MALLA REDDY VISHWAVIDYAPEETH

SCHOOL OF ALLIED HEALTHCARE SCIENCES AND TECHNOLOGY

Suraram X Roads, Jeedimetla,
Hyderabad-500055
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Program

Master of Physician Associate (MPA)

(Master of Clinical Surgery)

2026

MALLA REDDY VISHWAVIDYAPEETH

SCHOOL OF ALLIED HEALTHCARE SCIENCES & TECHNOLOGY

Master of Physician Associate (MPA)
(Master of Clinical Surgery)

VISION:

- To develop highly competent Physician Associates who provide patient-centered, evidence-based healthcare.
- To contribute to accessible and quality healthcare services across communities and healthcare systems.
- To promote excellence in clinical practice, medical ethics, and lifelong learning.
- To prepare healthcare professionals capable of working effectively in multidisciplinary medical teams.
- To advance healthcare delivery through innovation, research, and compassionate service.

MISSION:

- To provide advanced medical education and clinical training in diagnosis, treatment, and patient management.
- To cultivate professionalism, ethical values, empathy, and communication skills among students.
- To equip graduates with critical thinking and decision-making abilities for diverse healthcare settings.
- To encourage research activities, evidence-based practice, and continuous professional development.
- To serve society by producing skilled healthcare professionals dedicated to improving public health outcomes.

PROGRAM EDUCATIONAL OBJECTIVES (PEO's):

- Graduates will demonstrate advanced clinical competence in patient assessment, diagnosis, and management.
- Graduates will function effectively as integral members of interdisciplinary healthcare teams.
- Graduates will apply ethical principles, professionalism, and effective communication in healthcare practice.
- Graduates will engage in research, evidence-based medicine, and lifelong learning for professional growth.
- Graduates will contribute to community health promotion, disease prevention, and healthcare accessibility.

PROGRAM OUTCOMES (PO's):

- Apply comprehensive medical knowledge and clinical skills in patient care and healthcare delivery.
- Perform accurate history taking, physical examination, diagnostic interpretation, and clinical procedures.
- Demonstrate effective communication with patients, families, healthcare professionals, and the community.
- Practice ethical, legal, and professional responsibilities in accordance with healthcare standards.
- Utilize critical thinking, research aptitude, and evidence-based approaches in clinical decision-making.

PROGRAM SPECIFIC OUTCOMES (PSO's):

- Independently assist physicians in patient evaluation, diagnosis, treatment planning, and follow-up care.
- Perform clinical and emergency procedures safely and effectively under healthcare protocols.
- Interpret laboratory investigations, imaging studies, and clinical findings for patient management.
- Provide preventive, promotive, rehabilitative, and palliative healthcare services in various clinical settings.
- Demonstrate competency in healthcare technology, medical documentation, and hospital management systems.

COURSE OUTCOMES (CO's):

- Explain the principles of human anatomy, physiology, pathology, pharmacology, and clinical medicine relevant to physician associate practice.
- Conduct systematic patient assessment including history taking, physical examination, and clinical documentation.
- Assist in diagnosing and managing acute and chronic medical conditions using evidence-based practices.
- Demonstrate proficiency in clinical procedures, emergency care, infection control, and patient safety measures.
- Exhibit professionalism, ethical conduct, teamwork, communication skills, and commitment to lifelong learning in healthcare practice.

MALLA REDDY VISHWAVIDYAPEETH

SCHOOL OF ALLIED HEALTHCARE SCIENCES AND TECHNOLOGY

MASTER OF PHYSICIAN ASSOCIATE

(Master of Clinical Surgery)

COURSE STRUCTURE

I year I semester

S.NO	SUBJECT CODE	SUBJECT	L	T	P	C	Max. Marks		
							INT	EXT	TOTAL
1		Applied Basic Anatomy & History Taking	4	-	2	6	25	75	100
2		Evidence Based Medicine & Research Methods	3	-	1	4	25	75	100
3		Review Of General Surgery and General Anesthesia with Updates	3	-	1	4	25	75	100
4		Imaging	3	-	2	5	25	75	100
5		Consents / Medico-Legal Issues	2	-	-	2	25	75	100
6		Medical Education I	1	-	1	2	25	75	100
TOTAL			16	-	7	23	150	450	600

I year II semester

S.NO	SUBJECT CODE	SUBJECT	L	T	P	C	Max. Marks		
							INT	EXT	TOTAL
1		Pre- Operative Management	3	-	3	6	25	75	100
2		Principles Of Operative Surgery	4	-	2	6	25	75	100
3		Intensive care	4	-	2	6	25	75	100
4		Trauma And Shock	2	-	-	2	25	75	100
5		Medical Education II	1	-	1	2	25	75	100
TOTAL			14	-	8	22	125	375	500

II year III semester

S.NO	SUBJECT CODE	SUBJECT	L	T	P	C	Max. Marks		
							INT	EXT	TOTAL
1		Vascular Surgery	3	-	2	5	25	75	100
2		Onco Surgery	3	-	2	5	25	75	100
3		Uro Surgery	3	-	2	5	25	75	100
4		Cardiovascular And Thoracic Surgery	3	-	1	4	25	75	100
5		Ethics, Communication, and Leadership Skills	2	-	-	2	25	75	100
6		Medical Education-III	1	-	1	2	25	75	100
TOTAL			15	-	8	23	150	450	600

II year IV semester

S.NO	SUBJECT CODE	SUBJECT	L	T	P	C	Max. Marks		
							INT	EXT	TOTAL
1		Neurosurgery	4	-	2	6	25	75	100
2		Orthopedic Surgery	4	-	2	6	25	75	100
3		Pediatric Surgery	3	-	2	5	25	75	100
4		Hepatobiliary Surgery	3	-	1	4	25	75	100
5		Medical Education - IV	1	-	1	2	25	75	100
TOTAL			15	-	8	23	125	375	500

1.1 Post Graduate Programme

Sl. No.	Course	Duration	Eligibility for admission
1	Master of Physician Associate (MPA) (Master of Clinical Surgery)	2 years	Bachelor of Physician Associate or equivalent from a recognized university with minimum 5.5 CGPA

1.2. Medium of Instruction:

English shall be the medium of instruction for all subjects of study and for examinations.

1.3. Duration of the Course

Duration details are mentioned under clause no. 1.1 of this booklet.

1.4 Examination Regulations

1.4.1 Attendance: 75% of attendance (physical presence) is mandatory.

Medical leave or other types of sanctioned leaves will not be counted as physical presence. Attendance will be counted from the date of commencement of the session to the last day of the closing of attendance before the final examination.

1.4.2 Internal Assessments:

a) Regular periodic assessment shall be conducted throughout the course. In each semester there will be **two one-hour internal assessments (10 marks each)** and a continuous assessment (10 marks). Thus, a total of 30 marks for the internal exam. (i.e. weightage for internal assessment shall be 30% of the total marks in each subject).

b) **Exam pattern for internal assessment** in each semester will be

(a) Short questions 3 nos. out of which the student should write two questions each carrying 5 marks (i.e. 2 x 5=10 marks). Two such internal examinations will be conducted.

(b) Continuous assessment of the student will be done. Students' overall attendance, performance in class, behaviour of the student, extra-curricular activities etc will be assessed. Continuous assessment carries 10 marks.

(d) Thus, a total of 30 marks for the internal examination. (10+10+10=30 marks). A candidate should secure a minimum of 40% marks in the internal assessment in each subject to be eligible to appear for the University examination

(e) For value added courses, only internal examination will be conducted. The assessment comprised of five assignments/presentations/case presentations each carrying 10 (i.e. 5 x 10 = 50 marks). Final examination will be for 50 marks with 5 questions each carrying 10 marks (5 x 10 = 50 marks). The minimum pass is 40% marks.

