

Part B - Syllabus

ALLIED HEALTH AND PARAMEDICAL SCIENCES (AHP)

Human Biosciences and Pathophysiology: Organization and functions of cardiovascular, respiratory, nervous, musculoskeletal, renal, endocrine, gastrointestinal systems; homeostasis; biomolecules, enzymes, metabolism, acid-base and electrolyte balance; cell injury, inflammation, healing and neoplasia; basic genetics and molecular techniques, including PCR, sequencing, CRISPR-Cas; common cardiac, respiratory, neurological and musculoskeletal disorders. Medically important bacteria, viruses, fungi and parasites, microbial culture, identification and antimicrobial susceptibility testing; sterilization, disinfection, hospital-acquired infections and antimicrobial resistance; innate and adaptive immunity, hypersensitivity, vaccines, and serological methods.

Laboratory, Pharmacological, Biotechnological and Forensic Sciences: Body fluids, haematological and biochemical investigations, liver and kidney function tests, specimen collection and laboratory quality; UV-visible spectroscopy and chromatography. Drug administration routes, pharmacokinetics, pharmacodynamics, adverse effects, interactions and emergency drugs; formulations, drug delivery systems; toxic substances and pharmacovigilance. Recombinant DNA technology, cell culture, stem cells, gene and cell therapies, monoclonal antibodies, bioinformatics and omics fundamentals. Forensic biology, serology, DNA profiling, autopsy, injuries, fingerprints, forensic toxicology, digital forensics, crime-scene management, chain of custody, and BNS, BNSS and BSA provisions relevant to evidence

Diagnostic, Imaging and Digital Technologies: ECG, stress testing, Holter monitoring, echocardiography and pulmonary function tests; monitoring of SpO₂, capnography, and invasive pressures; X-ray production, contrast media, fluoroscopy, CT, MRI, ultrasound, mammography, nuclear medicine and PET; image quality, artefacts, PACS and DICOM; radiation physics, dosimetry, ALARA and AERB norms; molecular and immunodiagnostics, biomarkers and point-of-care testing; health informatics, medical devices, and applications of artificial intelligence in healthcare and medical imaging.

Clinical Care, Interventions and Rehabilitation: First aid, basic life support, advance cardiovascular life support (ACLS), and intensive care; general, regional and local anaesthesia, airway management, ventilators and perioperative emergencies; Operation theatre asepsis, surgical instruments, patient positioning, diathermy and safety; cardiac catheterization, angiography, percutaneous coronary catheterization (PCI); pacemakers and perfusion; physiotherapy assessment and management of cardiopulmonary, musculoskeletal, sports, neurological, geriatric and obstetric conditions; orthoses, prostheses, assistive technology, ergonomics and community-based rehabilitation (ICF).

Public Health, Ethics and Quality: Epidemiology, including incidence, prevalence, screening, sensitivity, specificity; evidence-based practice; patient safety, infection control and biomedical waste management; medical ethics and informed consent; quality assurance and accreditation; GMP, validation, regulatory approvals (NDA/ANDA, CDSCO) Institutional Review Board (IRB) functions and concepts of patents.