling 70 marks (35 Theory and 35 Practical).

- Summative Exam: End-of-block assessment for Block-X.
- Annual Theory Exam: 140 MCQs (140 marks) with a duration of 2 hours 30 minutes.
- Annual Practical Exam: Total of 140 marks, including OSPE, OSVE, and Short Cases.

MBBS 3rd Professional						
Block-8						
Subject	**Written Exam**		**Oral/Practical/Clinical Exam**			
	MCQ (1 mark)	**Marks**	**OSPE /OSCE (8 marks each observed)**	**OSCE (10 marks each observed)**	**OSVE (14 marks each observed)**	**Marks**
Pharmacology	22	22	03	-	01	38
Pathology	55	55	04	-	02	60
Community Medicine	04	04	-	-	-	-
Surgery	20	20	01	-	-	08
Medicine	20	20	01	-	-	08
Forensic	15	15	01	-	-	08
Behavioral	02	02	-	-	-	-
Patient Safety	02	02	-	-	-	-
CFRC	-	-	01	-	-	08
PERLs + ExposITory	-	-	-	01	-	10
Total	**140**	**140**	**11 stations x 08 = 88**	**01 stations x 10 = 10**	**03 stations x 14=42**	**140**

Recommended Books

Books

- Robins Basic Pathology by Kumar, V., Abbas, A. and Aster, J. Latest Edition
- Robbins and Cotran Pathological Basis of Disease
- Richard Mitchall, Vinary Kumar, Abul K. Abbas and Nelson Fausto Robbins and Cotran, Pocket Companion to Pathologic basis of diseases, Saunder Harcourt.
- Walter and Israel. General Pathology. Churchill Livingstone.
- Review of Medical Microbiology and Immunology by Lewinson
- Medical Microbiology and Immunology by Levinson and Jawetz, Latest edition Ed., Mc Graw-Hill.
- Illustrated Pathology
- District Laboratory Practice in Tropical Countries, Part 2 by Monica

Websites

Webpath, Pathology

Test preparation/MCQs

- Review of pathology – Robbins
- Pre-test in Pathology
- BRS Pathology

STUDY GUIDE FORENSIC MEDICINE

BLOCK 8

INTEGRATED MODULAR SYSTEM

ACADEMIC SESSION, 2026

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Learning Objective Code	Skill/Task	Teaching Tool	Teaching Technique	Skill Targeted	Assessment Methods

For2-Tr-001	General concept	Interactive lecture	Flipped class room	Cognitive skills	Formative Assessment MCQs
For2-Tr-002	Wound production	Interactive lecture	Flipped class room	Cognitive skills	Formative Assessment MCQs
For2-Tr-003	Abrasion	Lecture on power point	Present on medicolegal case	Psychomotor skills	Formative Assessment MCQs
For2-Tr-004	Bruise	Lecture on power point	Present on medicolegal case	Cognitive skills	Formative Assessment MCQs
For2-Tr-005	Laceration	Lecture on power point	Present on medicolegal case	Cognitive skills	Formative Assessment MCQs
For2-Tr-006	Fractures		Present on medicolegal case	Cognitive skills	Formative Assessment MCQs
For2-Tr-007	Incised /stab wounds	Medicolegal case study	Present on medicolegal case	Cognitive skills	Formative Assessment MCQs
For2-Tr-008	Pathophysiolog y of injuries	Interactive lecture	Present on medicolegal case	Cognitive skills	Formative Assessment MCQs
For2-Tr-009	Timing of injury / ante mortem, post mortem of nature wound	Interactive lecture	Present on medicolegal case	Cognitive skills	Formative Assessment MCQs
For2-Tr-010	Ewing's postulates	Interactive lecture	Present on medicolegal case	Cognitive skills	Formative Assessment MCQs
For2-Tr-011	Battered baby syndrome	Interactive lecture	Present on medicolegal case	Cognitive skills	Formative Assessment MCQs
For2-Tr-012	Torture	Interactive lecture	Flipped class room	Cognitive skills	Formative Assessment MCQs
For2-Tr-013	Medicolegal Certification of injury	Brain stormily session	Flipped class room	Cognitive skills	Formative Assessment MCQs

For2-Tr-014	Internal ballistics	Interactive lecture	Flipped class room	Cognitive skills	Formative Assessment MCQs
For2-Tr-015	External Ballistics	Interactive lecture	Flipped classroom	Cognitive skills	Formative Assessment MCQs
For2-Tr-016	Terminal Ballistics	Interactive lecture	Medicolegal cases on power point	Cognitive & Psychomotor skills	Formative Assessment MCQs
For2-Tr-017	Gun powders	Interactive lecture	Medicolegal cases on power point	Cognitive & Psychomotor skills	Formative Assessment MCQs
For2-Tr-018	Blast injuries	Interactive lecture	Medicolegal cases on power point	Cognitive & Psychomotor skills	Formative Assessment MCQs
For2-Tr-019	Regional Injuries	Interactive lecture	Accidental Cases on power point	Cognitive & Psychomotor skills	Formative Assessment MCQs
For2-Tr-020	Transportation Injuries	Interactive lecture	Accidental Cases on power point	Cognitive & Psychomotor skills	Formative Assessment MCQs

For2-Tr-021	Thermal Injuries / Burn	Interactive lecture	Accidental Cases on power point	Cognitive & Affective skills Ethical & legal)	Formative Assessment MCQs
For2-Tr-022	Electrocution Lightening	Interactive lecture	Accidental Cases on power point	Cognitive & Affective skills Ethical & legal)	Formative Assessment MCQs
For2-Tr-023	Hyper / Hypothermia/ Starvation	Interactive lecture	Accidental Cases on power point	Cognitive & Affective skills Ethical & legal)	Formative Assessment MCQs
For2-Tr-024	Chemical Burns	Interactive lecture	Accidental Cases on power point	Cognitive & Affective skills Ethical & legal)	Formative Assessment MCQs
For2-Tr-025	Drowning	Interactive lecture	Autopsy cases on power point	Cognitive & Affective skills Ethical & legal)	Formative Assessment MCQs