1.4.3 University Examinations (External):

a) University Examination shall be conducted at the end of every semester.

b) A candidate who satisfies the requirement of attendance and internal assessment marks, as stipulated by the University shall be eligible to appear for the University Examination.

c) Examination will be of 3 hours duration (for theory). The question pattern for those subjects without practical examination (70 marks) will be (a) Three essay questions out of which the student should answer 2 questions each carrying 10 marks (i.e. 2 x 10 = 20 marks) (b) Eight short note questions out of which the student should attempt six questions, each carrying 5 marks (6 x 5 = 30 marks). (c) Ten very short questions each carrying 2 marks (i.e. 10 x 2 = 20 marks). Thus, a total of 70 marks.

d) The question pattern for practical examination (a) Spotters/major practical/minor practical/Viva/practical record.

The minimum pass for internal assessment is 40% and for the University Examination is 50%. i.e. a student should score a total of 50% (adding the internal and external examination) to pass in each subject

SEMESTER – I

S.NO	SUBJECT CODE	SUBJECT	L	T	P	C	Max. Marks		
							INT	EXT	TOTAL
1		Applied Basic Anatomy & History Taking	4	-	2	6	25	75	100
2		Evidence Based Medicine & Research Methods	3	-	1	4	25	75	100
3		Review Of General Surgery and General Anesthesia with Updates	3	-	1	4	25	75	100
4		Imaging	3	-	2	5	25	75	100
5		Consents / Medico-Legal Issues	2	-	-	2	25	75	100
6		Medical Education I	1	-	1	2	25	75	100
TOTAL			16	-	7	23	150	450	600

APPLIED BASIC ANATOMY & HISTORY TAKING L/T/P/C 4/-/2/6

COURSE OBJECTIVES

After completion of this course, the student will be able to:

1. Understand the structure and organization of the human body with clinical correlation.
2. Apply anatomical knowledge in patient examination, diagnosis, and clinical procedures.
3. Develop competency in systematic and patient-centered history taking.
4. Demonstrate effective communication skills and professional behavior during patient interaction.
5. Interpret clinical findings using applied anatomical concepts and clinical reasoning.

COURSE OUTCOMES

Upon successful completion of the course, students will be able to:

1. Describe the gross anatomy, surface anatomy, and clinical anatomy of major organ systems.
2. Identify anatomical landmarks relevant to physical examination and clinical procedures.
3. Obtain comprehensive and focused patient history using standard medical protocols.
4. Demonstrate communication skills, empathy, ethics, and professionalism in patient interviews.
5. Correlate anatomical knowledge with common clinical conditions and diagnostic approaches.

Theory Syllabus

Unit I – Introduction to Applied Anatomy **(12 hours)**

- Anatomical terminology and body organization
- Levels of structural organization
- Anatomical positions, planes, and movements
- Surface anatomy and clinical landmarks
- Introduction to radiological and cross-sectional anatomy

- Basic histology and embryology
- Clinical relevance of anatomy in patient care

Unit II – Musculoskeletal and Neuroanatomy (12 hours)

- Osteology, myology, and arthrology
- Upper limb and lower limb anatomy
- Vertebral column and posture
- Skull and facial anatomy
- Central nervous system and peripheral nervous system
- Cranial nerves and spinal nerves
- Applied anatomy in fractures, nerve injuries, and musculoskeletal disorders

Unit III – Thorax, Abdomen, and Pelvis (12 hours)

- Anatomy of thoracic cavity and mediastinum
- Heart, lungs, pleura, and major vessels
- Abdominal wall and abdominal viscera
- Gastrointestinal system anatomy
- Pelvic organs and perineum
- Urogenital anatomy
- Applied anatomy in cardiovascular, respiratory, gastrointestinal, and pelvic disorders

Unit IV – Principles of History Taking (12 hours)

- Importance and objectives of history taking
- Communication skills in healthcare
- Components of medical history
- Chief complaints and presenting illness
- Past medical, surgical, family, and personal history
- Drug history, allergy history, and immunization history
- Documentation and medical terminology

Unit V – Systemic and Specialized History Taking (12 hours)

- General history taking in adults and children
- Cardiovascular system history
- Respiratory system history
- Gastrointestinal and genitourinary history
- Neurological and musculoskeletal history
- Obstetric and gynaecological history
- Psychiatric history and geriatric assessment
- Ethical issues, confidentiality, and patient-centered interviewing

Reference Textbooks

1. Gray's Anatomy for Students – Richard L. Drake, A. Wayne Vogl, Adam W.M. Mitchell.
2. Clinically Oriented Anatomy – Keith L. Moore, Arthur F. Dalley, Anne M.R. Agur.
3. Bates' Guide to Physical Examination and History Taking – Lynn S. Bickley.
4. Macleod's Clinical Examination – Graham Douglas, Fiona Nicol, Colin Robertson.
5. BD Chaurasia's Human Anatomy – Standard textbook for regional and applied anatomy.
6. Clinical Anatomy by Regions – Richard S. Snell.
7. Hutchison's Clinical Methods – Comprehensive clinical history and examination guide.

The syllabus structure and competencies are aligned with physician associate curricula emphasizing anatomy, patient assessment, and clinical skills training.

Practical Syllabus (30 hours)

1. Identification of anatomical models, bones, and organs

2. Surface anatomy and anatomical landmark demonstration
3. Basic radiological anatomy (X-ray, CT, MRI orientation)
4. Demonstration of joint movements and muscle actions
5. Neurological examination basics (cranial nerves, reflexes)
6. Communication skills and patient interaction practice
7. General history taking (complete case history)
8. System-wise history taking (CVS, RS, CNS, GIT, etc.)
9. Case-based discussion and clinical correlation
10. Documentation of history and maintenance of logbook

EVIDENCE BASED MEDICINE & RESEARCH METHODS L/T/P/C 3/-/1/4

COURSE OBJECTIVES

After completion of this course, the student will be able to:

1. Understand the principles and importance of Evidence Based Medicine (EBM) in clinical practice.
2. Develop skills to critically appraise medical literature and research publications.
3. Gain knowledge of research methodologies, biostatistics, and scientific writing.
4. Apply research principles in planning, conducting, and reporting healthcare research.
5. Promote ethical research practices and evidence-based clinical decision-making.

COURSE OUTCOMES

Upon successful completion of the course, students will be able to:

1. Explain the concepts, hierarchy, and application of Evidence Based Medicine in healthcare.
2. Formulate clinical questions and perform efficient literature searches using scientific databases.
3. Critically analyze research articles for validity, reliability, and clinical applicability.
4. Design basic research studies and apply appropriate research methodologies and statistical tools.
5. Demonstrate ethical conduct in biomedical research and prepare scientific reports and presentations.

Theory Syllabus

Unit I – Introduction to Evidence Based Medicine (9 hours)

- Definition, scope, and importance of EBM
- Principles and steps of EBM
- Hierarchy of evidence
- Clinical decision-making process
- Framing clinical questions using PICO format
- Sources of medical evidence and databases
- Introduction to systematic reviews and meta-analysis

Unit II – Literature Search and Critical Appraisal (9 hours)

- Literature search strategies
- Use of PubMed, Cochrane Library, Google Scholar, and medical databases
- Types of medical research articles
- Reading and interpreting scientific papers
- Critical appraisal of research articles
- Measures of disease frequency and association
- Bias, confounding factors, and validity in research

Unit III – Research Methodology **(9 hours)**

- Introduction to health research
- Types of research designs:
  - Observational studies
  - Experimental studies
  - Qualitative and quantitative research
- Sampling methods and sample size determination
- Variables and data collection methods
- Questionnaire and survey design
- Research protocol preparation

Unit IV – Biostatistics and Data Analysis **(9 hours)**

- Introduction to biostatistics
- Types of data and data presentation
- Measures of central tendency and dispersion
- Probability and normal distribution
- Hypothesis testing
- Parametric and non-parametric tests
- Correlation and regression
- Use of statistical software in healthcare research

Unit V – Research Ethics and Scientific Communication **(9 hours)**

- Research ethics and ethical principles
- Institutional Ethics Committee (IEC) and informed consent
- Good Clinical Practice (GCP)
- Plagiarism and publication ethics
- Scientific writing and manuscript preparation
- Referencing styles and citation methods
- Preparation of research reports, posters, and oral presentations

Reference Textbooks

1. Evidence-Based Medicine: How to Practice and Teach EBM – Sharon E. Straus, W. Scott Richardson, Paul Glasziou, R. Brian Haynes.
2. Research Methodology: Methods and Techniques – C.R. Kothari.
3. Medical Biostatistics – B.K. Mahajan.
4. Essentials of Biostatistics in Health Sciences – J.V. Dixit and Suresh C. Sahu.
5. Basic & Clinical Biostatistics – Beth Dawson and Robert G. Trapp.
6. Designing Clinical Research – Stephen B. Hulley et al.
7. Practical Statistics for Medical Research – Douglas G. Altman.
8. How to Read a Paper: The Basics of Evidence Based Medicine – Trisha Greenhalgh.

