UNIVERSITY OF HEALTH SCIENCES LAHORE

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Block 8

Study Guide

Third Year MBBS

ISLAM MEDICAL COLLEGE

Sialkot – Pakistan

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BLOCK 8

NEOPLASIA

INFECTIOUS DISEASES

MUSCULOSKELETAL & LOCOMOTION 2

FORENSIC & TOXICOLOGY 2

GUIDE

MODULE LEAD DETAILS

Hello, I am Dr. Rana Muhammad Asad Khan working as a Assistant Professor in Pathology department of Islam Medical and Dental College, Sialkot and now acting as **a Block Lead of Block 8.** I completed my graduation from Islam Medical and Dental College, Sialkot in 2019, and MPhil Microbiology in 2024 at Institute of Molecular Biology and Biotechnology, Lahore. You can come to meet me in Pathology department office, Academic Block 2 from 08:00 – 15:00 hours on weekdays. You can also contact me freely on my email assadmanj786@gmail.com.

MODULE OVERVIEW

Neoplasia module is essential to provide MBBS students with the knowledge and skills abilities necessary to comprehend the biological, clinical, and public health aspects of cancer. this module provides the foundation for effective cancer diagnosis, management, and prevention, it guarantees that our future doctor is well prepared to address one of the most pressing healthcare challenges of our time.

Aim of this module is to provide MBBS students with a comprehensive understanding of neoplasia, preparing them to diagnose, treat, and prevent cancer effectively in their future clinical practice..

MODULE OUTCOMES

 Understand the basic concept of neoplasia, including benign and malignant tumors.

 Describe the molecular and cellular mechanisms of carcinogenesis, including the role of genetic mutations, oncogenes, tumor suppressor genes, and environmental factors

 Understand the classification of tumors based on histology, site of origin, and grading/staging systems (TNM classification).

 Explain the biological mechanisms of tumor growth, invasion, angiogenesis, and metastasis

 Explain the role of the immune system in tumor recognition and immune evasion mechanisms by cancer cells.

□ Understand the general principles of cancer treatment, including surgery, chemotherapy,

radiotherapy, immunotherapy, and targeted therapy.

□ Understand how to utilize diagnostic tools, such as imaging and pathology (biopsy), to identify

and assess neoplasms.

□ Communicate effectively with patients and families about cancer diagnosis, treatment

Infectious diseases pose a universal threat to human health, ranging from mild to life-threatening

conditions. This module aims to equip students with essential knowledge of common infections,

including their transmission, clinical presentation, diagnosis, and treatment, while emphasizing

the importance of infection control and biosafety. Students will learn the pathophysiology of

conditions such as sepsis, septic shock, and pyrexia of unknown origin, as well as viral, bacterial,

fungal, protozoal, and helminthic infections. Integrating infection control and biosafety into the

curriculum, the module covers core safety principles like proper handling of biological materials,

risk mitigation strategies, and the use of personal protective equipment (PPE), ensuring that

students develop the skills to manage infections effectively while safeguarding public and

healthcare worker safety through preventive measures such as immunization and sterilization.

This comprehensive approach fosters a deeper understanding of clinical decision-making,

laboratory investigations, and public health initiatives in infectious disease management

MODULE OUTCOMES

** Demonstrate a systematic approach to assessing patients with suspected infections, including**

pyrexia of unknown origin and sepsis, while adhering to biosafety protocols to minimize the

risk of infection transmission during patient evaluation.

** Diagnose common viral infections such as measles, chickenpox, rubella, mumps, influenza,**

COVID-19, and dengue based on clinical features and diagnostic tools, applying biosafety

measures during sample collection and handling.

** Outline treatment options, including antiviral therapies, supportive care, and preventive**

measures (e.g., immunization) for viral infections.

• Diagnose and manage gram-positive and gram-negative bacterial infections such as pharyngitis, pneumonia, enteric fever, and meningitis.

• Describe the clinical features, diagnosis, and management of clostridial infections (botulism, gas gangrene) and sexually transmitted infections like syphilis.

• Recognize the clinical features and management strategies for mycobacterial infections, with a focus on pulmonary and abdominal tuberculosis.

• Identify and manage common fungal infections, including diagnosis, treatment, and preventive measures.

• Explain the clinical features, investigations, and treatment of protozoal infections such as amoebiasis and helminthic infections like ascariasis and hookworm.

• Describe the life cycle of helminths and explain how infections like hookworm contribute to anemia, along with prevention and treatment strategies.

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• Diagnose and manage acute and chronic diarrhea based on etiologies such as bacterial, viral, and protozoal infections.

• Discuss strategies for immunization and prevention of vaccine-preventable diseases, including measles, mumps, rubella, and poliomyelitis.

• Apply empirical and definitive treatment protocols for various infectious diseases, including antibiotic stewardship and antiviral therapies.

□ Analyze the epidemiology of diseases like dengue, rabies, and COVID-19, and propose public

health interventions for their control and prevention.

□ Describe the role of surgical interventions in infections like hydatid cysts, alongside medical

management approaches.

□ Recognize different types of Healthcare-Associated Infections (HAI), associated pathogens,

transmission routes, and prevention strategies.

□ Implement effective prevention and control measures for HAI in clinical settings to ensure

patient safety.

□ Identify and apply biosafety measures in laboratory and clinical settings to ensure safe

handling of biological materials and minimize bio risk during infectious disease management.

□ Evaluate the importance of bio risk management protocols in infection prevention strategies,

focusing on the safe collection, storage, and disposal of biological samples to protect both

healthcare workers and patients.

The Musculoskeletal & Locomotion II module is designed to deepen medical students' understanding of the musculoskeletal system, integrating knowledge from multiple disciplines to enhance the management of musculoskeletal disorders and injuries. This module emphasizes the interconnectedness of various fields, including orthopedics, surgical traumatology, forensic traumatology, and rheumatology, while also incorporating essential subjects such as pathology, pharmacology, community medicine, behavioral sciences, radiology, and evidence-based medicine.

Integrated Learning: This module promotes an integrated approach to understanding the musculoskeletal system. By combining orthopedics, surgical traumatology, forensic traumatology, and rheumatology, students will gain a holistic perspective on diagnosis and treatment, preparing them for the complexities of clinical practice.

Pathology and Pharmacology: Understanding the underlying pathology of musculoskeletal disorders is essential for effective management. This module emphasizes the importance of pathology and pharmacology, equipping students with the knowledge to identify disease mechanisms and select appropriate pharmacological interventions for pain management and inflammation control.

Community Medicine and Behavioral Sciences: Musculoskeletal disorders significantly impact community health and patient well-being. The module includes community medicine to address the epidemiology, prevention, and health promotion aspects of musculoskeletal conditions. Additionally, behavioral sciences will be integrated to enhance understanding of patient behavior, adherence to treatment, and the psychosocial factors affecting recovery.

Radiology and Evidence-Based Medicine: Proficiency in interpreting radiological findings is crucial for diagnosing musculoskeletal conditions. The module will cover radiological techniques relevant to orthopedics and traumatology, allowing students to correlate imaging results with clinical findings. Furthermore, an emphasis on evidence-based medicine will teach students how

to critically appraise research and apply findings to clinical decision-making, ensuring the delivery

of high-quality patient care.

Real-World Applications: By focusing on both common and complex musculoskeletal disorders,

including those requiring surgical intervention, students will develop the skills necessary to

assess and manage a wide range of conditions. This prepares them for future roles in various

healthcare settings, from primary care to specialized practices.

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Multidisciplinary Collaboration: The management of musculoskeletal disorders often requires a

team approach, involving collaboration with specialists in orthopedics, rheumatology, radiology,

and rehabilitation. This module fosters an appreciation for interdisciplinary teamwork and the

importance of effective communication in providing optimal patient care.

MODULE OUTCOMES

** Explain the pathology and underlying mechanisms of common musculoskeletal disorders**

and injuries, including septic arthritis, osteomyelitis, fractures, and degenerative

conditions.

** Identify key features of various musculoskeletal disorders, including their clinical**

presentations, epidemiology, and impact on community health.

** Perform thorough musculoskeletal examinations to assess joint mobility, strength, and**

functional capabilities.

□ Interpret relevant imaging studies (e.g., X-rays, MRI, CT scans) to aid in the diagnosis and

management of musculoskeletal conditions.

□ Apply appropriate first aid measures for common musculoskeletal injuries, including

immobilization techniques and pain management strategies.

□ Integrate knowledge from orthopedics, surgical traumatology, forensic traumatology, and

rheumatology to develop comprehensive management plans for patients with

musculoskeletal conditions.

□ Collaborate effectively with healthcare professionals from diverse specialties, including

pathology, pharmacology, community medicine, behavioral sciences, and radiology, to

enhance patient care.

□ Critically evaluate and apply current evidence-based guidelines and research findings to

inform clinical decision-making in the management of musculoskeletal disorders.

□ Formulate treatment plans that incorporate pharmacological and non-pharmacological

interventions based on best practices and individual patient needs.

□ Demonstrate empathy and effective communication skills when interacting with patients

suffering from musculoskeletal disorders, ensuring a patient-centered approach to care.

□ Educate patients about their conditions, treatment options, and the importance of

adherence to management plans for optimal outcomes.

□ Recognize the ethical considerations and challenges in the management of

musculoskeletal disorders, including issues related to informed consent, patient autonomy,

and resource allocation.

□ Exhibit professionalism in all interactions with patients, families, and healthcare team

members, promoting a culture of respect and trust.

Forensic Medicine and Toxicology trains the 3rd year MBBS student to handle social issues like violence, and sexual

exploitation, they can identify injuries and give an inference on their cause. It equips them with

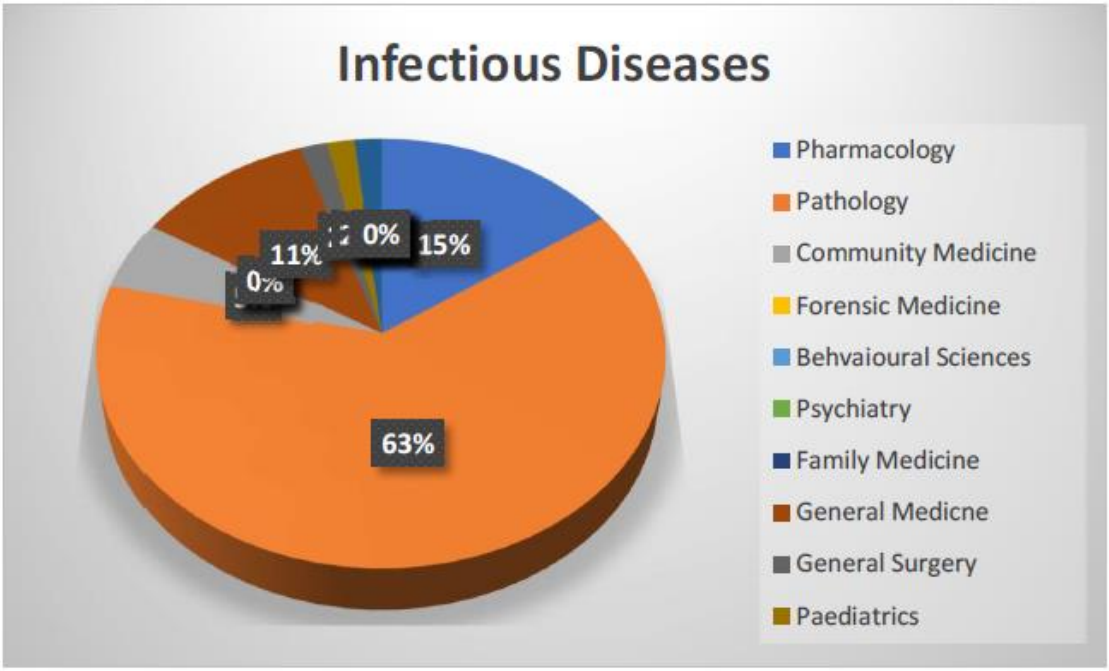
skills to provide accurate medical evaluation and contribute to justice.