For2-Se-001	Impotency frigidity and sterility	Interactive lecture	Autopsy cases on power point	Cognitive & Affective skills Ethical & legal)	Formative Assessment MCQs
For2-Se-002	Virginity and defloration	Interactive lecture	Findings of rape cases on power point	Cognitive & Affective skills Ethical & legal)	Formative Assessment MCQs
For2-Se-003	Pregnancy	Interactive lecture	Findings of rape cases on power point	Cognitive & Affective skills Ethical & legal)	Formative Assessment MCQs
For2-Se-004	Delivery	Interactive lecture	Findings of rape cases on power point	Cognitive & Affective skills Ethical & legal)	Formative Assessment MCQs
For2-Se-005	Abortion/Miscarriage	Interactive lecture	Findings of rape cases on power point	Cognitive & Affective skills Ethical & legal)	Formative Assessment MCQs

For2-Se-006	Sexual Offences	Interactive lecture	Findings of rape cases on power point	Cognitive & Affective skills Ethical & legal)	Formative Assessment MCQs
For2-Se-007	Infanticide	Interactive lecture	Autopsy cases on power point	Cognitive skills	MCQs & Case based discussion
For2-Tr-026	Mechanical injuries	SGDs	Flipped class room	Psychomotor & Affective skills	MCQs & Case based discussion
For2-Tr-027	Abrasion	Case based learning	Flipped class room	Psychomotor & Affective skills	MCQs & Case based discussion
For2-Tr-028	Bruise	Case based learning	Flipped class room	Psychomotor & Affective skills	MCQs & Case based discussion
For2-Tr-029	wound	Case based learning	Flipped class room Flipped class room	Psychomotor & Affective skills	MCQs & Case based discussion

For2-Tr-030	Age of fracture	Case based learning	Flipped class room	Psychomotor & Affective skills	MCQs & Case based discussion
For2-Tr-031	Hurt / Qisas N Diyat Act	SGD	Flipped class room	Psychomotor & Affective skills	MCQs & Case based discussion
For2-Tr-032	Certification of injury	SGD	Flipped class room	Psychomotor & Affective skills	MCQs & Case based discussion
For2-Tr-033	Firearm	Case based learning	Flipped class room	Psychomotor & Affective skills	MCQs & Case based discussion
For2-Tr-034	Burn	Case based learning	Flipped class room	Psychomotor & Affective skills	MCQs & Case based discussion
For2-Tr-035	Electrocuted injury	Case based learning	Flipped class room	Psychomotor & Affective skills	MCQs & Case based discussion
For2-Tr-036	Hypo / Hypothermia / starvation	SGDs	Flipped class room	Psychomotor & Affective skills	MCQs & Case based discussion

For2-Tr-037	Chemical Burns	SGDs	Flipped class room	Psychomotor & Affective skills	MCQs & Case based discussion
For2-Tr-038	Hanging	SGDs	Flipped class room	Psychomotor & Affective skills	MCQs & Case based discussion
For2-Tr-039	Strangulation / Hanging	SGDs	Flipped class room	Psychomotor & Affective skills	MCQs & Case based discussion
For2-Tr-040	Throttling	SGDs	Flipped class room	Psychomotor & Affective skills	MCQs & Case based discussion
For2-Tr-041	Smothering / Gagging	SGD	Flipped class room	Psychomotor & Affective skills	MCQs & Case based discussion
For2-Tr-042	Drowning	SGD	Flipped class room	Psychomotor & Affective skills	MCQs & Case based discussion
For2-Se-008	Sexual assault	SGD	Flipped class room	Psychomotor & Affective skills	MCQs & Case based discussion

Study Guide: 3rd Year MBBS-GMC

Modular Integrated Curriculum 2k23 (V.3), Block-8

Subject: Pharmacology & Therapeutics

Module-16: Neoplasia

Sr. No.	Code	Competencies/ Skill Development	Teaching Strategies	Assessment Methods
1	N-Ph-001	Knowledge	Lectures/SGDs	MCQs/OSVE
2	N-Ph-002	Knowledge	Lectures/SGDs	MCQs/OSVE

Module-17: Infectious Diseases

Sr. No.	Code	Competencies/ Skill Development	Teaching Strategies	Assessment Methods
1	ID-Ph-001	Knowledge	Lectures/SGDs	MCQs/OSVE
2	ID-Ph-002	Knowledge	Lectures/SGDs	MCQs/OSVE
3	ID-Ph-003	Knowledge	Lectures/SGDs	MCQs/OSVE
4	ID-Ph-004	Knowledge	Lectures/SGDs	MCQs/OSVE
5	ID-Ph-005	Knowledge	Lectures/SGDs	MCQs/OSVE
6	ID-Ph-006	Knowledge	Lectures/SGDs	MCQs/OSVE
7	ID-Ph-007	Knowledge	Lectures/SGDs	MCQs/OSVE
8	ID-Ph-008	Knowledge	Lectures/SGDs	MCQs/OSVE

Module-18: Musculoskeletal & Locomotion - II

Sr. No.	Code	Competencies/ Skill Development	Teaching Strategies	Assessment Methods
1	MS2-Ph-001	Knowledge	Lectures/SGDs	MCQs/OSVE
2	MS2-CM-001	Knowledge	Lectures/SGDs	MCQs/OSVE
3	MS2-Orth-017	Knowledge	Lectures/SGDs	MCQs/OSVE
4	MS2-Ph-002	Knowledge/Skill	Online Videos/ Graphs/Practicals/SGDs	OSPE/OSCE

OSPE Content: Prescriptions

Sr. No.	Clinical Condition	Competencies/ Skill Development	Teaching Strategies	Assessment Methods
1	Prescription Writing	Knowledge/Skill	Practicals/SGDs	OSPE/OSCE
2	Sample Prescriptions	Knowledge/Skill	Practicals/SGDs	OSPE/OSCE
3	Rheumatoid Arthritis	Knowledge/Skill	Practicals/SGDs	OSPE/OSCE
4	Malaria	Knowledge/Skill	Practicals/SGDs	OSPE/OSCE
5	Typhoid Fever, with Mx of resistant cases	Knowledge/Skill	Practicals/SGDs	OSPE/OSCE
6	Amebiasis	Knowledge/Skill	Practicals/SGDs	OSPE/OSCE
7	Glaucoma	Knowledge/Skill	Practicals/SGDs	OSPE/OSCE
8	UTI	Knowledge/Skill	Practicals/SGDs	OSPE/OSCE
9	Round Worm Infestation	Knowledge/Skill	Practicals/SGDs	OSPE/OSCE
10	Acute Bacillary Dysentery	Knowledge/Skill	Practicals/SGDs	OSPE/OSCE
11	Iron Deficiency Anemia	Knowledge/Skill	Practicals/SGDs	OSPE/OSCE
12	Migraine	Knowledge/Skill	Practicals/SGDs	OSPE/OSCE
13	Hepatitis B/C	Knowledge/Skill	Practicals/SGDs	OSPE/OSCE
14	Bird-Flu	Knowledge/Skill	Practicals/SGDs	OSPE/OSCE
15	Dengue	Knowledge/Skill	Practicals/SGDs	OSPE/OSCE
16	Scabies	Knowledge/Skill	Practicals/SGDs	OSPE/OSCE
17	Gout	Knowledge/Skill	Practicals/SGDs	OSPE/OSCE
18	Motion-Sickness	Knowledge/Skill	Practicals/SGDs	OSPE/OSCE