This syllabus is designed to strengthen clinical research aptitude, analytical thinking, and evidence-based healthcare practice among physician associate students.

Practical Syllabus **(15 hours)**

1. Framing clinical questions using PICO format
2. Literature search using PubMed, Google Scholar, Cochrane
3. Identification of different study designs
4. Critical appraisal of research articles
5. Data collection and questionnaire preparation
6. Basic statistical calculations (mean, median, SD)
7. Interpretation of graphs, tables, and research data
8. Use of basic statistical software (Excel/SPSS basics)

9. Preparation of research protocol and synopsis
10. Scientific writing, referencing, and presentation skills

REVIEW OF GENERAL SURGERY AND GENERAL ANESTHESIA WITH UPDATES

L/T/P/C

3/-/1/4

COURSE OBJECTIVES

After completion of this course, the student will be able to:

1. Understand the principles and practice of general surgery and perioperative patient care.
2. Develop knowledge of surgical diseases, diagnostic evaluation, and management approaches.
3. Gain competency in preoperative, intraoperative, and postoperative patient assessment.
4. Understand the principles, techniques, and safety aspects of general anaesthesia and pain management.
5. Familiarize with recent advances and updates in surgical procedures, anaesthesia, and patient safety protocols.

COURSE OUTCOMES

Upon successful completion of the course, students will be able to:

1. Describe the etiology, clinical features, diagnosis, and management of common surgical conditions.
2. Assist in perioperative care including patient preparation, surgical assistance, and postoperative monitoring.
3. Apply principles of asepsis, sterilization, infection control, and surgical safety in clinical practice.
4. Explain the pharmacology, techniques, complications, and monitoring involved in general anaesthesia.
5. Demonstrate knowledge of recent advances in minimally invasive surgery, anaesthesia technology, and enhanced recovery protocols.

Theory Syllabus

Unit I – Principles of General Surgery **(9 hours)**

- History and scope of general surgery
- Surgical anatomy and physiological considerations
- Principles of wound healing
- Surgical infections and antimicrobial prophylaxis
- Fluid, electrolyte, and acid-base balance
- Shock, trauma, and burns management
- Asepsis, sterilization, and operation theatre protocols

Unit II – Common Surgical Disorders **(9 hours)**

- Disorders of the gastrointestinal system
- Acute abdomen and surgical emergencies
- Hernias and abdominal wall defects
- Breast disorders and thyroid diseases
- Hepatobiliary and pancreatic disorders
- Colorectal diseases
- Urological and vascular surgical conditions
- Principles of surgical oncology

Unit III – Perioperative Care and Surgical Procedures **(9 hours)**

- Preoperative assessment and patient optimization
- Informed consent and surgical ethics
- Surgical instruments and suturing materials
- Basic surgical procedures and assistance
- Postoperative care and complications
- Pain management and wound care
- Nutritional support in surgical patients
- Enhanced Recovery After Surgery (ERAS) protocols

Unit IV – General Anaesthesia **(9 hours)**

- History and principles of anaesthesia
- Pre-anaesthetic evaluation
- Pharmacology of anaesthetic agents
- Stages and planes of general anaesthesia
- Airway management and intubation
- Monitoring during anaesthesia
- Regional anaesthesia and sedation techniques
- Complications of anaesthesia and emergency management

Unit V – Recent Advances and Updates **(9 hours)**

- Minimally invasive and laparoscopic surgery
- Robotic surgery and image-guided procedures
- Day-care and ambulatory surgery
- Advances in anaesthesia monitoring and patient safety
- Ultrasound-guided anaesthesia techniques
- Multimodal analgesia and pain management
- Infection prevention and antimicrobial stewardship
- Evidence-based surgical and anaesthesia practices

Reference Textbooks

1. Bailey & Love's Short Practice of Surgery – Norman S. Williams, Christopher J.K. Bulstrode, P. Ronan O'Connell.
2. Schwartz's Principles of Surgery – F. Charles Brunicardi et al.
3. Sabiston Textbook of Surgery – Courtney M. Townsend Jr. et al.
4. Clinical Anaesthesia – Paul G. Barash, Bruce F. Cullen, Robert K. Stoelting.
5. Miller's Anaesthesia – Michael A. Gropper.
6. Morgan & Mikhail's Clinical Anaesthesiology – John F. Butterworth, David C. Mackey, John D. Wasnick.
7. SRB's Manual of Surgery – Sriram Bhat M.
8. Short Textbook of Anaesthesia – Ajay Yadav.
9. Oxford Handbook of Clinical Surgery – Greg McLatchie et al.
10. Oxford Handbook of Anaesthesia – Keith Allman, Iain Wilson.

This syllabus is intended to provide physician associate students with integrated knowledge of surgical care, anaesthesia principles, perioperative management, and current advances in surgical sciences.

Practical Syllabus **(15 hours)**

1. Preoperative patient assessment and preparation
2. Identification and handling of surgical instruments
3. Aseptic techniques, sterilization, and OT protocols
4. Assisting in minor surgical procedures and suturing techniques
5. Airway management (bag-mask ventilation, basic intubation assistance)
6. Monitoring vital signs during perioperative period
7. Postoperative care and complication monitoring

8. Wound care and dressing techniques
9. Pain assessment and basic pain management methods
10. Case discussion and perioperative documentation

IMAGING **L/T/P/C**
3/-/2/5

COURSE OBJECTIVES

After completion of this course, the student will be able to:

1. Understand the principles, techniques, and applications of medical imaging modalities in clinical practice.
2. Develop knowledge of radiological anatomy and interpretation of common imaging findings.
3. Apply imaging principles in diagnosis, patient management, and clinical decision-making.
4. Understand radiation safety, contrast media usage, and ethical considerations in imaging.
5. Familiarize with recent advances in diagnostic and interventional imaging technologies.

COURSE OUTCOMES

Upon successful completion of the course, students will be able to:

1. Explain the basic physics, instrumentation, and clinical applications of various imaging modalities.
2. Identify normal radiological anatomy and common pathological findings on imaging studies.
3. Assist in selecting appropriate imaging investigations for different clinical conditions.
4. Demonstrate awareness of radiation protection, patient safety, and contrast-related precautions.
5. Interpret basic imaging findings and communicate effectively with radiologists and healthcare teams.

Theory Syllabus

Unit I – Introduction to Medical Imaging **(9 hours)**

- History and evolution of medical imaging
- Basic principles of radiological imaging
- Radiological anatomy and terminology
- Imaging modalities overview:
  - X-ray
  - Ultrasound
  - Computed Tomography (CT)
  - Magnetic Resonance Imaging (MRI)
  - Nuclear medicine
- Indications and limitations of imaging studies
- Radiation physics and biological effects of radiation

Unit II – Conventional Radiography and Ultrasound **(9 hours)**

- Principles of X-ray imaging
- Chest X-ray interpretation
- Musculoskeletal radiography
- Gastrointestinal and abdominal radiography
- Contrast studies and fluoroscopy
- Principles of ultrasonography
- Doppler ultrasound applications
- Obstetric, abdominal, and vascular ultrasound
- Point-of-care ultrasound (POCUS)

Unit III – Advanced Imaging Techniques **(9 hours)**

- Principles and applications of CT scan

- Contrast-enhanced CT imaging
- MRI physics and imaging sequences
- MRI applications in neurological, musculoskeletal, and abdominal disorders
- PET scan and nuclear imaging
- Interventional radiology basics
- Image-guided diagnostic and therapeutic procedures