MODULE OUTCOMES

- **Explain the biomechanics of wound production**
- **Determine the manner of injury**
- **Describe the pathophysiology of injuries and their effects on the body**
- **Define & Explain puberty, Impotence in males, frigidity in females, Sterility and medicolegal**

importance.

- **Reproduce different sections of law relevant to sexual offenses.**


Infectious Diseases
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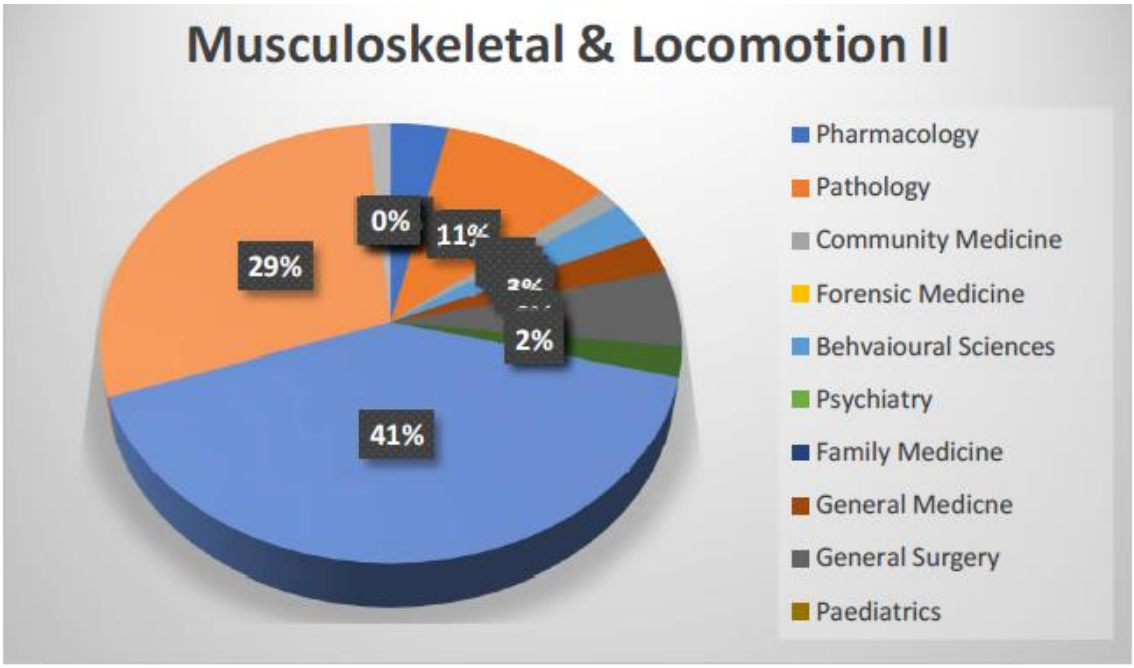
Pharmacology
Pathology
Community Medicine
Forensic Medicine
Behvaioural Sciences
Psychiatry
Family Medicine
General Medicne
General Surgery
Paediatrics


Musculoskeletal & Locomotion II
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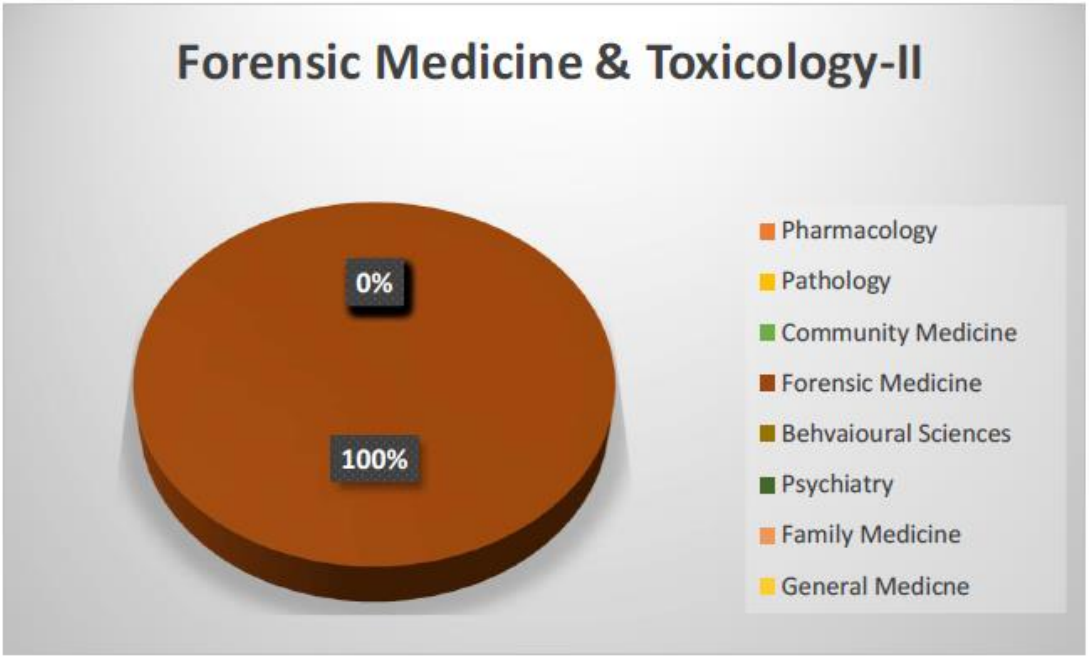
Pharmacology
Pathology
Community Medicine
Forensic Medicine
Behvaioural Sciences
Psychiatry
Family Medicine
General Medicne
General Surgery
Paediatrics


Forensic Medicine & Toxicology-II
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100%
Pharmacology
Pathology
Community Medicine
Forensic Medicine
Behvaioural Sciences
Psychiatry
Family Medicine
General Medicne

MODULE SCHEDULE
Will be posted after meeting

MODULE CONTENTS
Neoplasia content

THEORY			
PATHOLOGY			
CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 15	
		INTEGRATING DISCIPLINE	TOPIC
N-Pa-001	Define neoplasia, Nomenclature and difference between benign and malignant tumors based on morphological and functional characteristics and epidemiology of cancer.	Pathology	Nomenclature. benign and malignant tumours.
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.
N-Pa-003	Carcinogenic agents with their cellular interactions.		Carcinogenesis
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 markers
N-Pa-005	Grading and staging of tumors and treatment strategies.		Grading and Staging Invasion and metastasis
	Understand the concept of invasion and metastasis		
	Basic tumor markers		
N-Pa-006	Molecular basis of cancer		Molecular basis of cancer
N-Pa-007	Define and describe Paraneoplastic syndrome and associate with neoplastic lesions.		Paraneoplastic syndrome

BEHAVIOURAL SCIENCES			
CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 01	
		INTEGRATING DISCIPLINE	TOPIC
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.	Behavioural Sciences	Psychosocial aspect of oncology / cancer
BIOCHEMISTRY			
CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 02	
		INTEGRATING DISCIPLINE	TOPIC
N-B-001	Discuss molecular changes in oncogenes, tumor, suppressor genes, and apoapsis mechanism. Explain Role of epigenetics in cancer development.	Biochemistry	Oncology / cancer
RADIOLOGY			
CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 02	
		INTEGRATING DISCIPLINE	TOPIC
N-M-001	Introduction to Radiological Modalities in Oncology Understand the different radiological imaging techniques used in cancer management: i. X-rays ii. Ultrasound iii. CT scans (Computed Tomography) iv. MRI (Magnetic Resonance Imaging) v. PET scans (Positron Emission Tomography) vi. Mammography	Medicine	Introduction
N-Ra-001	Role of Imaging in Cancer Detection and Diagnosis		Role of Imaging

	i. Identify radiological signs of cancer in different imaging modalities. ii. Understand how imaging assists in detecting primary tumors and metastasis. iii. Compare the sensitivity and specificity of different imaging techniques in diagnosing various types of cancer (e.g., CT vs. MRI for brain tumors).		
N-Ra-002	Imaging in Cancer Staging: i. Learn the importance of imaging in staging cancer (TNM system). ii. Understand how radiological imaging helps determine the extent of local, regional, and distant disease spread. iii. Role of CT, MRI, and PET scans in staging cancers like lung cancer, breast cancer, and colorectal cancer.		Imaging
	Imaging-Guided Procedures i. Introduction to imaging-guided diagnostic procedures (e.g., CT or ultrasound-guided biopsy). ii. Learn how interventional radiology aids in both diagnosis and treatment, such as tumor ablation and drainage procedures.		
	. Imaging in Treatment Planning: i. Role of imaging in planning surgical interventions, radiotherapy, and other treatments. ii. Understand how imaging assists in monitoring tumor size, location, and response to therapy. iii. Discuss the use of PET/CT scans in assessing the metabolic activity of tumors to guide treatment decisions.		

N-Ra-003	Follow-up and Monitoring i. Importance of radiological imaging in follow-up after cancer treatment (e.g., detecting recurrence or metastasis). ii. Learn how imaging changes guide alterations in treatment plans. iii. Understand the concept of surveillance imaging for cancer patients in remission.		Follow up & monitoring
N-Ra-004	Radiological Signs of Cancer Complications. Recognize radiological findings associated with complications like: i. Tumor obstruction ii. Bone metastasis iii. Brain metastasis iv. Vascular invasion or thrombosis		Complications
PHARMACOLOGY			
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOTAL HOURS = 10**	
		INTEGRATING DISCIPLINE	**TOPIC**
N-Ph-001	Patho physiology cell cycle	Pharmacology	Cell cycle
	Abnormalities in cell cycle leading to oncogenesis		
N-Ph-002	Cell Cycle specific and non-specific anti-tumour agent mechanism of action, adverse effect, indication drugs interaction of various class of chemotherapeutic agents.		Cell Cycle specific and non-specific anti-tumour agent
	Drugs for palliative therapy in various tumours		
	Drugs related with rehabilitation.		
	Drugs used during phases of radiotherapy e.g tumour lysis syndrome		
	Drugs used beside surgical resection of various tumour to treat complications.		