STUDY GUIDE BEHAVIOURAL SCIENCES

BLOCK 8

INTEGRATED MODULAR SYSTEM

ACADEMIC SESSION, 2026

3rd YEAR MBBS

GUJRANWALA MEDICAL COLLEGE

GUJRANWALA

Code	Domain	Specific Learning Outcomes	Topic	Teaching Tool/ Teaching Technique	Skill Targeted	Assessment Methods
N-BhS-001		• Discuss improvement in quality of life, holistic care for terminal cancer patient • Discuss palliative care (pain management, psychological support). • Understand the importance of mental health support for cancer patients.	Psychosocial aspect of oncology / cancer	Lecture	Knowledge Comprehension	Multiple Choice Questions
MS2-BhS001		• Analyze psychosocial impact of chronic MSK conditions. • Describe patient counseling techniques for MSK conditions. • Promote adherence to MSK treatment plans. • Educate patients on importance of adherence to MSK management. • Discuss impact of disability on MSK patients.	Psychosocial Impact & Patient Counseling	Lecture	Knowledge Comprehension	Multiple Choice Questions
	Ethics	Explore the ethical consideration involved in end-of-life decisions, including using ventilation, balancing patient autonomy, family wishes and medical judgment in making these decisions.	End-of-life decisions, ventilator use	Lecture	Knowledge Comprehension	OSPE

	Professionalism	• Appreciate the skills to adapt to the physician's role, including managing stress, handling uncertainty, and making clinical decisions, while demonstrating professionalism in diverse clinical settings. (skills include emotional resilience, critical thinking, communication, and time management)	Adapting to the Physician's Role	Lecture	Knowledge Comprehension	OSPE
	Ethics	• Discuss the process of obtaining informed consent, ensuring patients are fully aware of their treatment options, risks, and potential outcomes. • Ensure the patient's autonomy is respected throughout the	Autonomy in rehabilitation, Informed consent	Lecture	Knowledge Comprehension	OSPE
	Professionalism	• Recognize the professional duty of healthcare workers to protect vulnerable patients, colleagues, and the community by adhering to infection control protocols and promoting public health measures. Effectively communicate the risks and management strategies related to contagious diseases to patients and their families (i.e. Tuberculosis) balancing public health concerns with individual patient rights and privacy.	Professional Responsibility in Public Health	Lecture	Knowledge Comprehension	OSPE
	Ethics	Explore the diverse cultural and religious perspectives on Do Not Resuscitate (DNR) orders and understand how these views influence end-of-life decisions in the context of neoplasia care.	Cultural/religious views on Do Not Resuscitate	Lecture	Analytical and Diagnostic Skills	OSPE

Study Guide

on

Block 8

Community Medicine Department

GUJRANWALA MEDICAL COLLEGE, GUJRANWALA

Content

3rd YEAR (BLOCK 8)

Table of Contents

13. Recommended Books

Introduction to Module Block 8

Module Block 8 in Community Medicine is designed to provide MBBS students with advanced knowledge and practical understanding of public health principles, disease prevention strategies, and healthcare delivery systems. This module builds upon the concepts learned in previous blocks and focuses on the application of community-based approaches to improve population health.

The primary aim of this block is to enable students to understand the epidemiology, prevention, and control of common communicable and non-communicable diseases, along with health promotion strategies at individual, family, and community levels. Students will also develop skills in data interpretation, health program planning, and evaluation of healthcare services. During this module, students will be exposed to interactive teaching sessions including lectures, tutorials, small group discussions, case-based learning, and field visits to healthcare facilities. These learning activities are intended to strengthen clinical correlation with community health problems and enhance problem-solving abilities.

Special emphasis will be placed on national health programs, primary healthcare concepts, maternal and child health services, environmental health issues, and the role of healthcare professionals in disease prevention and health promotion. Students will also learn communication skills necessary for community interaction, counseling, and health education.

By the end of Module Block 8, students are expected to:

Understand the burden and determinants of major health problems in the community.

- Apply epidemiological methods in disease prevention and control.
- Demonstrate knowledge of national health policies and programs.
- Interpret health data and indicators for decision-making.
- Develop leadership and teamwork skills in community health settings.

This module plays a crucial role in preparing future doctors to become competent healthcare providers who can address community health needs effectively and contribute to improving public health outcomes.

Study Hours of Block 8

The study hours for Module Block 8 are structured to ensure a balanced combination of theoretical knowledge, practical exposure, and self-directed learning. The distribution of hours may vary slightly depending on institutional policy; however, a typical schedule is as follows:

Total Duration

10 weeks (approximately 336 contact hours)

Component	Description
Lectures	Core theoretical concepts, disease prevention, health programs
Small Group Discussions (SGDs) / Tutorials	Case-based learning, problem solving, interactive discussions
Practical / Field Visits	Visits to community health centers, data collection, surveys
Skills / Demonstrations	Communication skills, health education methods
Self-Directed Learning (SDL)	Independent study, assignments, presentations
Assessment	MCQs, short questions, presentations, formative assessment

Total Estimated Hours

336 Hours

Student Time Commitment

Students are expected to spend additional personal study time reviewing lecture material, preparing assignments, and reading recommended resources to reinforce learning outcomes.

BLOCK OBJECTIVES –

By the end of Block 8, MBBS students should be able to:

Understand Community Health Concepts:

- Comprehend the structure and functions of healthcare systems.
- Understand principles of public health and preventive medicine.

Apply Epidemiological Principles:

- Describe basic epidemiological measures (incidence, prevalence, morbidity, mortality).
- Conduct simple epidemiological studies and surveys.

Analyze Health Data:

- Interpret health statistics for decision-making.
- Identify patterns of disease in the community.

Plan and Implement Preventive Measures:

- Recommend appropriate interventions for common public health issues.
- Participate in vaccination, sanitation, and awareness campaigns.