Unit IV – System-Based Imaging **(9 hours)**

- Imaging of respiratory system disorders
- Cardiovascular imaging
- Neuroimaging and stroke imaging
- Abdominal and pelvic imaging
- Musculoskeletal imaging
- Breast imaging and mammography
- Imaging in trauma and emergency medicine
- Paediatric and geriatric imaging considerations

Unit V – Imaging Safety and Recent Advances **(9 hours)**

- Radiation protection and ALARA principles
- Contrast media: indications, reactions, and precautions
- Infection control in radiology departments
- Ethical and legal aspects in medical imaging
- Artificial intelligence in radiology
- Digital imaging and PACS systems
- Advances in molecular and functional imaging
- Emerging trends in diagnostic and interventional radiology

Reference Textbooks

1. Sutton's Textbook of Radiology and Imaging – David Sutton.
2. Grainger & Allison's Diagnostic Radiology – Andy Adam, Adrian Dixon, Jonathan Gillard, Cornelia Schaefer-Prokop.
3. Fundamentals of Diagnostic Radiology – William E. Brant, Clyde A. Helms.
4. Diagnostic Imaging – Melissa L. Rosado-de-Christenson et al.
5. Radiology Review Manual – Wolfgang Dähnert.
6. Essential Radiology: Clinical Presentation, Pathophysiology, Imaging – Richard B. Gunderman.
7. Clark's Positioning in Radiography – A. Stewart Whitley et al.
8. Practical Guide to Diagnostic Imaging – Peter Armstrong and Martin Wastie.
9. Emergency Radiology: The Requisites – Jorge A. Soto, Brian C. Lucey.
10. Point of Care Ultrasound – Nilam J. Soni, Robert Arntfield, Pierre Kory.

This course is designed to provide physician associate students with essential knowledge and practical understanding of diagnostic imaging for effective patient assessment and multidisciplinary clinical care.

Practical Syllabus **(30 hours)**

1. Identification of imaging equipment (X-ray, USG, CT, MRI)
2. Basic radiological anatomy on X-ray, CT, and MRI
3. Chest X-ray interpretation (normal & common abnormalities)
4. Basic ultrasound handling and image orientation
5. Observation of CT and MRI scans (case-based learning)
6. Identification of common fractures and pathologies on imaging
7. Demonstration of contrast studies and precautions
8. Radiation safety practices and protection measures

9. PACS system use and image viewing basics
10. Case discussion and imaging-based clinical correlation

CONSENTS / MEDICO-LEGAL ISSUES L/T/P/C 2/-/-/2

COURSE OBJECTIVES

After completion of this course, the student will be able to:

1. Understand the legal and ethical principles governing healthcare practice and patient rights.
2. Develop knowledge regarding informed consent and medico-legal responsibilities in clinical care.
3. Identify legal implications of negligence, malpractice, and professional misconduct in healthcare.
4. Apply medico-legal principles in documentation, communication, and patient management.
5. Promote ethical decision-making and professional accountability in healthcare settings.

COURSE OUTCOMES

Upon successful completion of the course, students will be able to:

1. Explain the legal and ethical foundations of medical practice and healthcare delivery.
2. Obtain and document valid informed consent for clinical procedures and patient care.
3. Recognize medico-legal issues related to negligence, malpractice, confidentiality, and patient safety.
4. Maintain accurate medical records and medico-legal documentation according to healthcare regulations.
5. Demonstrate ethical conduct, professional responsibility, and adherence to legal standards in clinical practice.

Theory Syllabus

Unit I – Introduction to Medical Ethics and Law (6 hours)

- Definitions and scope of medical ethics and medico-legal practice
- Principles of bioethics:
  - Autonomy
  - Beneficence
  - Non-maleficence
  - Justice
- Patient rights and responsibilities
- Professional conduct and medical professionalism
- Healthcare laws and regulatory bodies
- Ethical decision-making in clinical practice

Unit II – Consent in Medical Practice (6 hours)

- Definition and types of consent
- Informed consent: principles and components
- Implied, express, written, and proxy consent
- Consent in minors and mentally incapacitated patients
- Refusal of treatment and withdrawal of consent
- Consent in emergencies and critical care
- Documentation and legal validity of consent

Unit III – Medico-Legal Issues in Clinical Practice (6 hours)

- Medical negligence and malpractice
- Standard of care and duty of care
- Civil and criminal liability in healthcare

- Medical errors and patient safety
- Confidentiality and privacy of patient information
- Professional misconduct and disciplinary actions
- Consumer Protection Act and healthcare services

Unit IV – Medical Records and Legal Documentation (6 hours)

- Importance of medical records
- Principles of documentation and record keeping
- Electronic medical records (EMR)
- Medico-legal case documentation
- Injury reports and death certification
- Legal aspects of prescriptions and investigations
- Hospital policies and risk management

Unit V – Special Medico-Legal Situations and Recent Updates (6 hours)

- Organ transplantation and legal aspects
- End-of-life care and euthanasia
- Medico-legal aspects of reproductive health
- Assault, abuse, and forensic considerations
- Telemedicine and digital healthcare laws
- Biomedical waste management regulations
- Recent updates in healthcare laws and ethical guidelines
- Role of Physician Associates in medico-legal practice

Reference Textbooks

1. Medical Ethics – C.M. Francis.
2. Principles of Medical Ethics – Raanan Gillon.
3. Parikh's Textbook of Medical Jurisprudence, Forensic Medicine and Toxicology – C.K. Parikh.
4. Medical Jurisprudence and Toxicology – K.S. Narayan Reddy.
5. Textbook of Forensic Medicine and Toxicology – Anil Aggrawal.
6. Legal and Ethical Issues for Health Professionals – George D. Pozgar.
7. Oxford Handbook of Medical Ethics and Law – Hope, Savulescu, Hendrick.
8. Essentials of Forensic Medicine and Toxicology – K. S. Narayan Reddy & O. P. Murty.
9. Medical Law and Ethics – Bonnie F. Fremgen.
10. Handbook of Medical Ethics – World Medical Association (WMA).

This course equips physician associate students with essential legal, ethical, and professional knowledge required for safe, responsible, and patient-centered healthcare practice.

MEDICAL EDUCATION – I

L/T/P/C
1/-/1/2

COURSE OBJECTIVES

1. To provide clinical exposure in surgical settings.
2. To develop skills in patient assessment and management.
3. To train students in basic surgical procedures.
4. To enhance clinical decision-making abilities.
5. To promote professional and ethical practice.

COURSE OUTCOMES

1. Perform clinical examination and case presentation effectively.
2. Assist in surgical procedures and perioperative care.
3. Apply basic surgical skills in clinical practice.
4. Participate in emergency and trauma management.
5. Demonstrate professionalism and teamwork in healthcare.

SYLLABUS (TOTAL HOURS: 30 HOURS)

1. Clinical postings in surgical wards and OPD
2. History taking and physical examination
3. Pre-operative and post-operative care
4. Assisting in minor and major surgeries
5. Operation theatre protocols and asepsis
6. Ward rounds and case discussions
7. Basic surgical skills (suturing, dressing, catheterization)
8. Emergency and trauma care exposure
9. Maintenance of logbook and records
10. Seminars, case presentations, and teaching sessions

SEMESTER – II

S.NO	SUBJECT CODE	SUBJECT	L	T	P	C	Max. Marks		
							INT	EXT	TOTAL
1		**Pre- Operative Management**	3	-	3	6	25	75	100
2		**Principles Of Operative Surgery**	4	-	2	6	25	75	100
3		**Intensive care**	4	-	2	6	25	75	100
4		**Trauma And Shock**	2	-	-	2	25	75	100
5		**Medical Education II**	1	-	1	2	25	75	100
TOTAL			**14**	**-**	**8**	**22**	**125**	**375**	**500**

PRE- OPERATIVE MANAGEMENT L/T/P/C

3/-/3/6

COURSE OBJECTIVES

After completion of this course, the student will be able to:

1. Understand the principles and importance of pre-operative evaluation and patient optimization.
2. Develop competency in assessing surgical fitness and identifying perioperative risks.
3. Gain knowledge of pre-operative investigations, patient preparation, and anaesthetic considerations.
4. Apply infection control, patient safety, and ethical principles in pre-operative care.
5. Familiarize with multidisciplinary approaches and recent advances in perioperative management.