	Glucocorticoids as part of various anti-cancer cocktails.		
SURGERY			
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOTAL HOURS = 01**	
		INTEGRATING DISCIPLINE	**TOPIC**
N-S-001	Understand the principles of oncologic surgery, including when and how surgery is indicated during the treatment Identify role of surgery, techniques, indicators for curative and palliative surgery.	Surgery	Principles of oncologic surgery
COMMUNITY MEDICINE			
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOTAL HOURS = 01**	
		INTEGRATING DISCIPLINE	**TOPIC**
N-CM-001	Define cancer screening and its important Explain methods of screening for common cancers Major risk factors for cancer. Preventive and control measures.	Community Medicine	Screening /prevention
MEDICINE / ONCOLOGY			
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOTAL HOURS = 04**	
		INTEGRATING DISCIPLINE	**TOPIC**
N-M-002	Presenting Problems of Cancer Patients and clinical examination of patients on Cancer Treatment Understand the examination (important clinical signs of patients with cancer)	Medicine & oncology	Presenting problems
N-M-003	Risk factors for Cancer Development Understand and interpret the environment and genetic factors involved in Cancer development		Risk factors
N-M-004	Investigations in Cancer patients Will be able to understand & interpret various investigations required for Cancer patients		Investigation

N-M-005	Oncological Emergencies & Paraneoplastic syndrome Understand & interpret various ecologic emergencies, metastasis of tumours, and Paraneoplastic		Paraneoplastic syndrome
N-M-006	Therapeutic in Oncology Will be able to understand and Interpret Various Therapeutic options like surgery, radiotherapy, chemotherapy, and palliative.		Therapeutics
PRACTICAL / LAB WORK			
PATHOLOGY			
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOTAL HOURS = 06**	
		INTEGRATING DISCIPLINE	**TOPIC**
N-Pa-008	Morphological features of Benign and Malignant tumours (Gross and Microscopic features)	Pathology	Nomenclature, Difference between benign and malignant tumours
	Common Benign tumours (Lipoma, Leiomyoma, Fibroadenoma of Breast)		
	Carcinoma in situ (DCIS & Bowens disease)		
	Common Malignant tumours (Adenocarcinoma, Squamous cell carcinoma)		
N-Pa-009	Tumour grade and stage in malignant tumours Adenocarcinoma / Squamous cell carcinoma (including tumour invasion and metastasis)		Clinical aspects of Neoplasia

THEORY			
MICROBIOLOGY			
CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 53	
		INTEGRATING DISCIPLINE	TOPIC
ID-Pa-001	Explain the morphological, pathological and diagnostic aspects of: • Staphylococci. • Streptococci • Clostridia • Bacillus • Corynebacterium • Listeria and Gardnerella	Surgery	Bacterial infectious agents
		Microbiology	
	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	Microbiology	
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.	Microbiology	Parasitic infectious agents
ID-Pa-003	Explain the morphological, pathological and diagnostic aspects of ; • Dermatophytes, malassezia fur fur, Spoorthi, Histoplasma,	Microbiology	Fungal infections

	Explain the morphological, pathological and diagnostic aspects of ; • coccidioiodes, paracoccidioiodes, blastomyces, candida, mucor, aspergillus, cryptococcus	Microbiology	Fungal infections
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	Microbiology	Viral infectious agents
	Explain the morphological, pathological and diagnostic aspects of; • Retrovirus, flaviviruses, togaviruses • Coronavirus, delta virus, paramyxovirus, rhabdovirus, orthomyxovirus, filovirus	Microbiology	
ID-Pa-005	Enlist organisms producing CNS infections.	Microbiology	Microorganisms producing CNS infections
	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	Microbiology	

	• Adenovirus • C. neoformans • Rabies • Herpes simplex • Malaria • Toxoplasma • Negleria		
	Compare CSF findings of viral and bacterial meningitis.	Microbiology	
ID-Pa-006	Enlist organisms producing diarrhea & food poisoning.	Microbiology	Microorganisms producing GIT infections
	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	Microbiology integrates with medicine	
	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	Microbiology integrates with medicine	

	• 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	Microbiology	
	Correlate clinically the virulence factors, transmission, pathogenesis, laboratory diagnosis of Entamoeba & Echinococcus in liver infections.	Microbiology	
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	Microbiology integrates with medicine	Sexually transmitted infections
ID-Pa-008	Discuss important properties of: • Rickettsia, • Leptospira& Brucella, • anthrax, plague. • Francisella, bartonella	Microbiology	ZOONOTIC infections

PHARMACOLOGY			
CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 18	
		INTEGRATING DISCIPLINE	TOPIC
ID-Ph-001	Classify cell wall synthesis inhibitors.	Pharmacology	Cell Wall Inhibitors
	Discuss the mechanism of action of beta lactam antibiotics (Penicillin G, V, Oxacillin, Nafcillin, Ampicillin, Amoxicillin, Piperacillin).		
	Delineate the mechanism of resistance to beta lactam antibiotics.		
	Enlist the major adverse effects of penicillin		
	Differentiate the clinical uses of beta lactam antibiotics.		
	Discuss the mechanism of action and clinical significance of Beta Lactamase Inhibitors (Clavulanic acid, Sulbactam, Tazobactam, Avibactam, Vaborbactam)		Cell Wall Inhibitors
	Classify cephalosporin generations		
	Describe their antibacterial spectrum and clinical uses.		
	Differentiate the clinical uses of cephalosporin generations		
	List the major adverse effects of cephalosporins.		
	Describe important features of the carbapenems and monobactam.		
	Describe the mechanism of action of Membrane active antibiotics (daptomycin, Fosfomycin, bacitracin, cycloserine).		
	Describe the mechanism of resistance of Membrane active antibiotics.		
	Describe the adverse effects and toxicities of Membrane active antibiotics.		

	Describe antibacterial spectrum, mechanism of action, resistance, clinical uses and toxicity of vancomycin.		
	Discuss clinical features of Redman Syndrome.		
	Describe antibacterial spectrum, mechanism of action of Teicoplanin, Telavancin, Delbavancin, Oritavancin.		
ID-Ph-002	Explain briefly the major steps of protein synthesis.	Medicine	Protein Synthesis Inhibitors
	Classify protein synthesis inhibitors.		
	Demonstrate the tetracyclines and discuss mechanism of action, resistance, antibacterial spectrum, clinical uses, adverse effects of tetracyclines.		
	Outline features of Milk Alkali Syndrome	Medicine	
	List pharmacological indication and adverse effects of Glycylcycline.		
	Classify Macrolide/ Ketolide.		
	Describe the mechanism of action and pharmacokinetics, antimicrobial spectrum, clinical uses, adverse effects of Erythromycin, Clarithromycin, Azithromycin, Fidaxomycin.		
	Enlist mechanism of resistance & drug interactions of Macrolides.		
	Describe the antibacterial spectra, therapeutic uses and side effects of Ketolides (Telithromycin, solithromycin)		
	Discuss the main characteristics of Clindamycin including mechanism of action, pharmacokinetics, clinical uses and adverse effects.		

	Explain Chloramphenicol with respect to its: mechanism of action, resistance, antibacterial spectrum, pharmacokinetics, clinical uses and adverse effects.		
	Describe Gray Baby Syndrome.	Integrate with pediatrics	
	Enlist major pharmacokinetic characteristics of Streptogramins (Quinupristin / dalfopristin).		
	Classify Antifolate drugs.		
	Define Sulfonamides.		
	Discuss the classification of Sulfonamides.		
	Describe the mechanism of action of Sulfonamides.		
	Discuss the clinical uses of Sulfonamides.		
	Describe the adverse effects and toxicities of Sulfonamides.		
	Outline clinical features of Steven Johnsons Syndrome.	Integrate with Medicine	
	Explain Trimethoprim & Trimethoprim - Sulfamethoxazol with respect to their mechanism of actions, resistance, antibacterial spectrum, pharmacokinetics, clinical uses and adverse effects		
	Define Aminoglycosides.		
	Classify Aminoglycosides.		
	Describe the mechanism of action of Aminoglycosides (amikacin, gentamycin, streptomycin, tobramycin, neomycin, kanamycin).		
	Describe the mechanism of resistance of Aminoglycosides.		
	Discuss the clinical uses of Aminoglycosides.		
	Describe the adverse effects and toxicities of Aminoglycosides.		

	Discuss ototoxicity and nephrotoxicity of Aminoglycosides		
	Define DNA Gyrase Inhibitors.		
	Discuss the classification of DNA Gyrase Inhibitors.		
	Describe the mechanism of action of DNA Gyrase Inhibitors (Ciprofloxacin, Levofloxacin, Ofloxacin, Getifloxacin and others)	Integrate with Medicine	
	Describe the mechanism of resistance of DNA Gyrase Inhibitors.		
	Discuss the clinical uses of DNA Gyrase Inhibitors.		
	Describe the adverse effects and toxicities of DNA Gyrase Inhibitors.		
	Briefly describe the signs, symptoms, diagnosis of tuberculosis.	Integrate with Medicine	Antituberculosis Therapy (ATT)
	Classify antituberculosis drugs into 1st line and 2nd line agents with examples.		
ID-Ph-003	Describe standard protocols (WHO recommendation) for management of newly diagnosed pulmonary tuberculosis, multidrug-resistant tuberculosis, latent tuberculosis.	Integrate with Community Medicine	
	Delineate the characteristic pharmacodynamics and pharmacokinetic properties of Rifampin, Isoniazid, Ethambutol and Pyrazinamide.		
	Discuss the adverse effectsof 1st line antituberculosis drugs.		
	Describe how to monitor patients during antituberculosis drug therapy.		
	Discuss 2nd line drugs used in treatment of Multidrug resistant tuberculosis with their therapeutic and adverse effects.		
ID-Ph-004	Explain standard protocols (WHO recommendation) for management of leprosy.		Drugs used in Leprosy

	Describe the characteristic properties of dapsone and clofazimine with their adverse effects.		
ID-Ph-005	Classify Antiprotozoal Drugs.		Antiprotozoal Drugs
	Discuss the classification of Antimalarial agents.		
	Describe the mechanism of action of Antimalarial agents.		
	Describe the mechanism of resistance of Antimalarial agents.		
	Discuss the clinical uses of Antimalarial agents.		
	Describe the adverse effects and toxicities of Antimalarial agents.		
	Discuss the main characteristics of antiprotozoal drugs used in amoebiasis & giardiasis including mechanism of action, pharmacokinetics, clinical uses and adverse effects.		
	Discuss the main characteristics of antiprotozoal drugs used in treatment of Leishmaniasis.		
	Discuss the main characteristics of antiprotozoal drugs used in treatment of Trypanosomiasis.	Integrate with Medicine / Pead's	
ID-Ph-006	Classify anti-helmintic drugs.		Anti-Helminthic Drugs
	Discuss drugs used for the treatment of Nematodes.		
	Explain mechanisms of action, clinical uses, adverse effects of Mebendazole, Pyrantel pamoate, Piperazine, Diethylcarbamazine & Ivermectin.		
	Discuss drugs used for the treatment for Tape worm (cestodes) infection.		
	Explain mechanisms of action, clinical uses, and adverse effects of drugs used in cestodes infections.		