Develop Communication and Professional Skills:

- Educate communities on health promotion and disease prevention.
- Work effectively in teams during field visits and community projects.

Integrate Theory with Practice:

- Apply knowledge from lectures and tutorials to real-life community settings.
- Demonstrate skills in data collection, reporting, and presenting findings.

Study Hours of Block:-

Total Study Hours: 336hours –

Teaching Faculty and their contact number

Sr. #	Designation	Name	Father Name	Contact
1.	Professor	Prof. Dr. Sumair Anwar	Muhammad Anwar	0321-4383051
2.	Associate Professor	Dr. Umar Farooq Dar	Muhammad Dar.	0327-9597714
1.	Assistant Professor	Dr. Kauser Aftab Khan	Muhammad Ashraf Khan	0300-9681700
2.	Senior Demonstrator	Dr. Zara Zaheer	Malik Zaheer Ul Haq	0334-4507860
3.	Demonstrator	Dr. Adeeba Munir	Muhammad Ahmad	0333-6603390
4.	Demonstrator	Dr. Sadia Yaseen	Muhammad Yaseen	0347-5099126
5.	Demonstrator	Dr. Maryam Ahmad	Muhammad Ahmad	0335-6317108
6.	Demonstrator	Dr. Sana Aftab	Aftab Ahmed Qazi	0315-6404131
3.	Dr. Kamran Gulam Mir			0312-7272422
4.	Demonstrator	Dr. Aqib Maqbool	Maqbool Rubbani	0323-7474176

Learning Outcomes of Subject within Module (s) in this Block

By the end of this module, students should be able to:

1. Understand principles of epidemiology and biostatistics.

2. Apply concepts of preventive medicine in community settings.

3. Conduct basic community health surveys.

4. Analyze and interpret health data for decision-making.

5. Identify risk factors and suggest interventions for common public health issues.

Teaching tools, used by the Department for this Subject Learning Outcomes

Interactive Lectures –

Case-based Learning (CBL) –

Problem-based Learning (PBL) –

Community Field Visits –

Demonstrations & Practical Exercises –

Multimedia Presentations

Assessment and its Plan for Subject Learning Objectives in this Block

Formative Assessment: -

Quizzes & MCQs –

Participation in Tutorials and Practical Exercises –

Case Study Presentations –

Summative Assessment: -

Written Exams (MCQs, OSPE) –

Practical/Field Work Reports –

Viva-Voce

Learning Content of Subject within Module (s) in this Block

Module block 8 integrates multiple subjects to achieve comprehensive learning outcomes.

Community Medicine (Core Subject)

Topic	Facilitator
N-CM-OO1	Prof. Dr Sumair
ID-CM-OO1	Dr. Umar Farooq
ID-CM-OO2	Dr. Umar Farooq
ID-CM-OO3	Dr. Umar Farooq
ID-CM-OO4	Dr. Umar Farooq
ID-CM-OO5	Dr. Umar Farooq
ID-CM-OO6	Dr. Umar Farooq
ID-IC-001	Dr. Kausar Aftab
MS2-Orth-001	Dr. Umar Farooq
MS2-CM-001	Dr. Umar Farooq

Block Evaluation Method

Continuous Evaluation (50%) –

End-of-Block Exam (50%) –

Feedback from Students and Faculty –

Assessment of Attendance & Participation

Resources Available for Learning Objectives in this Block

Departmental Library & E-Library Access –

Statistical Software for Data Analysis –

Community Health Centers for Field Practice –

Multimedia & Online Learning Platforms

Recommended books

1. Park K. Textbook of Preventive and Social Medicine, 28th Edition.

2. K. Vijayalakshmi. Community Medicine Made Easy, 3rd Edition.

3. R. B. Singh. Essentials of Public Health, Latest Edition.

4. WHO Publications & Guidelines on Community Health.

DEPARTMENT OF PAEDIATRICS

GUJRANWALA MEDICAL COLLEGE TEACHING HOSPITAL GUJRAWALA

Code	Topic	Learning outcomes	Facilitator
ID-PE-001	Fever in children	Define fever in children and differentiate it from hyperthermia. Identify causes of fever and general danger signs in pediatric age group	Dr.Afshin Oneeb
ID-PE-002	Diarrhea in children	Identify infectious causes of diarrhea in children , differentiate btw mild ,moderate and severe dehydration, outline management plan and explain preventive measures	Dr.Saima omar

Paediatrics lecture schedule for block-8 , credit hours : 2

DEPARTMENT OF ORTHOPAEDICS AND SPINE SURGERY

Sr #	CODE	TOPIC	Learning outcomes	Facilitator NAMES	Assesment
1	MS2-Orth001	Pediatric Fractures	Discuss pediatric fractures and their management. Explain Salter-Harris classification for growth plate injuries.	DR.NABEEL YAZDANI	MCQs/OSPE/OSVE
2	MS2-Orth002	Introduction to orthopedics .Fracture Classification and Healing	Explain the classification of fractures using the AO system. Describe principles of fracture healing. Differentiate between complete and incomplete fractures.LEARNING OUTCOMES	DR.USMAN ZAFAR DAR	
3	MS2-Orth003	Osteoporotic Fractures	Define osteoporotic fractures and their clinical features. Identify common sites of osteoporotic fractures. Discuss risk factors for osteoporosis.	DR.NABEEL YAZDANI	
4	MS2-Orth004	Pathological Fractures	Define pathological fractures and differentiate from traumatic fractures. Identify causes of pathological fractures. Describe diagnostic approaches for pathological fractures. Explain management options for pathological fractures.	DR.USMAN ZAFAR DAR	
5A	MS2-Orth005	Sports Injuries	Classify sports injuries and their management. Describe common sports injuries in upper and lower limbs. Discuss pathophysiology of muscle strains and ligament sprains. Explain biomechanics of gait and malalignment injuries. Outline injury prevention strategies in sports.	DR.NABEEL YAZDANI	
5B	MS-Ortho 005	Sports injuries	Analyze rehabilitation processes for sports injuries. Discuss use of assistive devices in rehabilitation. Explain psychological impact of sports injuries. Describe nutritional roles in recovery from sports injuries. Outline surgical intervention in severe sports injuries.	DR.RASHID HUSSAIN	
6	MS2-Orth006	Achondroplasia	Define achondroplasia as the most common skeletal dysplasia and describe its effect on bone growth. Identify the characteristic skeletal features. Identify	DR.RASHID HUSSAIN	