COURSE OUTCOMES

Upon successful completion of the course, students will be able to:

1. Perform comprehensive pre-operative assessment including history taking and physical examination.
2. Interpret pre-operative investigations and identify factors affecting surgical outcomes.
3. Assist in patient preparation, risk reduction, and perioperative planning for various surgical procedures.
4. Demonstrate knowledge of anaesthesia evaluation, informed consent, and surgical safety protocols.
5. Apply evidence-based practices and patient-centred approaches in pre-operative management.

Theory Syllabus

Unit I – Introduction to Pre-Operative Management (9 hours)

- Definition, goals, and importance of pre-operative care
- Surgical risk assessment and classification
- Roles and responsibilities of healthcare professionals
- Patient evaluation and optimization
- Elective versus emergency surgery
- Pre-operative documentation and communication
- Ethical and legal considerations in surgical preparation

Unit II – Pre-Operative Patient Assessment **(9 hours)**

- Comprehensive medical and surgical history
- Physical examination and systemic assessment
- Assessment of cardiovascular, respiratory, renal, hepatic, and endocrine status
- Nutritional assessment and fluid balance
- Evaluation of comorbid conditions
- Functional status and ASA classification
- Assessment of elderly and high-risk surgical patients

Unit III – Pre-Operative Investigations and Preparation **(9 hours)**

- Routine and specialized laboratory investigations
- Imaging and diagnostic studies
- ECG and pulmonary function evaluation
- Blood grouping, crossmatching, and transfusion preparation
- Medication review and perioperative drug management
- Fasting guidelines and bowel preparation
- Skin preparation and infection prevention
- Pre-operative counseling and patient education

Unit IV – Anaesthesia and Perioperative Considerations **(9 hours)**

- Pre-anaesthetic evaluation and fitness assessment
- Types of anaesthesia and selection criteria
- Airway assessment and anaesthesia risks
- Management of patients with chronic diseases
- Prevention of perioperative complications
- Pain management strategies
- Surgical safety checklist and WHO protocols
- Day-care surgery and ambulatory surgical care

Unit V – Special Situations and Recent Advances **(9 hours)**

- Pre-operative management in trauma and emergency surgery
- Pediatric and obstetric surgical considerations
- Pre-operative care in oncology patients
- Management of anticoagulants and antiplatelet therapy
- Enhanced Recovery After Surgery (ERAS) protocols
- Evidence-based perioperative management
- Telemedicine and digital pre-operative assessment
- Recent advances in perioperative patient safety and optimization

Reference Textbooks

1. Bailey & Love's Short Practice of Surgery – Norman S. Williams et al.
2. Schwartz's Principles of Surgery – F. Charles Brunicardi et al.
3. Sabiston Textbook of Surgery – Courtney M. Townsend Jr. et al.
4. Oxford Handbook of Anaesthesia – Keith Allman, Iain Wilson.
5. Morgan & Mikhail's Clinical Anaesthesiology – John F. Butterworth et al.
6. Clinical Anesthesia – Paul G. Barash et al.
7. Perioperative Medicine: Medical Consultation and Co-Management – Mark F. Newman et al.
8. Manual of Perioperative Care in Adult Cardiac Surgery – Robert M. Bojar.
9. SRB's Manual of Surgery – Sriram Bhat M.
10. Current Diagnosis & Treatment: Surgery – Gerard M. Doherty.

This course is designed to prepare physician associate students with essential competencies in pre-operative patient evaluation, perioperative planning, surgical safety, and multidisciplinary patient management.

Practical Syllabus **(45 hours)**

1. Pre-operative history taking and physical examination
2. Assessment of surgical fitness (ASA classification)
3. Interpretation of pre-operative investigations (lab, ECG, imaging)
4. Pre-anaesthetic evaluation and airway assessment
5. Patient preparation (fasting, medication adjustment, consent)
6. Infection control and pre-operative aseptic measures
7. Risk assessment and perioperative planning
8. Use of surgical safety checklist (WHO checklist)
9. Pre-operative counseling and patient education
10. Case discussion and documentation of pre-operative plan

PRINCIPLES OF OPERATIVE SURGERY L/T/P/C

4/-/2/6

COURSE OBJECTIVES

After completion of this course, the student will be able to:

1. Understand the fundamental principles and techniques of operative surgery and surgical patient care.
2. Develop knowledge of surgical instrumentation, aseptic techniques, and operation theatre protocols.
3. Gain competency in assisting surgical procedures and maintaining perioperative patient safety.
4. Apply principles of wound management, tissue handling, hemostasis, and suturing techniques.
5. Familiarize with modern surgical technologies, minimally invasive procedures, and evidence-based operative practices.

COURSE OUTCOMES

Upon successful completion of the course, students will be able to:

1. Explain the basic principles and stages of operative surgical procedures.
2. Identify and appropriately use surgical instruments, sutures, and operation theatre equipment.
3. Demonstrate knowledge of asepsis, sterilization, infection prevention, and surgical safety measures.
4. Assist effectively in preoperative, intraoperative, and postoperative surgical care.
5. Apply principles of tissue handling, wound closure, and operative techniques in clinical practice.

Theory Syllabus

Unit I – Introduction to Operative Surgery **(12 hours)**

- History and evolution of surgery
- Principles of operative surgery
- Surgical anatomy and physiological considerations
- Classification of surgical procedures
- Roles of surgical team members
- Operation theatre design and protocols
- Patient safety and surgical ethics

Unit II – Asepsis, Sterilization, and Surgical Instruments **(12 hours)**

- Principles of asepsis and antisepsis
- Sterilization and disinfection methods

- Infection prevention and control
- Surgical hand scrubbing, gowning, and gloving
- Surgical instruments: classification and uses
- Sutures, ligatures, and surgical needles
- Biomedical waste management in surgery

Unit III – Basic Operative Techniques **(12 hours)**

Principles of tissue handling

- Incisions and surgical exposure
- Hemostasis and blood loss management
- Wound healing and wound closure techniques
- Drainage systems and dressings
- Principles of biopsy and specimen handling
- Basic laparoscopic and minimally invasive techniques

Unit IV – Perioperative Care and Surgical Assistance **(12 hours)**

- Preoperative patient preparation
- Positioning of patients during surgery
- Monitoring during surgical procedures
- Assisting in common surgical procedures
- Postoperative care and recovery room management
- Recognition and management of surgical complications
- Pain management and rehabilitation

Unit V – Recent Advances and Specialized Operative Practices **(12 hours)**

- Minimally invasive and robotic surgery
- Microsurgery and laser surgery
- Image-guided and computer-assisted surgery
- Enhanced Recovery After Surgery (ERAS)
- Surgical safety checklist and WHO guidelines
- Day-care and ambulatory surgery
- Evidence-based surgical practices
- Recent advances in surgical technology and patient care

Reference Textbooks

1. Bailey & Love's Short Practice of Surgery – Norman S. Williams et al.
2. Schwartz's Principles of Surgery – F. Charles Brunicardi et al.
3. Sabiston Textbook of Surgery – Courtney M. Townsend Jr. et al.
4. Farquharson's Textbook of Operative General Surgery – Margaret Farquharson.
5. SRB's Manual of Surgery – Sriram Bhat M.
6. Hamilton Bailey's Demonstrations of Physical Signs in Clinical Surgery.
7. Operative Surgery Manual – Royal College of Surgeons publications.
8. Oxford Handbook of Clinical Surgery – Greg McLatchie et al.
9. Clinical Surgery – Alfred Cuschieri et al.
10. Essential Surgical Practice – Sir Alfred Cuschieri.

This course is designed to equip physician associate students with core operative surgical knowledge, perioperative competencies, and practical understanding required for safe and effective participation in surgical care.