	Distinguish the drugs used for the treatment of Cestodes infection based on their characteristics and therapeutic uses.		
	Discuss drugs used in treatment of Neurocysticercosis.		
ID-Ph-007	Classify antifungal drugs.	Medicine / Pead's	Antifungal Drugs Classification
	Discuss drugs used for systemic mycotic infections.		
	Discuss mechanisms of action & resistance, pharmacokinetics, clinical uses, adverse effects of Amphotericin B.		
	Expalin the mechanism of action, uses and adverse effects of flucytosine.		
	Classify Azole antifungal drugs.		
	Discuss mechanism of action, resistance, antifungal spectrum, pharmacokinetics, clinical uses, adverse effects and drug interactions of Azole antifungal drugs.		
	Describe important pharmacologic properties of echinocandins.		
	Discuss the drugs used for mucocutaneous mycotic infections.		
	Discuss mechanism of action, resistance, antifungal spectrum, pharmacokinetics, clinical uses, adverse effects and drug interactions of Griseofulvin. and Terbinafine.		
	Discuss the drugs used for cutaneous mycotic infections / Topical agents.		
	Discuss mechanism of action, resistance, antifungal spectrum, pharmacokinetics, clinical uses, adverse effects of drugs used in cutaneous mycotic infections.		
	Discuss mechanism of action, resistance, antifungal spectrum, pharmacokinetics, clinical uses, adverse effects of Nystatin.		

ID-Ph-008	Discuss the main steps of viral replication that are targets for antiviral drugs.		Antiviral Agents
	Describe drugs used in treatment of herpes simplex and varicella zoster virus infection with their properties.		
	Explain the mechanism of action, pharmacodynamics and adverse effects of acyclovir, valacyclovir and famciclovir.		
	Explain the mechanism of action, pharmacodynamics and adverse effects of agents used in cytomegalovirus infection.		
	Classify antiretroviral agents.		
	Discuss mechanism of action, resistance, pharmacokinetics, clinical uses, adverse effects of NRTIs, NNRTIs, PIs, INSTIs, Fusion inhibitors, CCR5 coreceptor antagonist, CD4 post-attachment inhibitors.		
	Demonstrate the standard protocol for treatment of hepatitis B and C.		
	Describe pharmacodynamics and adverse effects of interferon, entacavir, tenofovir, ribavirin and others.		
	Describe the mechanism of action of drugs used in treatment of COVID-19 and influenza along with their adverse effects.		
	Briefly discuss antiretroviral drug used in treatment of HIV AIDS.		
	Describe the significant characteristics of the five groups of drugs used in HIV AIDs.		

COMMUNITY MEDICINE			
CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 06	
		INTEGRATING DISCIPLINE	TOPIC
ID-CM-001	Analyze the local & global burden of Tuberculosis Identify the risk factors of TB	Integrate with Microbiology	Tuberculosis

	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		
ID-CM-002	Discuss the global burden of hepatitis		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.		
ID-CM-003	Evaluate the Global Polio Eradication Initiative		Polio
	Analyze the historical and current global impact of poliomyelitis vaccination efforts.		
	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
	Describe the mode of transmission (airborne droplets) and the highly contagious nature of measles, mumps, Rubella	Integrate with Microbiology	

	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
	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
	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
	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.		
INTERNAL MEDICINE			
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOTAL HOURS = 05**	
		INTEGRATING DISCIPLINE	**TOPIC**
ID-Pa-009	Define pyrexia of unknown origin.	Integrate with Microbiology/ Pathology	Pyrexia of unknown origin
	Describe the investigations of a patient with pyrexia of unknown origin.		
ID-Ph-009	Summarize the treatment plan of a patient with pyrexia of unknown origin.	Integrate with Pharmacology	
ID-Pa-013	Discuss the signs, symptoms, diagnosis and treatment of septic and aseptic meningitis.	Integrate with Microbiology	CNS
	Discuss the signs, symptoms, diagnosis and treatment of septic and aseptic encephalitis.		
ID-Ph-010	Discuss the signs symptoms diagnosis and treatment of diarrhea and dysentery.	Integrate with Pharmacology	GIT infections
ID-Ph-011	Discuss the clinical diagnosis and treatment of typical and atypical pneumonia.		Respiratory tract infections
	Discuss the clinical diagnosis and treatment of TB		

GYNAECOLOGY			
CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 02	
		INTEGRATING DISCIPLINE	TOPIC
ID-GO-001	Discuss clinical presentation & treatment of pelvic inflammatory diseases (PID)	Integrate with Pharmacology	Sexually transmitted infections
ID-GO-002	Discuss the differential diagnosis of bacterial, parasitic and fungal vaginosis/vaginitis and their treatment	Integrate with Microbiology	Genital tract
PEDIATRICS MEDICINE			
CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 02	
		INTEGRATING DISCIPLINE	TOPIC
ID-Pe-001	Discuss the signs symptoms diagnosis and treatment of neonatal meningitis.	Integrate with Microbiology	CNS
ID-Pe-002	Discuss the signs symptoms diagnosis and treatment of diarrhea in infants.		GIT
ID-Pe-003	Discuss the clinical diagnosis and treatment of childhood respiratory tract infections.		RTI
SURGERY			
CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 02	
		INTEGRATING DISCIPLINE	TOPIC
ID-S-001	Discuss the treatment of carbuncle, necrotizing fasciitis and gas gangrene	Integrate with Microbiology	Skin infections
ID-S-002	Discuss the signs symptoms diagnosis and surgical treatment of hydatid cyst and its differential diagnosis with amoebic liver abscess	Integrate with Medicine	GIT

MICROBIOLOGY (INFECTION CONTROL)			
CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 08	
		INTEGRATING DISCIPLINE	TOPIC
ID-Pa-009	Define hospital acquired infections (HAI)	Microbiology	Infection prevention & control
	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		

MICROBIOLOGY			
BIOSAFETY			
CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 05	
		INTEGRATING DISCIPLINE	TOPIC
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 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?	Microbiology	Bio-risk management (BRM)

PRACTICALS / LAB WORK			
MICROBIOLOGY			
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOTAL HOURS = 08**	
		INTEGRATING DISCIPLINE	**TOPIC**
ID-Pa-011	Identify the stained slides* of gram positive and gram-negative bacteria (staphylococci, streptococci, Neisseria, Strept. pneumoniae, E. coli, proteus and acid fast bacilli). (*if slides will not be available, photographic slides should be used	Microbiology	Staining
ID-Pa-012	Interpret the culture sensitivity reports and antibiogram of gram positive and gram-negative bacteria.		Laboratory reporting
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
ID-Pa-014	Identify the ova, cysts and trophozoites of protozoans, helminths, cestodes and schistosomes.		Stool examination
ID-Pa-015	Perform and interpret the catalase test, coagulase test and oxidase test.		Laboratory tests
CLINICAL ROTATIONS / COMMUNITY HEALTHCARE			
INTERNAL MEDICINE			
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOTAL HOURS = 08**	
		INTEGRATING DISCIPLINE	**TOPIC**
ID-M-001	Demonstrate an accurate and comprehensive history from patient with fever	Internal medicine	History taking
ID-M-002	Perform a thorough general physical examination of a patient with fever		Physical Examination
ID-M-003	Order laboratory and radiological investigations for a patient with fever		Investigations

ID-M-004	Interpret the results of investigations of a patient with fever		Results
ID-M-005	Use information from history, physical examination, and laboratory investigations to identify and formulate a differential diagnosis of the underlying causes of fever		Differential diagnosis
ID-M-006	Formulate a therapeutic plan by integrating information from history, physical examination, and laboratory data for the management of a patient with fever		Therapeutic plan
ID-M-007	Record and present the complete history, physical examination findings, laboratory data, differential diagnosis, and therapeutic plan in a systematic, concise, and coherent manner, both in writing and orally		Management plan

Musculoskeletal & locomotion 2

THEORY			
RHEUMATOLOGY			
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOTAL HOURS = 17**	
		INTEGRATING DISCIPLINE	**TOPIC**
MS2-Rh-001	Understand the scope and importance of rheumatology.	Rheumatology	Introduction to Rheumatology
	Recognize common musculoskeletal disorders managed in rheumatology.		
MS2-Rh-002	Describe the pathophysiology of Rheumatoid Arthritis (RA).	Rheumatology, Medicine	Rheumatoid Arthritis (RA)
	Identify clinical features of Rheumatoid Arthritis (RA).		
	Explain diagnostic criteria for Rheumatoid Arthritis (RA).		
	Differentiate Rheumatoid Arthritis (RA) from other inflammatory joint diseases.		
MS2-Rh-003	Explain the pathogenesis of Osteoarthritis (OA).	Rheumatology, Medicine	Osteoarthritis (OA)
	Identify clinical manifestations of Osteoarthritis (OA).		
	Discuss diagnostic methods for Osteoarthritis (OA).		
	Explain the community burden of Osteoarthritis (OA).	Rheumatology, Community Med	
	Identify risk factors for Osteoarthritis (OA).		
MS2-Rh-004	Define Crystal Arthritis, including Gout and Pseudogout.	Rheumatology, Medicine	Crystal Arthritis (Gout/Pseudo gout)
	Describe the pathophysiology of Gout.		
	Describe the pathophysiology of Pseudogout.		
	Identify clinical features of Gout.		

	Identify clinical features of Pseudogout.	Rheumatology, Community Med	
	Discuss diagnostic tests for Crystal Arthritis.	Rheumatology, Medicine	
	Differentiate between Gout and Pseudogout based on clinical and diagnostic findings.		
	Outline management strategies for Gout.		
	Outline management strategies for Pseudogout.		
MS2-Rh-005	Define Systemic Inflammatory Vasculitis.	Pathology	Systemic Inflammatory Vasculitis
	Describe the pathophysiology of Systemic Inflammatory Vasculitis.		
	Identify types of Systemic Inflammatory Vasculitis.		
	Discuss the community burden of Systemic Inflammatory Vasculitis.	Rheumatology, Medicine	
	Explain risk factors for Systemic Inflammatory Vasculitis.	Pathology	
	Describe clinical features of Systemic Inflammatory Vasculitis.		
	Identify diagnostic tests for Systemic Inflammatory Vasculitis.		
	Justify the use of diagnostic investigations in Systemic Inflammatory Vasculitis.	Rheumatology, Medicine	
	Discuss management strategies for Systemic Inflammatory Vasculitis.	Medicine	
MS2-Rh-006	Define Autoimmune Rheumatic Diseases (e.g., SLE, Sjogren's, Systemic Sclerosis).	Pathology	Autoimmune Rheumatic Diseases
	Describe the pathophysiology of Systemic Lupus Erythematosus (SLE).		
	Identify clinical manifestations of Sjogren's Syndrome.	Pathology	
	Explain the pathophysiology of Systemic Sclerosis.		