			musculoskeletal complications due to achondroplasia. Interpret characteristic radiographic findings relevant to diagnosis and follow-up. Outline management principles. Discuss the role of surgical and non-surgical interventions in improving function and quality of life	
7	MS2-Orth007	Scoliosis	Define scoliosis and its types. Identify clinical features and screening methods for scoliosis. Discuss treatment options for scoliosis. Describe multidisciplinary approach in managing scoliosis.	DR.NABEEL YAZDANI
8	MS2-Orth008	Osteogenesis Imperfecta	Define osteogenesis imperfecta and describe its genetic basis and abnormal collagen formation. Identify the key skeletal manifestations. Identify associated musculoskeletal complication. Interpret characteristic radiological features of OI used for diagnosis and monitoring. Discuss the principles of management.	DR.NABEEL YAZDANI
9	MS2-Orth009	Marfan syndrome	Define Marfan syndrome and describe its genetic basis. Identify the characteristic skeletal features. Identify orthopedic complications. Interpret relevant clinical and radiological findings used in diagnosing skeletal involvement. Outline principles of management.	DR.TAYYAB SHOAIB
10	MS2-Orth010	Septic Arthritis	Define septic arthritis and identify its etiological agent. Explain the pathogenesis of joint infection and subsequent cartilage destruction. Identify the clinical features of acute septic arthritis in children and adults. Identify key diagnostic investigations. Outline the management plan. Discuss its potential complications.	DR.RASHID HUSSAIN
11	MS2-Orth011	Clubfoot (Congenital Talipes Equinovarus – CTEV)	Define clubfoot and describe its anatomical deformities. Explain the embryological and etiological basis of	DR.TAYYAB SHOAIB

			clubfoot. Describe the clinical presentation and methods of clinical assessment. Outline the principles of management with emphasis on non-surgical correction. Describe indications for surgical intervention and explain operative correction.		
12	MS2-Orth012	Osteomyelitis	Differentiate acute, subacute, and chronic forms of osteomyelitis. Identify its risk factors and describe its pathophysiology. Describe radiological features of osteomyelitis. Identify typical clinical features of osteomyelitis. Outline management strategies and discuss complications.	DR.RASHID HUSSAIN	
13	MS2-Orth013	Early Assessment and Management of Severe Trauma	Define severe trauma and recognize its impact on morbidity and mortality. Describe the concept of the “golden hour” and its relevance in trauma care. Apply the principles of primary survey (ABCDE) for rapid assessment and stabilization. Identify immediate life-threatening conditions requiring urgent intervention. Outline the steps of secondary survey for detailed evaluation after initial stabilization. Discuss the role of resuscitation, monitoring, and adjunct investigations in trauma management. List the indications for urgent surgical referral and definitive management.	DR.NABEEL YAZDANI	
14	MS2-Orth019	Extremity trauma	Describe the common types and mechanisms of extremity trauma. Identify life- and limb-threatening conditions. Apply principles of initial assessment and stabilization. Outline indications for urgent referral to orthopedic/trauma specialists. Educate patients and attendants regarding basic care, need for follow-up, and complications.	DR.RASHID HUSSAIN	

Third Year MBBS Medicine Study Guide

Block 8

Department Of Medicine
Gujranwala Medical College

Department of Medicine

Gujranwala Medical College

Block 8 | Third Year MBBS

Modules 16-18: Neoplasia, Infectious Diseases, Musculoskeletal & Locomotion-II

1. Faculty

- Dr. Asim Saleem - Associate Professor of Medicine
- Dr. Qamar Rafique - Assistant Professor of Medicine
- Dr. Ali Shakeel - Assistant Professor of Medicine
- Dr. Bilal Minhas - Senior Registrar Medicine
- Dr. Faizan Butt - Senior Registrar Medicine
- Dr. Hafiz Qamar- Senior Registrar Medicine
- Dr. Shafaq Ilyas- Senior Registrar

2. Course Overview

This study guide is designed for third-year MBBS students in the Department of Medicine at Gujranwala Medical College and is aligned with the UHS Modular Integrated Curriculum 2K23 (Year-03). It follows the departmental study guide pattern used for Block 7, with Block 8 content arranged from the revised unified learning outcomes for Medicine and Allied disciplines.

Block 8 includes Module 16: Neoplasia, Module 17: Infectious Diseases, and Module 18: Musculoskeletal & Locomotion-II. The Medicine/Allied contribution comprises 26 lecture hours: Neoplasia 4 hours, Infectious Diseases 5 hours, and Rheumatology/Musculoskeletal Medicine 17 hours, in addition to CFRC clinical skills and end-of-rotation assessment activities.

The Neoplasia component introduces students to common cancer presentations, risk factors, investigations, oncological emergencies, paraneoplastic syndromes, and broad therapeutic principles. The Infectious Diseases component emphasizes a systematic approach to pyrexia of unknown origin, sepsis, meningitis, respiratory tract infections, and common gastrointestinal infections. The Musculoskeletal & Locomotion-II component focuses on rheumatology, including rheumatoid arthritis, osteoarthritis, crystal arthritis, systemic vasculitis, ankylosing spondylitis, SLE, systemic sclerosis, inflammatory myopathies, and Sjogren syndrome.

Clinical Foundation Rotation Clerkship (CFRC) sessions are included to strengthen bedside history-taking, focused cardiovascular examination, clinical reasoning, patient-centered decision-making, and OSCE readiness.

3. Expected Learning Outcomes

- Recognize the common presenting complaints and important clinical signs in patients with cancer and relate them to appropriate investigations and therapeutic options.
- Identify environmental, genetic, and clinical risk factors for cancer development and explain the role of investigations in cancer diagnosis and management.
- Explain oncological emergencies, tumor metastasis, and paraneoplastic syndromes in clinically relevant terms.
- Define pyrexia of unknown origin, sepsis, septic shock, and meningitis, and outline their diagnostic and initial management approach.
- Differentiate common respiratory and gastrointestinal infectious syndromes and apply appropriate clinical diagnosis and initial treatment principles.

- Diagnose and clinically differentiate common rheumatological disorders including rheumatoid arthritis, osteoarthritis, gout, pseudogout, vasculitis, spondyloarthritis, SLE, systemic sclerosis, polymyositis/dermatomyositis, and Sjogren syndrome.
- Interpret relevant laboratory and imaging investigations in oncology, infectious disease, and rheumatology scenarios.
- Apply evidence-based principles to clinical decision-making in Medicine and Rheumatology.
- Demonstrate CFRC clinical skills including cardiovascular history, precordial inspection, JVP assessment, palpation, auscultation, formulation of diagnosis, and patient-centered decision-making.