Practical Syllabus **(30 hours)**

1. Surgical hand scrubbing, gowning, and gloving techniques

2. Identification and handling of surgical instruments
3. Aseptic techniques and OT protocol practice
4. Basic suturing and knot-tying techniques
5. Wound dressing and bandaging methods
6. Assisting in minor surgical procedures
7. Patient positioning and draping in OT
8. Hemostasis techniques and use of basic surgical tools
9. Postoperative wound care and complication monitoring
10. Biomedical waste management and OT safety practices

INTENSIVE CARE L/TP/C 4/-/2/6

COURSE OBJECTIVES

After completion of this course, the student will be able to:

1. Understand the principles and organization of intensive care management for critically ill patients.
2. Develop competency in monitoring, assessment, and supportive management of patients in intensive care units (ICU).
3. Gain knowledge of respiratory, cardiovascular, neurological, renal, and metabolic support in critical care.
4. Apply infection control, patient safety, and ethical principles in intensive care practice.
5. Familiarize with recent advances, technologies, and evidence-based approaches in critical care medicine.

COURSE OUTCOMES

Upon successful completion of the course, students will be able to:

1. Perform systematic assessment and monitoring of critically ill patients in ICU settings.
2. Identify and manage common life-threatening conditions and medical emergencies.
3. Assist in airway management, ventilatory support, hemodynamic monitoring, and critical care procedures.
4. Demonstrate knowledge of infection prevention, nutritional support, and multidisciplinary ICU care.
5. Apply ethical, legal, and evidence-based principles in intensive care management.

Theory Syllabus

Unit I – Introduction to Intensive Care (12 hours)

- History and scope of intensive care medicine
- Organization and design of ICU
- Roles and responsibilities of ICU healthcare team
- Principles of critical care and patient monitoring
- ICU admission and discharge criteria
- Basic life support (BLS) and advanced life support (ALS)
- Patient safety and quality assurance in ICU

Unit II – Respiratory and Airway Management (12 hours)

- Airway assessment and management
- Oxygen therapy and humidification
- Mechanical ventilation:
  - Principles
  - Modes
  - Indications
- Arterial blood gas (ABG) interpretation
- Acute respiratory failure and ARDS
- Pulmonary embolism and respiratory emergencies
- Weaning from ventilator and extubation

Unit III – Cardiovascular and Hemodynamic Support (12 hours)

- Hemodynamic monitoring in ICU
- Shock: types, pathophysiology, and management
- Fluid and electrolyte management
- Cardiac arrhythmias and acute coronary syndromes
- Sepsis and septic shock
- Use of vasoactive and inotropic drugs
- Cardiopulmonary resuscitation (CPR) and post-resuscitation care

Unit IV – Neurological, Renal, and Metabolic Critical Care (12 hours)

- Neurological assessment in ICU
- Stroke, seizures, and coma management
- Raised intracranial pressure and head injury care
- Acute kidney injury and renal replacement therapy
- Endocrine emergencies and metabolic disorders
- Nutritional support in critically ill patients
- Pain, sedation, and delirium management

Unit V – Infection Control, Ethics, and Recent Advances (12 hours)

- ICU-acquired infections and prevention
- Antibiotic stewardship in critical care
- Biomedical waste management
- Ethical and legal issues in ICU
- End-of-life care and organ donation
- Point-of-care ultrasound (POCUS) in ICU
- Tele-ICU and digital critical care systems
- Recent advances in intensive care medicine

Reference Textbooks

1. Oh's Intensive Care Manual – Andrew D. Bersten, Neil Soni.
2. Marino's The ICU Book – Paul L. Marino.
3. Textbook of Critical Care – Jean-Louis Vincent, Edward Abraham, Patrick Kochanek et al.
4. Principles of Critical Care – Jesse B. Hall, Gregory A. Schmidt.
5. Irwin and Rippe's Intensive Care Medicine – Richard S. Irwin, James M. Rippe.
6. Oxford Handbook of Critical Care – Mervyn Singer et al.
7. Clinical Procedures in Intensive Care Medicine – John J. Marini et al.
8. Critical Care Medicine: The Essentials – John J. Marini.
9. Manual of ICU Procedures – Nitin Soni.
10. Essentials of Mechanical Ventilation – Dean Hess, Robert Kacmarek.

This course is designed to provide physician associate students with comprehensive knowledge and practical understanding of intensive care principles, critical patient management, and multidisciplinary ICU practice.

Practical Syllabus (30 hours)

1. Basic life support (BLS) and cardiopulmonary resuscitation (CPR) skills
2. Airway management techniques (OPA, NPA, bag-mask ventilation)
3. Assisting in endotracheal intubation and ventilator setup
4. Monitoring of vital signs and ICU patient assessment
5. Arterial blood gas (ABG) sample collection and interpretation
6. Intravenous line insertion and fluid administration
7. Hemodynamic monitoring (CVP, ECG monitoring basics)
8. Infection control practices and ICU asepsis techniques
9. Nutritional support methods (enteral and parenteral feeding assistance)
10. Assisting in common ICU procedures (catheterization, suctioning, wound care)

TRAUMA AND SHOCK L/TP/C 2/-/-/2

COURSE OBJECTIVES

After completion of this course, the student will be able to:

1. Understand the principles of trauma care and emergency management of critically injured patients.
2. Develop competency in the assessment, stabilization, and management of patients with trauma and shock.
3. Gain knowledge of the pathophysiology, classification, and treatment of various types of shock.
4. Apply advanced life support principles, triage systems, and multidisciplinary approaches in trauma care.
5. Familiarize with recent advances in trauma management, critical care, and disaster preparedness.

COURSE OUTCOMES

Upon successful completion of the course, students will be able to:

1. Perform systematic primary and secondary assessment of trauma patients using standard trauma protocols.
2. Identify and manage different types of shock and life-threatening emergencies.
3. Assist in airway management, haemorrhage control, fluid resuscitation, and emergency procedures.
4. Demonstrate knowledge of trauma scoring systems, patient monitoring, and critical care support.
5. Apply ethical, legal, and evidence-based principles in trauma and emergency management.

Theory Syllabus

Unit I – Introduction to Trauma Care (6 hours)

- Epidemiology and principles of trauma management
- Golden hour concept
- Trauma systems and trauma team approach
- Triage and mass casualty management
- Primary survey and secondary survey
- Basic and advanced trauma life support (ATLS)
- Documentation and medico-legal considerations in trauma care

Unit II – Airway, Breathing, and Thoracic Trauma (6 hours)

- Airway assessment and management
- Cervical spine stabilization
- Oxygen therapy and ventilation support
- Chest trauma:
  - Pneumothorax
  - Hemothorax
  - Flail chest
  - Cardiac tamponade
- Respiratory distress and failure
- Emergency thoracic procedures
- Monitoring and transport of trauma patients

Unit III – Haemorrhage, Shock, and Fluid Resuscitation (6 hours)

- Physiology of shock
- Classification of shock:
  - Hypovolemic shock
  - Cardiogenic shock
  - Septic shock
  - Neurogenic shock
  - Anaphylactic shock
- Haemorrhage control techniques
- Fluid therapy and blood transfusion
- Massive transfusion protocols
- Hemodynamic monitoring
- Complications of shock and resuscitation

Unit IV – Head, Spine, Abdominal, and Musculoskeletal Trauma (6 hours)

- Traumatic brain injury and raised intracranial pressure
- Spine injuries and immobilization techniques
- Abdominal trauma and pelvic injuries
- Musculoskeletal trauma and fractures
- Burns and soft tissue injuries
- Compartment syndrome
- Trauma imaging and diagnostic procedures

Unit V – Critical Care, Rehabilitation, and Recent Advances (6 hours)

- Post-trauma intensive care management
- Pain management in trauma patients
- Infection prevention and wound care
- Rehabilitation and physiotherapy after trauma
- Psychological impact of trauma
- Disaster management and emergency preparedness
- Point-of-care ultrasound (FAST/eFAST)
- Damage control surgery and resuscitation
- Recent advances in trauma and shock management

Reference Textbooks

1. ATLS: Advanced Trauma Life Support Student Course Manual – American College of Surgeons.
2. Trauma – Kenneth L. Mattox, Ernest E. Moore, David V. Feliciano.
3. Tintinalli's Emergency Medicine: A Comprehensive Study Guide – Judith E. Tintinalli.
4. Current Diagnosis & Treatment: Surgery – Gerard M. Doherty.
5. Schwartz's Principles of Surgery – F. Charles Brunicardi et al.
6. Bailey & Love's Short Practice of Surgery – Norman S. Williams et al.
7. Oxford Handbook of Emergency Medicine – Jonathan P. Wyatt et al.
8. Emergency Care and Transportation of the Sick and Injured – AAOS.
9. Marino's The ICU Book – Paul L. Marino.
10. Textbook of Critical Care – Jean-Louis Vincent et al.