	Discuss treatment options for Polymyositis and Dermatomyositis.	Rheumatology, Medicine	
	Define Spondylarthritis and its clinical features.		
	Describe clinical features of Spondylarthritis.		
	Explain diagnostic criteria for Autoimmune Rheumatic Diseases.	Pathology	
	Differentiate Autoimmune Rheumatic Diseases from each other.		
MS2-Rh-007	Understand the role of evidence-based medicine in rheumatology management.	Rheumatology, Evidence-Based Medicine	Integrated EBM
	Apply evidence-based guidelines to rheumatology case studies.		
	Critically evaluate current research in rheumatology.		
	Integrate evidence-based practices into rheumatology treatment plans.		
	Demonstrate the ability to appraise rheumatology research studies.		
	Apply evidence-based findings to clinical decision-making in rheumatology.		
	Summarize key research advancements in rheumatology.		
	Implement evidence-based guidelines in rheumatology practice.		

ORTHOPEDICS			
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOTAL HOURS = 14**	
		INTEGRATING DISCIPLINE	**TOPIC**
MS2-Orth-001	Define the field of orthopedics and its significance.	Orthopedics	Introduction to Orthopedics
	Identify common orthopedic conditions and their impact.	Community Medicine	

MS2-Orth-002	Explain the classification of fractures using the AO system.	Orthopedics, Radiology	Fracture Classification and Healing
	Describe principles of fracture healing.		
	Differentiate between complete and incomplete fractures.		
MS2-Orth-003	Discuss pediatric fractures and their management.	Orthopedics, Pediatrics, Rehabilitation	Pediatric Fractures
	Explain Salter-Harris classification for growth plate injuries.		
MS2-Orth-004	Define osteoporotic fractures and their clinical features.	Orthopedics, Geriatrics, Endocrinology	Osteoporotic Fractures
	Identify common sites of osteoporotic fractures.		
	Discuss risk factors for osteoporosis.		
MS2-Orth-005	Define pathological fractures and differentiate from traumatic.	Orthopedics, Oncology, Radiology	Pathological Fractures
	Identify causes of pathological fractures.		
	Describe diagnostic approaches for pathological fractures.		
	Explain management options for pathological fractures.		
MS2-Orth-006	Classify sports injuries and their management.	Orthopedics, Sports Medicine, Physical Therapy	Sports Injuries
	Describe common sports injuries in upper and lower limbs.		
	Discuss pathophysiology of muscle strains and ligament sprains.	Pathology, Sports Medicine	
	Explain biomechanics of gait and malalignment injuries.	Biomechanics, Orthopedics, Sports Medicine	
	Outline injury prevention strategies in sports.	Physiology, Sports Medicine	
	Analyze rehabilitation processes for sports injuries.		

	Discuss use of assistive devices in rehabilitation.	Orthopedics, Physical Therapy	
	Explain psychological impact of sports injuries.	Psychology, Sports Medicine	
	Describe nutritional roles in recovery from sports injuries.	Nutrition, Sports Medicine	
	Understand surgical intervention in severe sports injuries.	Surgery, Orthopedics, Physical Therapy	
	Promote multidisciplinary approach in managing sports injuries.	Sports Medicine, Team Management	
MS2-Orth-007	Define genetic conditions: Achondroplasia and Marfan's Syndrome.	Orthopedics, Genetics, Surgery	Genetic Conditions in Orthopedics
	Describe clinical features of Achondroplasia.		
	Explain management of Marfan's Syndrome.		
MS2-Orth-008	Define scoliosis and its types.	Orthopedics, Rehabilitation	Bone and Joint Disorders
	Identify clinical features and screening methods for scoliosis.	Orthopedics, Pediatrics	
	Discuss treatment options for scoliosis.	Orthopedics, Rehabilitation	
	Recognize multidisciplinary approach in managing scoliosis.		
	Define Osteogenesis Imperfecta and its genetic basis.	Orthopedics, Genetics, Rehabilitation	
	Identify clinical features and types of Osteogeneses Imperfecta.	Orthopedics, Pediatrics	
	Discuss management strategies for Osteogenesis Imperfecta.	Orthopedics, Rehabilitation	
	Educate patients on Osteogenesis Imperfecta.	Orthopedics, Rehabilitation	

	Define Marfan's Syndrome and its genetic basis.	Orthopedics, Genetics, Surgery	
	Identify clinical manifestations of Marfan's Syndrome.	Orthopedics, Cardiology	
	Discuss management strategies for Marfan's Syndrome.	Orthopedics, Surgery	
	Promote patient education and support for Marfan's Syndrome.	Orthopedics, Rehabilitation	
SURGICAL TRAUMATOLOGY			
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOTAL HOURS = 12**	
		INTEGRATING DISCIPLINE	**TOPIC**
MS2-Orth-009	Define ATLS and describe its relevance in trauma management.	Trauma Surgery, Surgery, Orthopedics	Introduction to Surgical Traumatology
MS2-Orth-010	Explain principles of trauma management and primary survey.	Trauma Surgery, Emergency Medicine	Introduction to Trauma Management & ATLS
	Describe types of injuries managed in traumatology.	General Surgery	
	Discuss multidisciplinary approach in trauma care.	Trauma Surgery, Surgery, Orthopedics	
	Identify key specialties in managing traumatic injuries.	Trauma Surgery, Surgery, Orthopedics	
MS2-Orth-011	Understand ATLS guidelines in primary survey (ABCDE).	Emergency Medicine, Trauma Surgery	Primary Survey and ATLS
	Recognize common causes of severe trauma.	Emergency Medicine, Trauma Surgery	
	Apply ATLS principles in conducting primary survey.	Emergency Medicine,	

		Trauma Surgery	
	Identify indications for rapid imaging in trauma assessment.	Radiology, Emergency Medicine	
MS2-Orth-012	Describe shock recognition and resuscitation measures.	Trauma Surgery, Critical Care	Shock Recognition and Management
MS2-Orth-013	Define Traumatic Brain Injury (TBI) and classify its severity.	Neurology, Neurosurgery	Traumatic Brain Injury (TBI)
	Describe pathophysiology of primary and secondary brain injury.	Neurosurgery, Pathology	
	Identify common causes of TBI.	Epidemiology, Emergency Medicine	
	Describe clinical features of TBI.	Neurology, Emergency Medicine	
	Explain importance of early imaging for TBI diagnosis.	Radiology, Neurology	
	Discuss ATLS role in TBI management.	Emergency Medicine, Trauma Surgery	
	Outline complications of TBI.	Neurology, Neurosurgery, Critical Care	
MS2-Orth-014	Define Neck and Spine Trauma and classify it.	Orthopedics, Neurosurgery, Trauma Surgery	Neck and Spine Trauma
	Recognize mechanisms of neck and spine trauma.	Epidemiology, Emergency Medicine	
	Describe anatomy of spine and spinal cord in trauma context.	Anatomy, Orthopedics, Neurosurgery	
	Identify clinical features of neck and spine trauma.	Neurology, Emergency Medicine, Neurosurgery	

	Understand importance of immobilization in spinal trauma.	Emergency Medicine, Orthopedics	
	Discuss role of imaging in spinal trauma diagnosis.	Radiology, Orthopedics, Neurosurgery	
	Recognize role of ATLS in spinal trauma management.	Emergency Medicine, Trauma Surgery	
	Outline complications of spine trauma.	Critical Care, Neurology, Rehabilitation	
MS2-Orth-015	Define Maxillofacial Trauma and its classification.	Oral & Maxillofacial Surgery, Plastic Surgery	Maxillofacial Trauma
	Identify causes of Maxillofacial Trauma.	Epidemiology, Emergency Medicine	
	Explain anatomy relevant to Maxillofacial Trauma.	Plastic Surgery, ENT	
	Recognize clinical features of facial trauma.	Surgery, Maxillofacial Surgery, ENT	
	Identify importance of airway management in facial trauma.	Emergency Medicine	
	Describe radiological investigations for facial fractures.	Radiology, Oral & Maxillofacial Surgery	
	Discuss complications of maxillofacial trauma.	Emergency Medicine, Plastic Surgery, ENT	
	Outline ATLS principles in maxillofacial trauma management.	Emergency Medicine, Trauma Surgery	
	Discuss surgical interventions for maxillofacial trauma.	Oral & Maxillofacial Surgery, Plastic Surgery	

MS2-Orth-016	Define Extremity Trauma and its types.	Orthopedics, Emergency Medicine	Extremity Trauma
	Explain mechanisms of extremity trauma.	Epidemiology, Trauma Surgery	
	Recognize clinical signs of extremity injuries.	Orthopedics, Emergency Medicine	
	Identify life-threatening complications of extremity trauma.	Orthopedics, Emergency Medicine	
	Understand role of imaging in extremity trauma diagnosis.	Radiology, Orthopedics	
	Describe principles of ATLS in extremity trauma management.	Emergency Medicine	
	Discuss management techniques for extremity trauma.	Orthopedics, Physical Therapy	
	Explain indications for surgical intervention in extremity trauma.	Orthopedics, Trauma Surgery	

PATHOLOGY, PHARMACOLOGY, COMMUNITY MEDICINE and BEHAVIORAL SCIENCES & EBM			
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOTAL HOURS = 20**	
		INTEGRATING DISCIPLINE	**TOPIC**
MS2-Pa-001	Discuss the etiology, pathophysiology, morphology, clinical manifestations and diagnostic criteria of Rheumatoid Arthritis (RA)	Pathology	MSK Diseases & Tumors
	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-Ph-001	Describe pharmacologic interventions for MSK disorders.	Pharmacology	MSK Drugs & Interventions
	Explain mechanisms of NSAIDs in MSK disorders.		
	Describe DMARDs and their use in MSK disorders.		
	Discuss corticosteroids in MSK management.		
	Explain bisphosphonates and opioids in MSK disorders.		
MS2-CM-001	Understand epidemiology of MSK diseases.	Community Medicine	Epidemiology & Prevention
	Discuss public health burden of MSK diseases.		
	Explain preventive measures for MSK diseases.		
	Discuss pharmacologic management in rheumatology.	Pharmacology, Rheumatology	Pharmacologic Management in Rheumatology
	Understand the use of NSAIDs in rheumatic diseases.		
	Describe DMARDs and their role in managing RA.		
	Explain corticosteroids in rheumatic disease management.		
	Discuss biologics in rheumatology management.		
	Describe opioids for pain management in rheumatology.		
	Understand the epidemiology of rheumatic diseases.	Community Medicine	Epidemiology & Prevention
	Discuss the public health burden of rheumatic diseases.		