4. Prerequisites or Prior Knowledge

- Basic anatomy, physiology, pathology, microbiology, pharmacology, and immunology relevant to cancer, infection, inflammation, and musculoskeletal disorders.
- Basic principles of clinical history-taking, general physical examination, and professional communication.
- Introductory understanding of laboratory interpretation, radiology, infection prevention, and patient safety.

5. Schedule / Timetable

- Weeks 1-2: Neoplasia / Medicine-Oncology teaching sessions.
- Weeks 3-4: Infectious Diseases teaching sessions.
- Weeks 5-10: Musculoskeletal & Locomotion-II / Rheumatology teaching sessions.
- CFRC sessions are distributed during clinical rotations and small-group bedside teaching.
- End-of-rotation and end-of-block assessment will be conducted according to the institutional plan.

6. Content Outline / Topics

Module 16: Neoplasia

- Presenting complaints and clinical examination in cancer patients
- Cancer risk factors: environmental and genetic
- Investigations in cancer patients
- Oncological emergencies, metastasis, and paraneoplastic syndromes
- Therapeutics in oncology: surgery, radiotherapy, chemotherapy, and palliative care

Module 17: Infectious Diseases

- Pyrexia of unknown origin
- Sepsis: definitions, diagnosis, and initial management
- Meningitis
- Respiratory tract infections

- GIT infections: diarrhea and dysentery

Module 18: Musculoskeletal & Locomotion-II / Rheumatology

- Rheumatoid arthritis
- Osteoarthritis
- Crystal arthritis: gout and pseudogout
- Systemic inflammatory vasculitis
- Ankylosing spondylitis
- Systemic lupus erythematosus
- Systemic sclerosis
- Polymyositis and dermatomyositis
- Sjogren syndrome

Block-08 CFRC Skills

- Chest pain history
- Dyspnea history
- Palpitations history
- Inspection of precordium and JVP
- Palpation of apex beat and peripheral pulses
- Auscultation of heart sounds and murmurs
- Cardiovascular system examination
- Formulation of diagnosis from patient findings
- Patient-centered clinical decision-making

7. Self-Assessment Questions

- Topic-wise formative short questions and viva practice after each lecture.
- Clinical scenario-based discussion on PUO, sepsis, meningitis, pneumonia, cancer emergencies, and rheumatology cases.
- Interpretation exercises for CBC, inflammatory markers, autoimmune profiles, synovial fluid analysis, cultures, imaging, and oncology investigations.
- CFRC logbook completion and end-of-rotation OSCE practice.

8. Learning Resources

- Davidson's Principles and Practice of Medicine - chapters on oncology, infectious diseases, sepsis, and rheumatology.
- Kumar & Clark's Clinical Medicine - sections on cancer medicine, infection, and rheumatology.
- Harrison's Principles of Internal Medicine - deeper reading for oncology, infectious disease, sepsis, and rheumatic diseases.

- Hutchison's Clinical Methods - cardiovascular examination and general bedside clinical methods.
- Macleod's Clinical Examination - history-taking, cardiovascular examination, and clinical skills.
- Relevant UHS curriculum documents, institutional CFRC logbook, ward SOPs, and hospital protocols.

9. Learning Strategies and Study Tips

- Read the relevant textbook section before each lecture and annotate the curriculum learning outcomes.
- Use clinical cases to link symptoms, examination findings, investigations, diagnosis, and initial management.
- Practice cardiovascular examination repeatedly in the ward with direct observation and feedback.
- Prepare high-yield differentials for fever, sepsis, meningitis, pneumonia, arthritis, vasculitis, and cancer-related emergencies.
- Revise core drug groups used in oncology, infection, and rheumatology with attention to indications, adverse effects, and monitoring.

10. Assessment Information

- Topic-wise formative assessment by the department.
- CFRC logbook completion with supervisor signatures.
- End-of-rotation assessment using OSCE, case-based discussion, and/or viva as per departmental plan.
- End-of-block written and clinical assessment according to the institutional assessment layout.

11. Instructor and Support Contact Info

- Dr. Asim Saleem - Associate Professor of Medicine
- Dr. Qamar Rafique - Assistant Professor of Medicine
- Dr. Ali Shakeel - Assistant Professor of Medicine
- Dr. Bilal Minhas - Senior Registrar Medicine
- Dr. Faizan Butt - Senior Registrar Medicine

12. Appendices

- Lecture Schedule
- CFRC Schedule
- Block Assessment Layout

13. Personal Comments or Guidance

- Regular attendance in theory and ward sessions is essential because Block 8 integrates theoretical knowledge with bedside clinical application.
- Students should maintain a topic-wise notebook for cancer presentations, infectious disease algorithms, sepsis steps, meningitis signs, pneumonia approach, and rheumatology differentials.
- Students should actively seek feedback during CFRC sessions to improve history-taking, cardiovascular examination technique, clinical reasoning, and communication.

14. References and Further Reading

- Davidson's Principles and Practice of Medicine
- Kumar & Clark's Clinical Medicine
- Harrison's Principles of Internal Medicine
- Hutchison's Clinical Methods
- Macleod's Clinical Examination
- UHS Modular Integrated Curriculum 2K23, Year-03

Appendices

Module 16: Neoplasia

Department of Medicine
Gujranwala Medical College
Block 8
Third Year MBBS

Module 16: Neoplasia
Subject: Medicine / Oncology
Total hours: 4 hours

Lecture	Code	Topic	Specific Learning Outcomes	Facilitator
1	N-M-001 N-M-002	Presenting Complaint and Risk Factors	1. Describe the common presenting complaint of cancer patients and the approach to clinical examination during cancer treatment. 2. Identify important clinical signs in patients with cancer. 3. Identify the risk factors for cancer development. 4. Discuss the role of environmental and genetic factors in cancer development.	**Dr. Ali Shakeel**
2	N-M-003	Investigations	1. Discuss the role of various investigations in the diagnosis and management of cancer patients.	**Dr. Hafiz Qamar**
3	N-M-004	Oncological Emergencies and Paraneoplastic Syndrome	1. Describe the common oncological emergencies. 2. Explain the clinical implications of tumour metastasis. 3. Discuss the types and features of paraneoplastic syndromes.	**Dr. Ali Shakeel**
4	N-M-005	Therapeutics in Oncology	1. Discuss the role of surgery, radiotherapy, chemotherapy, and palliative care in cancer management.	**Dr. Bilal Minhas**