This course is designed to equip physician associate students with essential knowledge and clinical competencies in trauma assessment, emergency stabilization, shock management, and multidisciplinary critical care.

MEDICAL EDUCATION – II L/T/P/C 1/-/1/2

COURSE OBJECTIVES

6. To provide clinical exposure in surgical settings.
7. To develop skills in patient assessment and management.
8. To train students in basic surgical procedures.
9. To enhance clinical decision-making abilities.
10. To promote professional and ethical practice.

COURSE OUTCOMES

6. Perform clinical examination and case presentation effectively.
7. Assist in surgical procedures and perioperative care.
8. Apply basic surgical skills in clinical practice.
9. Participate in emergency and trauma management.
10. Demonstrate professionalism and teamwork in healthcare.

SYLLABUS (TOTAL HOURS: 30 HOURS)

11. Clinical postings in surgical wards and OPD
12. History taking and physical examination
13. Pre-operative and post-operative care
14. Assisting in minor and major surgeries
15. Operation theatre protocols and asepsis
16. Ward rounds and case discussions
17. Basic surgical skills (suturing, dressing, catheterization)
18. Emergency and trauma care exposure
19. Maintenance of logbook and records
20. Seminars, case presentations, and teaching sessions

SEMESTER – III

S.NO	SUBJECT CODE	SUBJECT	L	T	P	C	Max. Marks		
							INT	EXT	TOTAL
1		Vascular Surgery	3	-	2	5	25	75	100
2		Onco Surgery	3	-	2	5	25	75	100
3		Uro Surgery	3	-	2	5	25	75	100
4		Cardiovascular And Thoracic Surgery	3	-	1	4	25	75	100
5		Ethics, Communication, and Leadership Skills	2	-	-	2	25	75	100
6		Medical Education-III	1	-	1	2	25	75	100
TOTAL			15	-	8	23	150	450	600

VASCULAR SURGERY L/T/P/C 3/-/2/5

COURSE OBJECTIVES

After completion of this course, the student will be able to:

1. Understand the anatomy, physiology, and pathology of the vascular system relevant to surgical practice.
2. Develop knowledge of common vascular disorders, diagnostic methods, and surgical management principles.
3. Gain competency in vascular patient assessment, perioperative care, and postoperative monitoring.
4. Apply principles of vascular emergencies, limb salvage, and preventive vascular care.
5. Familiarize with advances in minimally invasive and endovascular surgical techniques.

COURSE OUTCOMES

Upon successful completion of the course, students will be able to:

1. Explain the pathophysiology, clinical features, and management of common vascular diseases.
2. Perform vascular assessment and assist in diagnostic and therapeutic vascular procedures.
3. Identify vascular emergencies and participate in timely management and patient stabilization.
4. Demonstrate knowledge of perioperative care, anticoagulation, and postoperative vascular monitoring.
5. Apply evidence-based approaches and multidisciplinary care in vascular surgery practice.

Theory Syllabus

Unit I – Introduction to Vascular Surgery **(9 hours)**

- History and scope of vascular surgery
- Anatomy and physiology of arteries, veins, and lymphatics
- Hemodynamics and vascular circulation
- Vascular examination and clinical assessment

- Diagnostic investigations:
  - Doppler ultrasound
  - CT angiography
  - MR angiography
  - Conventional angiography
- Principles of vascular surgical care

Unit II – Arterial Diseases **(9 hours)**

- Peripheral arterial disease (PAD)
- Acute limb ischemia
- Chronic limb ischemia
- Aneurysms:
  - Aortic aneurysm
  - Peripheral aneurysm
- Carotid artery disease
- Mesenteric ischemia
- Diabetic vascular complications
- Principles of arterial reconstruction and bypass surgery

Unit III – Venous and Lymphatic Disorders **(9 hours)**

- Varicose veins and chronic venous insufficiency
- Deep vein thrombosis (DVT)
- Pulmonary embolism
- Venous ulcers and management
- Lymphedema and lymphatic disorders
- Compression therapy and venous interventions
- Endo venous procedures and sclerotherapy

Unit IV – Vascular Emergencies and Perioperative Management **(9 hours)**

- Vascular trauma and haemorrhage control
- Compartment syndrome
- Amputations and limb salvage procedures
- Anticoagulation and thrombolytic therapy
- Preoperative and postoperative vascular care
- Wound care and graft monitoring
- Infection prevention in vascular surgery
- Rehabilitation following vascular procedures

Unit V – Endovascular Surgery and Recent Advances **(9 hours)**

- Principles of endovascular surgery
- Angioplasty and stenting techniques
- Endovascular aneurysm repair (EVAR)
- Hybrid vascular procedures
- Vascular access procedures
- Role of imaging in vascular interventions
- Advances in vascular grafts and biomaterials
- Evidence-based vascular surgical practices and recent updates

Reference Textbooks

1. Rutherford's Vascular Surgery and Endovascular Therapy – Anton N. Sidawy, Bruce A. Perler.
2. Vascular Surgery: Principles and Practice – Samuel E. Wilson.
3. Moore's Vascular and Endovascular Surgery – James C. Stanley et al.
4. Bailey & Love's Short Practice of Surgery – Norman S. Williams et al.
5. Schwartz's Principles of Surgery – F. Charles Brunicardi et al.
6. Handbook of Patient Care in Vascular Surgery – Alexander W. Clowes et al.
7. Essential Vascular Surgery – A. Ross Naylor.
8. Oxford Handbook of Vascular Surgery – Jonathan D. Beard, Peter A. Gaines.
9. Current Diagnosis & Treatment: Surgery – Gerard M. Doherty.

10. Color Atlas of Vascular Diseases – Caroline M. R. G. R. and colleagues.

This course is designed to provide physician associate students with comprehensive knowledge of vascular disorders, surgical principles, endovascular techniques, and multidisciplinary vascular patient care.

Practical Syllabus **(30 hours)**

1. Peripheral vascular examination (pulse assessment, capillary refill, ABI measurement)
2. Assisting in Doppler ultrasound and interpretation basics
3. Preparation and assistance in angiography procedures
4. Identification and management of varicose veins and venous ulcers
5. Application of compression therapy and bandaging techniques
6. Assessment and initial management of DVT and limb ischemia
7. Assisting in vascular surgical procedures (bypass, grafting basics)
8. Postoperative monitoring of vascular patients (graft patency, limb perfusion)
9. Wound care and dressing in vascular cases (ulcers, amputations)
10. Basic understanding and assistance in endovascular procedures (angioplasty, stenting)

ONCO SURGERY L/TP/C 3/-/2/5

COURSE OBJECTIVES

After completion of this course, the student will be able to:

1. Understand the principles of surgical oncology and multidisciplinary cancer management.
2. Develop knowledge of the epidemiology, pathology, diagnosis, and staging of common cancers.
3. Gain competency in perioperative care and assistance during oncological surgical procedures.
4. Apply principles of cancer prevention, screening, rehabilitation, and palliative care.
5. Familiarize with recent advances in oncological surgery, minimally invasive techniques, and targeted therapies.

COURSE OUTCOMES

Upon successful completion of the course, students will be able to:

1. Explain the biological behaviour, staging, and management principles of common malignancies.
2. Perform clinical assessment and assist in diagnostic and therapeutic oncological procedures.
3. Demonstrate knowledge of perioperative management and postoperative care in cancer patients.
4. Identify complications associated with cancer and oncological surgery and participate in patient management.
5. Apply evidence-based and ethical approaches in multidisciplinary cancer care and patient counselling.