	Explain preventive measures for rheumatic diseases.		
MS2-BhS-001	Analyze psychosocial impact of chronic MSK conditions.	Behavioral Sciences	Psychosocial Impact & Patient Counseling
	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.		
MS2-Orth-017	Understand role of evidence-based medicine in MSK management.	Rheumatology, Pharmacology	Integrated EBM
	Apply evidence-based guidelines to rheumatology case studies.	Rheumatology, Evidence-Based Medicine	
	Critically evaluate current research in rheumatology.	Rheumatology, Evidence-Based Medicine	
	Integrate evidence-based practices into rheumatology treatment plans.	Rheumatology, Evidence-Based Medicine	
	Demonstrate the ability to appraise rheumatology research studies.		
	Apply evidence-based findings to clinical decision-making in rheumatology.		
	Summarize key research advancements in rheumatology.		
	Implement evidence-based guidelines in rheumatology practice.		

PRACTICAL / LAB WORK			
CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 09	
		INTEGRATING DISCIPLINE	TOPIC
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	Pathology	Test Interpretation
MS2-Pa-003	Interpret related cultures for diagnosis for infections	Microbiology, Pathology	
MS2-Ra-001	Interpret imaging tests to evaluate various musculoskeletal disorders including: i. X-rays ii. Computed tomography (CT) Scans iii. Ultrasound Scans iv. Bone Scans	Radiology Rheumatology Orthopedics Surgical Traumatology	
MS2-Ph-002	Analysis and interpretation of Drugs (atracurium or skeletal muscle relaxant) on animal through online videos / simulations / graphs / practical performance.	Pharmacology	MSK & locomotion
	Analysis and interpretation of different Concentrations of Drugs (atracurium or skeletal muscle relaxant) on Frog's rectus muscle through online videos / simulations / graphs / practical performance.		

CLINICAL ROTATIONS / COMMUNITY HEALTHCARE			
GENERAL MEDICINE/GENERAL SURGERY			
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOTAL HOURS = 12**	
		INTEGRATING DISCIPLINE	**TOPIC**
MS2-M-001	Elicit symptom of "pain" in history in terms of location, intensity, duration, character, aggravating and relieving factors.	General Medicine	History taking in pain
MS2-S-001	Elicit symptom of "swelling" in history in terms of location, intensity, duration, character, aggravating and relieving factors.	General Surgery	History taking in swelling
MS2-M-002	Elicit symptom of "swelling" in history in terms of location, duration, pattern and any family or drug history.	General Medicine	History taking in swelling in drug history
MS2-Rh-011	Elicit symptom of 'joint mobility" in history in terms of location, intensity, duration, character, aggravating and relieving factors.	Rheumatology	History taking in joint mobility
MS2-Orth-017	Elicit symptom of "joint mobility" in history in terms of its location, duration, pattern, mechanism of injury with associated symptoms.	Orthopedics	History taking in joint mobility
	Elicit the signs and symptoms of patient with joint dislocation in history		
	Elicit signs and symptoms of patient with fracture in history		
MS2-Rh-012	Elicit the signs and symptoms of patient with osteoporosis	Rheumatology	History taking in osteoporosis
	Elicit a patient history to make a provisional diagnosis		

RHEUMATOLOGY			
CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 24	
		INTEGRATING DISCIPLINE	TOPIC
MS2-Rh-013	Palpate joints or areas for tenderness, warmth, swelling, and other inflammatory markers (e.g., effusion).	Rheumatology, Medicine	Physical Examination
	Assess range of motion (ROM) in joints, both actively (patient's effort) and passively (examiner's effort).	Rheumatology, Orthopedics	
	Test for specific joint tenderness and swelling in conditions like gout, rheumatoid arthritis, and osteoarthritis.	Rheumatology, Medicine	
	Assess for joint deformities (e.g., rheumatoid nodules, Heberden's nodes).	Rheumatology, Orthopedics	
	Perform a thorough hand and wrist examination for signs of arthritis (e.g., Boutonnière deformity, swan neck deformity).	Rheumatology, Orthopedics	
	Examine for abnormal postural patterns such as scoliosis, kyphosis, or lordosis.	Rheumatology, Orthopedics	
	Perform a spine examination, assessing for alignment, tenderness, and range of motion.	Rheumatology, Orthopedics	
	Perform pulse examination in Systemic Inflammatory Vasculitis.	Rheumatology	
AFFECTIVE DOMAIN			
MS2-PS-001	Show empathy toward patients with chronic pain.	Patient Communication, Ethics	Affective Domain
	Communicate the importance of early intervention.		
	Encourage adherence to long-term treatment plans.	Patient Education, Chronic Care	
	Promote timely referrals to specialists when necessary.	Patient Education, Chronic Care	

	Promote dietary interventions to improve overall health.	Nutrition, Patient Education	
	Discuss the prognosis of diseases based on findings and individual circumstances.	Clinical Decision Making, Pediatrics	
ORTHOPEDICS			
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOTAL HOURS = 22**	
		INTEGRATING DISCIPLINE	**TOPIC**
MS2-Orth-018	Inspect normal gait and assess deviations such as limping, stiffness, or imbalance.	Orthopedics, Medicine	Physical Examination
	Assess muscle strength surrounding normally functioning limbs using standard grading techniques (e.g., Oxford scale).	Orthopedics, Physical Therapy	
	Assess joint stability through special tests (e.g., Lachman test for ACL integrity, McMurray test for meniscus tears).		
	Perform a compartment syndrome assessment (checking for swelling, pain, and vascular compromise).	Orthopedics, Traumatology	
	Assess vascular status (pulses, capillary refill) in cases of trauma or orthopedic injury.		
	Conduct a neurological examination of the upper and lower limbs to assess motor and sensory function.	Orthopedics, Neurology	
MS2-Orth-019	Demonstrate skills in performing a thorough assessment of extremity injuries, including physical examination techniques.	Clinical Skills, Orthopedics	Soft Tissue, Neurological, and Bony Extremity Injuries
	Provide first aid to a person with bone injury like common sprains, fractures and dislocations (immobilization of body part) resuscitation of injured patient.	Orthopedics, Emergency Medicine	

MS2-Orth-020	Demonstrate skills in assessing fractures through physical examination and appropriate imaging modalities, including X-rays and CT scans.	Clinical Skills, Radiology	Fractures
	Perform a fracture assessment and evaluate signs of potential fractures or dislocations (e.g., deformity, abnormal movement).	Orthopedics, Traumatology	
	Demonstrate skills in developing individualized treatment plans based on fracture type, patient factors, and healing principles.	Orthopedics, Patient Care	
	Demonstrate clinical skills in assessing and managing fractures in various locations, including the use of appropriate imaging studies.	Orthopedics, Radiology	
	Observe application of dressings, splints, plasters and other immobilization techniques in fracture patients in emergency	Orthopedics, Radiology	
	Observation of fracture reduction and fixation	Orthopedics, Radiology	
	Observation of internal and exrernal fixation	Orthopedics, Radiology	
MS2-Orth-021	Assess and prioritize patients based on the severity of injuries.	Orthopedics, Emergency Medicine	Principles of Triage Surgery and Damage Control
	Implement damage control surgery techniques for orthopedic trauma.	Orthopedics, Trauma Surgery	
	Identify candidates for damage control surgery.		
	Stabilize fractures and manage soft tissue injuries in a timely manner.		
	Minimize the risk of complications and improve patient outcomes through damage control strategies.		
AFFECTIVE DOMAIN			
MS2-Orth-022	Recognize the indications for surgical intervention in the management of fractures, including fixation techniques and considerations for rehabilitation.	Orthopedics, Rehabilitation	Fractures

MS2-Orth-023	Educate patients on the principles of fracture healing and the importance of adherence to treatment protocols for optimal recovery.	Orthopedics, Patient Education	Fracture Healing and Principles of Treatment
MS2-Orth-024	Educate patients on the importance of follow-up and rehabilitation based on fracture location to optimize healing and functional recovery.	Orthopedics, Patient Education	Treatment by fracture location and region
	Collaborate with multidisciplinary teams to address unique challenges presented by fractures in specific regions (e.g., elderly patients with hip fractures).	Orthopedics, Geriatrics, Rehabilitation	
MS2-Orth-025	Coordinate with other specialties for comprehensive trauma care.	Orthopedics, Emergency Medicine, Anesthesiology	Principles of Triage Surgery and Damage Control
	Educate patients and families about the triage process and damage control strategies.	Orthopedics, Rehabilitation	

SURGICAL TRAUMATOLOGY

General Principles of ATLS – ABCDE

CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 12	
		INTEGRATING DISCIPLINE	TOPIC
MS2-S-001	Assess airway patency and clear airway obstructions. Apply cervical spine immobilization if necessary.	Surgery, Anesthesiology	General Principles of ATLS - ABCDE
	Inspect for chest movement, auscultate breath sounds, palpate for deformities.	Surgery	
	Assess pulse, control external bleeding, and assess perfusion. Initiate shock management if required.	Surgery, Cardiology	
	Assess level of consciousness using the Glasgow Coma Scale (GCS) and check pupil reaction.	Surgery, Neurology	
	Expose the patient to assess for hidden injuries and prevent hypothermia.	Surgery, Emergency Medicine	
	Conduct secondary survey - a head-to-toe examination, including history and detailed physical exam.	Surgery, Emergency Medicine	

SPECIAL EXAMINATIONS ACCORDING TO TYPE OF TRAUMA			
MS2-M-001	Use the Glasgow Coma Scale to assess consciousness in patients with head injuries.	Neurology	Traumatic Brain Injury (TBI)
MS2-Orth-026	Assess for tenderness and deformity along the cervical spine in trauma patients.	Orthopedics	Neck and Spine Trauma
MS2-M-002	Identify abnormal breath sounds during auscultation to detect potential injuries.	Pulmonology	Thoracic Trauma
MS2-S-002	Perform abdominal palpation to identify tenderness or rigidity indicating injury.	Surgery	Abdominal Trauma
MS2-S-003	Recognize signs of facial fractures or deformities during the examination.	Surgery	Maxillofacial Trauma
MS2-S-004	Conduct a quick neurovascular examination of the limbs to evaluate pulse and sensation.	Orthopedics	Extremity Trauma
MS2-S-005	Conduct a triage to prioritize patients in mass casualty situations.	General Surgery	Disaster Surgery
AFFECTIVE			
MS2-S-009	Recognize when to initiate life-saving interventions such as airway management, chest decompression, and external hemorrhage control.	Trauma Surgery, Emergency Medicine	Early Assessment and Management of Severe Traum
	Initiate consultation/ referral to a trauma center for further management, ensuring early communication with the trauma team.	Emergency Medicine, Trauma Surgery	
	Recognize when to initiate life-saving interventions such as airway management, chest decompression, and external hemorrhage control.	Trauma Surgery, Emergency Medicine	