Module 17: Infectious Diseases

Department of Medicine
Gujranwala Medical College
Block 8
Third Year MBBS

Module 17: Infectious Diseases
Subject: Internal Medicine
Total hours: 5 hours

Lecture	Code	Topic	Specific Learning Outcomes	Facilitator
1	ID-M-001	Pyrexia of Unknown Origin	1. Define pyrexia of unknown origin and state the diagnostic criteria. 2. Classify the major etiological groups of PUO. 3. Describe briefly the initial clinical approach to a patient with PUO.	**Dr. Ali Shakeel**
2-3	ID-M-002	Sepsis: Definitions, Diagnosis and Initial Management	1. Define sepsis and septic shock. 2. Identify common causes of sepsis. 3. Describe the key clinical signs and red flags of systemic infection. 4. Outline basic laboratory and bedside investigations to diagnose sepsis. 5. Plan the initial management and discuss preventive strategies.	**Dr. Ali Shakeel**
4	ID-M-003	Meningitis	1. Define meningitis. 2. Identify the common signs and symptoms of meningitis. 3. Describe the clinical importance of meningeal signs (Kernig's and Brudzinski's). 4. Outline the key investigations used in the diagnosis of meningitis.	**Dr. Ali Shakeel**
5	ID-M-004	Respiratory Tract Infections	1. Diagnose and differentiate between upper and lower respiratory tract infections based on clinical presentation. 2. Identify common causative organisms. 3. Identify warning signs. 4. Outline basic investigations to establish diagnosis and plan the management.	**Dr. Bilal Minhas**

Department of Medicine
Gujranwala Medical College
Block 8
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Module 18: Musculoskeletal & Locomotion-II
Subject: Medicine / Rheumatology
Total hours: 17 hours

Lecture	Code	Topic	Specific Learning Outcomes	Facilitator
1-2	MS2-Rh-001	Rheumatoid Arthritis	1. Explain the immunopathogenesis and underlying mechanisms leading to Rheumatoid Arthritis (RA). 2. Diagnose RA based on characteristic clinical features. 3. Differentiate RA from other causes of polyarthritis based on clinical and laboratory findings. 4. Interpret relevant investigations. 5. Discuss the diagnostic criteria for confirming RA. 6. Outline the management plan.	**Dr. Ali Shakeel**
3-4	MS2-Rh-002	Osteoarthritis	1. Identify risk factors contributing to the development and progression of osteoarthritis. 2. Describe the clinical features and typical pattern of joint involvement in OA. 3. Differentiate OA from other types of arthritis based on clinical presentation and investigation. 4. Interpret relevant diagnostic investigations. 5. Outline management plan. 6. Identify the complications and functional limitations associated with OA.	**Dr. Shafaq Ilyas**

Module 18: Musculoskeletal & Locomotion-II (continued)

Lecture	Code	Topic	Specific Learning Outcomes	Facilitator
5-6	MS2-Rh-003	Crystal Arthritis (Gout and Pseudogout)	1. Define crystal arthritis. 2. Differentiate between gout and pseudogout. 3. Describe the pathophysiology of monosodium urate and calcium pyrophosphate crystal deposition in joints. 4. Identify risk factors and precipitating causes associated with gout and pseudogout. 5. Describe clinical features and stages of gout. 6. Interpret relevant laboratory and imaging findings. 7. Discuss management strategies. 8. Identify potential complications.	**Dr. Shafaq Ilyas**
7-9	MS2-Rh-004	Systemic Inflammatory Vasculitis	1. Define systemic inflammatory vasculitis and classify its major types. 2. Describe the pathophysiological mechanisms underlying systemic vasculitis. 3. Identify common etiological factors and associations of systemic vasculitis. 4. Identify the characteristic clinical features and organ involvement in different types of vasculitis. 5. Discuss the diagnostic approach including relevant laboratory tests, imaging, and biopsy findings. 6. Differentiate between major types of vasculitis on the basis of clinical and diagnostic features. 7. Outline principles of management including pharmacological and supportive therapies. 8. Discuss potential complications and long-term outcomes of systemic inflammatory vasculitis.	**Pathology /** **Dr. Ali Shakeel**

Module 18: Musculoskeletal & Locomotion-II (continued)

Lecture	Code	Topic	Specific Learning Outcomes	Facilitator
10-11	MS2-Rh-005	Ankylosing Spondylitis	1. Describe the genetic predisposition and immunopathogenesis of ankylosing spondylitis. 2. Identify the cardinal clinical features of ankylosing spondylitis. 3. Interpret the diagnostic criteria and characteristic radiological findings. 4. Differentiate ankylosing spondylitis from mechanical back pain and other spondyloarthropathies. 5. Outline treatment principles including pharmacological, physical therapy, and lifestyle modifications. 6. Describe its complications, disability risks, and long-term prognosis.	**Dr. Ali Shakeel**
12-13	MS2-Rh-006	Systemic Lupus Erythematosus	1. Define SLE and describe its immunopathogenesis. 2. List common risk factors and triggers (genetic, environmental, hormonal). 3. Identify the clinical manifestations involving skin, joints, kidneys, hematological and nervous systems. 4. Describe diagnostic criteria and relevant laboratory investigations. 5. Outline the principles of management including pharmacological and supportive measures.	**Dr. Shafaq Ilyas**
14	MS2-Rh-007	Systemic Sclerosis	1. Define systemic sclerosis and classify its major types. 2. Describe the pathophysiological changes in it. 3. Identify the key clinical features including skin thickening, Raynaud's phenomenon, and internal organ involvement. 4. Identify diagnostic tests and autoantibodies associated with systemic sclerosis. 5. Outline the management strategies including symptomatic treatment and prevention of complications.	**Dr. Shafaq Ilyas**

Module 18: Musculoskeletal & Locomotion-II (continued)