Forensic Medicine & Toxicology

THEORY			
TRAUMATOLOGY			
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOTAL HOURS = 03**	
		INTEGRATING DISCIPLINE	**TOPIC**
For2-Tr-001	Define injury, wound and hurt. Classify injuries on the basis of causative weapons Classify injuries as per Qisas and Diyyat Act.	Forensic Medicine	General concept
For2-Tr-002	Explain mechanism of wound production with reference to subject, object and contact.		Wound production
For2-Tr-003	Define abrasions. Classify abrasion. Describe mechanism of production of abrasions. Differentiate between different types of abrasions. Explain medicolegal importance of abrasions.		Abrasion
For2-Tr-004	Define bruises. Describe mechanism of production of bruises. Classify bruises. Explain pathophysiology of color changes in the bruise Assess the age of wound from color changes of wound. Distinguish between bruise, artificial bruise and hypostasis. Explain medico legal importance of bruises.		Bruise
For2-Tr-005	Define lacerated wound. Outline mechanism of production of a lacerated wound. Classify lacerated wounds. Differentiate between a lacerated wound and incised wound on gross examination. Explain medico legal importance.		Laceration
For2-Tr-006	Explain mechanism of fracture of bones/tooth. Discuss the mechanism of fractures/tooth. Describe different types of fractures of bones.	Surgery/Orthopedics	Fractures

	Interpret the age of fractures from radiological findings. Illustrate stages of healing of fractures of bones/teeth. Apply the nature of the fracture in the injury certificate as per Qisas and Diyat act. Explain medico-legal importance of fracture of bone/tooth.		
For2-Tr-007	Define incised/stab wounds. Discuss mechanism of production of an incised wound. Explain medico-legal significance of incised/stab wounds		Incised/stab wounds
SPECIAL TRAUMATOLOGY			
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOTAL HOURS = 12.5**	
		INTEGRATING DISCIPLINE	**TOPIC**
For2-Tr-008	Describe the pathophysiology of injuries. Explain effects of injuries on the body.	Pathology	Pathophysiology of injuries
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.	Pathology, surgery, medicine & Forensic medicine	Timing of injury / ante mortem, post mortem nature of wound
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
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
For2-Tr-012	Define torture. Explain reasons, types and complications of torture. Describe medicolegal aspects of torture.		Torture

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
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
For2-Tr-015	To explain the factors affecting the trajectory of bullet after its exit from the muzzle end.	External Ballistics
For2-Tr-016	Interpret wound complex produced by a rifled and non-rifled 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
For2-Tr-017	Identify gun powders and ammunition used through different methods.	Gun powders
For2-Tr-018	Describe mechanics of blast injuries. Explain effects of blast injuries on human body. Describe medicolegal aspects of blast injuries	Blast injuries
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
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 Explain medicolegal significance and prevention of RTA.	Transportation Injuries

For2-Tr-021	Define thermal injuries. Classify thermal injuries-flame burns and scalds. Describe degree of burns according to different classifications. Calculate percentage of burnt surface area and their effects on the body. Describe management of the burnt patient clinically. Appraise causes of death due to burn. Determine age of burn and ante-mortem/post mortem nature of burn. Describe autopsy findings and medico legal importance of burns.	Surgery	Thermal Injuries / Burn
For2-Tr-022	Classify electrical injuries injuries-low voltage and high voltage Explain factors affecting electrocution. Describe mechanism and causes of death in electrocution. Interpret different patterns of electrical injuries due to low and high voltage current and lightening Describe autopsy findings and medico legal importance of electrocution		Electrocution Lightening
For2-Tr-023	Explain deaths from exposure to high environmental temperature like heat stroke, heat cramps and heat exhaustion. Explain deaths from exposure to low environmental temperature like Frost bite, Trench foot, Immersion foot. Describe their mechanism of development, autopsy findings and medicolegal importance. Interpret Starvation, causes, clinical findings, autopsy findings and medicolegal importance		Hyper / Hypothermia/ Starvation
For2-Tr-024	Describe chemical burns Explain mechanism of development of chemical burns Describe autopsy findings		Chemical Burns

	Summarize the chemical buns as per qisas and diyat act. Describe medicolegal importance of chemical burns.		
For2-Tr-025	Define and classify drowning. Explain mechanism of death in wet and dry drowning. Describe external and internal autopsy findings in wet and dry drowning. Interpret biochemical and diatom tests. Emphasize medicolegal importance of drowning		Drowning
MEDICOLEGAL ASPECTS OF SEXUAL OFFENCES			
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOTAL HOURS = 4.5**	
		INTEGRATING DISCIPLINE	**TOPIC**
For2-Se-001	Comprehend the terms-impotency, frigidity in females and sterility Explain their causes. Narrate their medico legal importance	Forensic Medicine & Gyne/obs	Impotency frigidity and sterility
For2-Se-002	Explain signs of virginity and defloration. Interpret medico legal importance		Virginity and defloration
For2-Se-003	Describe presumptive, probable and sure signs of pregnancy in living and dead.		Pregnancy
For2-Se-004	Explain recent and old signs of delivery in living and dead.		Delivery
For2-Se-005	Define and classify abortions Explain motives for criminal abortions Reproduce different methods of inducing criminal abortion Outline complications and causes of death due to abortion. Describe findings in living and dead after abortion. Examine the aborted material to assess the age and viability Apply sections of Qisas and Diyat act relevant to abortion.		Abortion/Miscarriage

For2-Se-006	Classify sexual offenses (natural, un-natural and perversions) and explain their medico legal importance. Describe sexual perversions and identify the traits. Reproduce different sections of law relevant to sexual offenses. Explain Medico-legal examination of a victim of sexual assault and issue report. Describe Medico-legal examination of the alleged accused of rape and issue report Know the Medico-legal examination in unnatural sexual offence. Outline collection, preservation and dispatch of specimens in cases of sexual assaults to chemical examiner. Interpret Psycho-pathology of assailant Interpret Psycho-pathology of victim Undertake initial management & referral of victim.		Sexual Offences
For2-Se-007	Define infanticide. State status of infants-still born/dead born/live born. Describe autopsy findings to determine whether live born or not, cause of death, age of new born and others	Forensic Medicine	Infanticide

PRACTICAL / LAB WORK

TRAUMATOLOGY

CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 09	
		INTEGRATING DISCIPLINE	TOPIC
For2-Tr-026	Recognize and identify common conventional blunt objects, sharp objects, firearms, electrical instruments and chemicals and their medico-legal aspects. (lathi, knife, axe, gandasa, sickle, dagger, razor	Forensic medicine	Mechanical injuries

	& stick, fire arms		
For2-Tr-027	Differentiate between different types of abrasions		Abrasion
For2-Tr-028	Assess the age of a bruise on the basis of color changes. Differentiate between a bruise and post mortem staining		Bruise
For2-Tr-029	Differentiate between a lacerated and incised wound on naked eye examination		wound
For2-Tr-030	Assess the age of fracture by recognition of healing stages on x rays Apply different sections of Qisas and Diyat Act from examination of fractures on x rays		Age of fracture
For2-Tr-031	Identify hurt and apply relevant section of Qisas and Diyat Act for: i. Itlaf-udw ii. Itlaf -slahiat-udw iii. Shajja iv. Jurh		Hurt / Qisas N Diyat Act
For2-Tr-032	Demonstrate appropriate examination of an injured person and issue the report in a simulated/supervised environment correctly		Certification of injury
For2-Tr-033	Identify different types of fire arm weapons Identify different parts of fire arm weapons Identify different parts of ammunition.		Firearm
	Determine the type of fire arm weapon from the examination of fire arm wound complex. Calculate the firing range of the weapon from appearance of wound. Identify characteristics of entry and exit fire arm wounds.		
For2-Tr-034	Differentiate between dry burn and wet burn. Calculate burnt surface area Determine age and nature of burn on naked eye examination		Burn

	Recognize autopsy findings.	
For2-Tr-035	Recognize between entry and exit wounds of electric currents on body. Describe different pathways of electric currents through human body. Recognize different patterns of electrical injuries.	Electrocuted injury
For2-Tr-036	Recognize different patterns of effects of high/low environmental temperature on the body. Appreciate clinical and autopsy findings of death due to starvation	Hypo / Hypothermia / starvation
For2-Tr-037	Recognize different patterns of Chemical burns over body. Apply relevant sections of Qisas And Diyat Act.	Chemical Burns
For2-Tr-038	Identify different kinds of ligature materials used for hanging Recognize different types of hanging Appreciate nonspecific and specific autopsy findings of hanging. Know how to remove and preserve the ligature material used.	Hanging
For2-Tr-039	Differentiate between ligature marks due to hanging and strangulation. Appreciate nonspecific and specific autopsy findings of hanging. Know how to remove and preserve the ligature material used.	Strangulation / Hanging
For2-Tr-040	Appreciate external and internal autopsy findings of death due to throttling. Determine the position of assailant and victim from external marks on neck	Throttling
For2-Tr-041	Appreciate external and internal autopsy findings of death due to smothering, choking, gagging and traumatic asphyxia	Smothering / Gagging
For2-Tr-042	Appreciate external and internal autopsy findings of death due to drowning.	Drowning

SEXOLOGY			
CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 06	
		INTEGRATING DISCIPLINE	TOPIC
For2-Se-008	Replicate Medico-legal examination of a victim of sexual assault and issue report. Demonstrate Medico-legal examination of the alleged accused of rape and issue report. Copy the Medico-legal examination in unnatural sexual offence. Perform collection, preservation and dispatch of specimens in cases of sexual assaults to chemical examiner.	Forensic medicine	Sexual assault

WEEKLY TIMETABLES

Will be posted after meeting

ASSESSMENT TOOLS

Students will be assessed by the following methods

1. Fortnightly Assessments

Assessments will be conducted every Monday.

2. Assignments/PBLs:

Assignments/PBLs will be given monthly.

3. Block Exam:

At the end of block an exam will be conducted comprising of theory (MCQs & SEQs) and practical/OSPE content.

4. Departmental quizzes, presentations & group projects:

Above mentioned can be the assessment tools for different departments on their will.

YEAR-3						
Subject	**Theory**		**Practical**			**Total**
BLOCK 7 **Modules** (Foundation-II + Hematopoietic, Immunity & Implant + General & Clinical Pharmacology + Forensic Medicine & Toxicology-I)	Part I MCQs (90)	90 Marks	Practical /Clinical Examination	11 OSPE 01 OSCE 03 OSVE	Marks 88 10 42	**350**
	Part II SEQS (10)	50 Marks				
	Internal Assessment 10%	35 Marks	Internal Assessment 10%	35 Marks		
	Total	**175**	Total	**175**		
BLOCK 8 **Modules** (Neoplasia + Infectious Diseases + Musculoskeletal & Locomotion-II + Forensic Medicine & Toxicology- II)	Part I MCQs (90)	90 Marks	Practical /Clinical Examination	11 OSPE 01 OSCE 03 OSVE	Marks 88 10 42	**350**
	Part II SEQS (10)	50 Marks				
	Internal Assessment 10%	35 Marks	Internal Assessment 10%	35 Marks		
	Total	**175**	Total	**175**		
BLOCK 9 **Modules** (Cardiovascular -II + Respiratory II + Community Medicine & Public Health + Family Medicine I + Forensic Medicine & Toxicology- III)	Part I MCQs (90)	90 Marks	Practical /Clinical Examination	11 OSPE 01 OSCE 03 OSVE	Marks 88 10 42	**350**
	Part II SEQS (10)	50 Marks				
	Internal Assessment 10%	35 Marks	Internal Assessment 10%	35 Marks		
	Total	**175**	Total	**175**		
				Total Marks:		**1050**

MBBS 3rd Professional							
Block-8							
Subject	**Written Exam**			**Oral/Practical/Clinical Exam**			
	MCQ (1 mark)	**SEQ (5 mark each)**	**Marks**	**OSPE /OSCE (8 marks each observed)**	**OSCE (10 marks each observed)**	**OSVE (14 marks each observed)**	**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 stations x 10 = 10**	**03 stations x 14=42**	**140**

Internal Assessment (Theory)			
Sr #	**Scoring Parameter**	**Marks out of 20%**	**Marks distribution**
1	Attendance in Lectures	85-90%=1%, > 90%=2% Remedial classes – re-sit examination allowed only after case endorsed and submitted by the college **Principal** and approval given by the **Competent Authority**. However, no marks given Remedial classes – re-sit exam allowed only in genuine cases after approval from **Competent Authority**. However, no marks given	85-90%= **01** mark > 90%=**02** marks
2	Block Examination	15%	**27**
3	Continuous Internal Assessment/Class Quiz/Class participation/ Professional Behaviour/ Ethical practices/ Leadership traits/ Module Exam Discipline/Punctuality	3%	**06**

Internal Assessment (Practical & Behavioral)			
Sr #	**Scoring Parameter**	**Marks out of 20%**	**Marks distribution**
1	Attendance in Practicals & Rotations	85-90%=1%, > 90%=2% Remedial classes – re-sit examination allowed only after case endorsed and submitted by the college **Principal** and approval given by the **Competent Authority**. However, no marks given Remedial classes – re-sit exam allowed only in genuine cases after approval from **Competent Authority**. However, no marks given	85-90%= **01** mark > 90%=**02** marks
2	Block Examination (OSPE/OSCE/OSVE)	13%	**23**
3	CFRC Log Book / PERLs Portfolio	02%	**06**
4	Ward / Clinical / Bedside assessment based on the clinical rotation / DOPS	02%	**04**

List of Resources

Anatomy

- Snell's Clinical Anatomy 10th ed.
- Langman's Medical Embryology 12th ed
- Medical Histology by Laiq Hussain Siddiqui 8th edition.
- General Anatomy by Laiq Hussain Siddiqui 6th edition.

Biochemistry

- Harpers illustrated Biochemistry (latest edition). Rodwell.V.W MCGrawHill publishers.
- Lippincott illustrated Review (latest edition). Kluwer.W.
- Essentials of Medical Biochemistry vol 1&2 by Mushtaq Ahmed.

Pathology

- Vinary Kumar, Abul K. Abbas and Nelson Fausto Robbins and Cotran, Pathologic basis of disease. WB Saunders.
- Robbins and Cotran Pathological Basis of Disease. Kumar, V., Abbas, A. and Aster, J. Latest Edition
- 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.
- Robbins & Kumar, Medical Microbiology and Immunology Levinson.

General Medicine

- Principles and Practice of Medicine by Davidson (latest edition)
- Clinical Medicine by Parveen J Kumar & Michaell Clark
- Oxford Handbook of Medicine
- Macleod's Clinical Examination book
- Medicine and Toxicology by C.K. Parikh
- Hutchison's Clinical Methods by Michael Swash. 21st edition

Pharmacology And Therapeutics

- Katzung and Trevor's Pharmacology: Examination and Board Review- 15th Edition
- Basic and Clinical Pharmacology by Bertram G Katzung (case scenarios only) - 16th Edition-
- Current Medical Diagnosis and Treatment- reference book –Edition-2024
- Basic and Clinical Pharmacology by Bertram G Katzung (case scenarios only) - 15th Edition
- Basic and Clinical Pharmacology by Katzung, McGraw-Hill. 16th Edition.

- Pharmacology by Champe and Harvey, Lippincott Williams & Wilkins 8th Edition.
- Katzung Basic and Clinical pharmacology, Lippincot Illustated reviews.
- Clinical Pathology Interpretations by A. H. Nagi

Behavioural Sciences

- Handbook of Behavioural Sciences by Prof. Mowadat H.Rana, 3rd Edition
- Medical and Psychosocial aspects of chronic illness and disability 6th edition by Donna R.Falvo and Beverely E.Holland,
- Integrating behavioral sciences in healthcare, Asma Humayun,2003, 1st edition

Community medicine

- Parks Textbook of Preventive and Social Medicine. K. Park
- Public Health and Community Medicine by Ilyas Ansari
- MSDS manual of Government of Punjab
- Text book of Community Medicine by Park J E. Latest Edition

Surgery

- Bailey & Love's Short Practice of Surgery (latest edition)
- Browse's Introduction to the Symptoms & Signs of Surgical Disease 4th Edition
- Bailey & Love Short Practice of Surgery, Clinical Surgery pearls by Dayananda Babu RACS for Surgical Audits.

Patient Safety

- Patient Safety Currciulum Guide: Multi Professional Guide

Microbiology

- Levinson's review of Microbiology
- Medical Microbiology and Immunology by Levinson and Jawetz,

Pediatrics Medicine

- Nelson Textbook of Pediatrics
- Basis of Pediatrics by Pervez Akbar Khan

Gynecology

- Gynecology by Ten Teachers

Infection Control

- National Guidelines Infection Prevention and control, National Institute of Health Pakistan

Biosafety

- Biosafety in Microbiological and Biomedical Laboratories, 6th Edition (CDC, USA)
- WHO Laboratory Biosafety Manual, Fourth Edition, And Associated Monographs
- WHO safe management of wastes from healthcare facilities chapter 7 -8 page 77-99, 105-125)

Family medicine

- Oxford Handbook of General Practice, 5th Edition

Orthopedics

- Apley and Solomon's System of Orthopaedics and Trauma by Ashley Blom (Editor)

Rheumatology

- Davidson's Principles and Practice of Medicine
- Clinical Medicine by Parveen J Kumar & Michaell, Clark
- Hutchison's Clinical Methods by Michael Swash

Radiology

- Aids to Radiological Differential Diagnosis by Chapman S. and Nakielny R. 4th edition. Elsevier Science Limited; 2003.

Forensic Medicine

- Knight's Forensic Pathology by Barnard Knight 3rd edition
- G. Principles and Practice of Forensic Medicine by Prof. NasibR. Awan,2nd edition
- Forensic DNA Typing – 2nd Edition, Author: John M. Butler
- Parikh's Text book of Medical Jurisprudence, Forensic Medicine and Toxicology by C.K. Parikh 6th Ed., CBS Publisher.
- Gun Shot Wounds 2nd edition by V.J.Deimaio
- Knight B. Simpson's Forensic Medicine.
- Knight and Pekka. Principles of Forensic Medicine

Forensic Pathology

- Forensic pathology 2nd edition by V.J.Deimaio CRC press Boca Raton London New York Washington DC

Toxicology

- Principles of clinical toxicology 3rd edition Thomas. Gossel CRC press Taylor and Francis group

Forensic Sciences

- Fundamentals of Forensic Science- 3rd Edition: Author: Max M Houck, Jay A. Siegel
- Text Book of forensic medicine and toxicology Principles and Practice 5th edition by Krishan Vig

Biomedical ethics

- Principles of Biomedical ethics, 8th edition by Tom. L. Beauchamp, James F. Childress.

Evidence Based Medicine

- Databases for the latest articles/manuscripts
- Clinical Practice Guidelines- local and international - (within last 3 years)
- Books (Latest edition-within last 5 years)

Pediatrics

- Nelson's Book of Pediatric 22 edition Illustrated book of Pediatrics, Pervaiz Akbar textbook peads medicine

Islamiyat

- Standard Islamiyat (compulsory) for B.A, BSc, MA, MSc, MBBS by Prof M Sharif Islahi.
- Ilmi Islamiyat(compulsory) for BA, BSc & equivalent.

Block-8 Coordinators

PHARMACOLOGY

Dr. Muhammad Usman

Assistant Professor Pharmacology Office: AP Office Pharmacology, Academic block2, First Floor Office Hours: Monday to Friday from 0800 Hours till 1500Hours

PATHALOGY

Dr.Rana Muhammad Asad (Block Lead)

Senior Lecturer Pathology Office: Pathology, Academic block2, Ground Floor Office Hours: Monday to Friday from 0800 Hours till 1500Hours **FORENSIC MEDICINE Prof. Alvina Raja** HoD & Professor of Forensic Medicine Office: Forensic Medicine Department Academic block 1, First Floor Office Hours: Monday to Friday from 0800Hours till 1500Hours

ANATOMY

Prof. Noreen Waseem

Professor of Anatomy Office: Anatomy Department Academic block 1, First Floor Office Hours: Monday to Friday from 0800Hours till 1500Hours

PHYSIOLOGY

Dr.Maimoona Shafiq

HOD/Professor of Physiology Office: HOD Office Physiology, Academic block 1, Ground Floor Office Hours: Monday to Friday from 0800 Hours till 1500Hours

BIOCHEMISTRY

Dr. Muhammad Usman Karim

Demonstrator Biochemistry Office: Biochemistry Department Academic block 1, First Floor Office Hours: Monday to Friday from 0800 Hours till 1500Hours

COMMUNITY MEDICINE

Dr. Arooj Lecturer Community Medicine Office: Community Medicine, Academic block1,First Floor Office Hours: Monday to Friday from 0800 Hours till 1500 Hours

BEHAVIOUR SCIENCES Dr. Rubab Waseem

Senior Lecturer Behavioural Sciences Office Hours: Monday to Friday from 0800 Hours till 1500Hours

MEDICINE Dr.Momin/Dr. Zara

SUGERY Dr. Shafaq

GYNAECOLOGY Dr. Anoos Butt

PAEDIATRICS Dr. Ghanwa

IMPORTANTNOTE

DISCLAIMER

To be able to sit in Annual Exam

85% attendance and at least 50% in internal assessment is mandatory

This module guide may be subject to changes and students should stay updated through official communication change.