Lecture	Code	Topic	Specific Learning Outcomes	Facilitator
15	MS2-Rh-008	Polymyositis and Dermatomyositis	1. Define polymyositis and dermatomyositis, highlighting their autoimmune basis. 2. Identify characteristic clinical features. 3. Discuss laboratory and diagnostic investigations. 4. Outline the management approach including immunosuppressive therapy and physiotherapy.	**Dr. Hafiz Qamar**
16-17	MS2-Rh-009	Sjögren's Syndrome	1. Define Sjögren's syndrome and differentiate between primary and secondary forms. 2. Describe the pathophysiology involving lymphocytic infiltration of exocrine glands. 3. Recognize typical clinical features including xerostomia, keratoconjunctivitis sicca, and systemic manifestations. 4. Discuss relevant diagnostic investigations (Schirmer's test, salivary gland biopsy, autoantibodies). 5. Outline management strategies including symptomatic relief and immunosuppression when indicated.	**Dr. Ali Shakeel**

CFRC Skills - Third Year MBBS Medicine Block 8

CFRC Skills	CFRC Code	Teaching Strategy	Facilitator	Resources
Chest pain history	CFRC3-028 CFRC3-029	Case-based Discussion	Dr. Ali Shakeel	**Hutchison's, Macleod's**
Dyspnea (shortness of breath) history	CFRC3-030	Bedside Teaching	Dr. Bilal Minhas	**Hutchison's, Macleod's**
Palpitations history	CFRC3-031	Role Play	Dr. Faizan Butt	**Hutchison's, Macleod's**
Inspection of precordium and JVP	CFRC3-032	Demonstration and Practice	Dr. Ali Shakeel	**Hutchison's, Macleod's**
Palpation (apex beat, peripheral pulses)	CFRC3-033	Hands-on Practice	Dr. Bilal Minhas	**Hutchison's, Macleod's**
Auscultation (heart sounds, murmurs)	CFRC3-062	Interactive Sessions	Dr. Faizan Butt	**Hutchison's, Macleod's**
Cardiovascular system examination	CFRC3-063	Observed Structured Clinical Examination (OSCE) Practice	Dr. Ali Shakeel	**Hutchison's, Macleod's**
Formulate a diagnosis from patient findings	CFRC3-054	Problem-Based Learning	Dr. Bilal Minhas	**Hutchison's, Macleod's**
Patient-centered clinical decision-making	CFRC3-051	Group Discussion	Dr. Ali Shakeel	**Davidson, Kumar & Clark**
EOR	Assessment			

Block 8 Assessment Layout

Subject	Written Exam MCQ (1 mark)	Written Exam SEQ (5 marks each)	Written Marks	OSPE/OSCE (8 marks each observed)	OSCE (10 marks each observed)	OSVE (14 marks each observed)	Clinical Marks
Pharmacology	12	02	22	**03**	-	01	38
Pathology	30	05	55	**04**	-	02	60
Family Medicine	-	-	-	**-**	-	-	-
Community Medicine	04	-	04	**-**	-	-	-
Surgery	15	01	20	**01**	-	-	08
Medicine	15	01	20	**01**	-	-	08
Forensic	10	01	15	**01**	-	-	08
Behavioral	02	-	02	**-**	-	-	-
Patient Safety	02	-	02	**-**	-	-	-
CFRC	-	-	-	**01**	-	-	08
PERLs + ExposITory	-	-	-	**-**	01	-	10
Total	90	10x5=50	140	**11 stations x 08 = 88**	01 station x 10 = 10	03 stations x 14 = 42	140

Department of Surgery and Allied

Gujranwala Medical College

Third Year MBBS

Block 8

Module 16: Neoplasia

Subject: Surgical Oncology

Total hours: 1 hour

Code	Topic	Specific Learning outcomes	Facilitator
N-S-001	Principles of oncologic surgery	• Describe the basic principles and role of surgery in cancer management, including its use for curative and palliative surgery.	**Dr Farhan Tahir**

Module: 17 Infectious Diseases

Subject: Surgery

Total hours: 3 hours.

Code	Topic	Specific Learning outcomes	Facilitator
ID-S-001	Surgical Site Infection	● List the common risk factors that predispose to surgical site infections. ● Identify early clinical features suggestive of a surgical site infection. ● Outline steps of initial management and prevention strategies. ● Describe the potential outcomes of untreated or poorly managed SSI.	**Dr Farhan Tahir**
ID-S-002	Antibiotics prophylaxis	● Define surgical antibiotic prophylaxis and its role in preventing infection. ● Explain the principles of timing, choice, and duration of prophylaxis. ● Recognize the consequences of inappropriate use. ● Discuss the role of prophylaxis as part of a wider infection control strategy.	**Dr Farhan Tahir**
ID-IC-001	Safe practices in healthcare settings	● Discuss the safe work practices that reduce the risk of infection transmission in healthcare settings. ● Describe the safe disposal of sharps and waste.	**Dr Farhan Tahir**

		● Explain aseptic technique and safe handling of invasive devices, in infection prevention	

Module: 18 Musculoskeletal and Locomotion II

Subject: Surgical Traumatology

Total hours: 4 hours

	Code	Topic	Specific Learning outcomes	Facilitator
1	MS2-Orth-013	Early Assessment and Management of Severe Trauma	● Define severe trauma and recognize its impact on morbidity and mortality. ● Describe the concept of the “golden hour” and its relevance in trauma care. ● Apply the principles of primary survey (ABCDE) for rapid assessment and stabilization. ● Identify immediate life-threatening conditions requiring urgent intervention. ● Outline the steps of secondary survey for detailed evaluation after initial stabilization. ● Discuss the role of resuscitation, monitoring, and adjunct investigations in trauma management. ● List the indications for urgent surgical referral and definitive management.	**Dr Farhan Tahir**

2	MS2-Orth-016	Maxillofacial Trauma	● Classify common facial fractures. ● Describe key clinical features and complications, including airway compromise. ● Explain initial assessment and stabilization in facial injuries. . ● Identify appropriate diagnostic investigations, especially imaging. ● Outline plan for definitive management and multidisciplinary care.	**Dr Farhan Tahir**
3	MS2-Orth-017	Thoracic Trauma	● Define thoracic trauma and classify it into blunt and penetrating types. ● Describe life-threatening chest injuries including tension pneumothorax, massive hemothorax, flail chest, cardiac tamponade. ● Apply the principles of initial assessment and stabilization using the ATLS approach. ● Identify key diagnostic tools for evaluation. ● Outline principles of acute management	**Dr Farhan Tahir**
4	MS2-Orth-018	Abdominal Trauma	● Classify abdominal trauma based on mechanism and organ involvement. ● Identify the clinical presentation and red flag signs indicating severe intra-abdominal injury. ● Discuss the role of bedside and imaging investigations in diagnosis.	**Dr Farhan Tahir**

			● Outline the early surgical and supportive management plan to prevent morbidity and mortality.	