Theory Syllabus

Unit I – Introduction to Surgical Oncology **(9 hours)**

- History and scope of surgical oncology
- Cancer epidemiology and carcinogenesis
- Tumor biology and pathology
- Principles of cancer diagnosis and staging
- TNM classification system
- Cancer screening and prevention
- Multidisciplinary approach to cancer management
- Role of Physician Associates in oncology care

Unit II – Principles of Oncological Surgery **(9 hours)**

- Principles of tumor resection and surgical margins
- Biopsy techniques and specimen handling
- Lymph node dissection and sentinel lymph node biopsy
- Reconstruction following cancer surgery
- Surgical management of benign and malignant tumors
- Perioperative care in oncology patients

- Surgical complications and postoperative monitoring
- Infection control and nutritional support in cancer surgery

Unit III – Organ-Specific Onco Surgery **(9 hours)**

- Breast cancer surgery
- Head and neck oncology surgery
- Gastrointestinal oncological surgery
- Hepatobiliary and pancreatic cancers
- Thoracic oncology surgery
- Urological oncology procedures
- Gynecological oncology surgery
- Musculoskeletal and soft tissue tumours

Unit IV – Adjuvant Therapies and Palliative Care **(9 hours)**

- Basics of chemotherapy and targeted therapy
- Principles of radiotherapy
- Immunotherapy in cancer treatment
- Palliative surgical procedures
- Pain management in cancer patients
- End-of-life care and hospice care
- Rehabilitation and psychosocial support
- Ethical and legal issues in oncology care

Unit V – Recent Advances and Emerging Trends **(9 hours)**

- Minimally invasive and robotic oncological surgery
- Image-guided and precision oncology surgery
- Enhanced Recovery After Surgery (ERAS) in oncology
- Molecular diagnostics and personalized medicine
- Cancer genetics and screening technologies
- Advances in reconstructive oncology
- Artificial intelligence in oncology practice
- Evidence-based updates in surgical oncology

Reference Textbooks

1. DeVita, Hellman, and Rosenberg's Cancer: Principles & Practice of Oncology – Vincent T. DeVita Jr. et al.
2. Abeloff's Clinical Oncology – John E. Niederhuber et al.
3. Bailey & Love's Short Practice of Surgery – Norman S. Williams et al.
4. Schwartz's Principles of Surgery – F. Charles Brunicardi et al.
5. Sabiston Textbook of Surgery – Courtney M. Townsend Jr. et al.
6. Oxford Handbook of Oncology – Jim Cassidy et al.
7. Surgical Oncology: Fundamentals, Evidence-Based Approaches and New Technologies – Graeme J. Poston et al.
8. Principles and Practice of Surgical Oncology – David C. Currow and Gregory A. Otterson.
9. AJCC Cancer Staging Manual – American Joint Committee on Cancer.
10. Cancer Surgery – Stephen K. W. Tsao and colleagues.

This course is designed to equip physician associate students with comprehensive knowledge of oncological surgery, multidisciplinary cancer care, perioperative management, and advances in modern oncology practice.

Practical Syllabus **(30 hours)**

1. Clinical examination and staging of common cancers
2. Assisting in biopsy procedures (FNAC, core biopsy, excisional biopsy)
3. Handling and labelling of oncological specimens
4. Preoperative preparation of cancer patients
5. Assisting in common oncological surgeries (breast, GI, head & neck)
6. Postoperative care and monitoring of oncology patients
7. Wound care, drain management, and infection prevention

8. Basics of chemotherapy administration and safety precautions
9. Pain assessment and palliative care support
10. Patient counselling and communication in oncology care

URO SURGERY L/T/P/C
3/-/2/5

COURSE OBJECTIVES

After completion of this course, the student will be able to:

1. Understand the anatomy, physiology, and pathology of the genitourinary system relevant to urological surgery.
2. Develop knowledge of common urological disorders, diagnostic procedures, and surgical management.
3. Gain competency in perioperative care and assistance in urological surgical procedures.
4. Apply principles of emergency management, infection control, and patient safety in urological practice.
5. Familiarize with minimally invasive, endoscopic, and robotic techniques used in modern urological surgery.

COURSE OUTCOMES

Upon successful completion of the course, students will be able to:

1. Explain the etiology, clinical presentation, diagnosis, and management of common urological disorders.
2. Perform urological patient assessment and assist in diagnostic and operative procedures.
3. Demonstrate knowledge of perioperative and postoperative management in urological surgery.
4. Identify and assist in the management of urological emergencies and complications.
5. Apply evidence-based and multidisciplinary approaches in urological surgical care.

Theory Syllabus

Unit I – Introduction to Urological Surgery (9 hours)

- History and scope of urology
- Anatomy and physiology of urinary and male reproductive systems
- Urological history taking and clinical examination
- Diagnostic investigations in urology:
  - Urinalysis
  - Imaging
  - Endoscopy
  - Urodynamic studies
- Principles of urological surgery
- Sterilization and infection control in urology

Unit II – Urological Disorders and Surgical Management (9 hours)

- Urinary tract infections
- Urolithiasis and stone disease
- Benign prostatic hyperplasia (BPH)
- Obstructive uropathy
- Hydronephrosis
- Urethral stricture disease
- Congenital anomalies of the urinary tract
- Principles of reconstructive urological surgery

Unit III – Uro-Oncology and Endourology (9 hours)

- Cancers of kidney, bladder, prostate, and testis
- Principles of uro-oncological surgery
- Haematuria evaluation
- Endoscopic urological procedures
- Cystoscopy and ureteroscopy
- Percutaneous nephrolithotomy (PCNL)
- Transurethral resection procedures

- Laser applications in urology

Unit IV – Urological Emergencies and Perioperative Care (9 hours)

- Acute urinary retention
- Renal trauma and genitourinary injuries
- Testicular torsion and scrotal emergencies
- Catheterization and suprapubic procedures
- Preoperative and postoperative urological care
- Fluid and electrolyte management
- Pain management and wound care
- Complications following urological surgery

Unit V – Advances and Specialized Areas in Uro Surgery (9 hours)

- Laparoscopic and robotic urological surgery
- Renal transplantation and transplant immunology
- Paediatric urology
- Female urology and pelvic floor disorders
- Male infertility and andrology
- Urodynamics and minimally invasive therapies
- Recent advances in imaging and diagnostics in urology
- Evidence-based practices and current updates in urological surgery
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Reference Textbooks

1. Campbell-Walsh-Wein Urology – Alan J. Wein, Louis R. Kavoussi et al.
2. Smith & Tanagho's General Urology – Jack W. McAninch, Tom F. Lue.
3. Hinman's Atlas of Urologic Surgery – Joseph A. Smith Jr.
4. Bailey & Love's Short Practice of Surgery – Norman S. Williams et al.
5. Schwartz's Principles of Surgery – F. Charles Brunicardi et al.
6. Operative Urology at the Cleveland Clinic – Andrew C. Novick et al.
7. Oxford Handbook of Urology – John Reynard, Simon Brewster.
8. Textbook of Operative Urology – Mahesh Desai et al.
9. Clinical Urology Made Easy – Christopher R. Chapple.
10. Current Diagnosis & Treatment: Surgery – Gerard M. Doherty.

This course is designed to provide physician associate students with comprehensive knowledge of urological diseases, operative techniques, perioperative care, and recent advances in urological surgical practice.

Practical Syllabus (30 hours)

1. Urological history taking and physical examination
2. Urine sample collection and basic urinalysis
3. Assisting in catheterization (Foley's and suprapubic catheter)
4. Preparation and assistance in cystoscopy and endoscopic procedures
5. Identification and management of urinary tract infections
6. Assessment and initial management of urological emergencies (retention, torsion)
7. Assisting in urological surgeries (stone removal, prostate procedures)
8. Postoperative care (catheter care, fluid balance monitoring)
9. Wound care and infection control in urology patients
10. Patient education and counselling (catheter care, hygiene, follow-up)

CARDIOVASCULAR AND THORACIC SURGERY L/T/P/C

3/-/1/4

COURSE OBJECTIVES

After completion of this course, the student will be able to:

1. Understand the anatomy, physiology, and pathology of the cardiovascular and thoracic systems relevant to surgical practice.
2. Develop knowledge of common cardiac and thoracic diseases, diagnostic methods, and surgical management principles.
3. Gain competency in perioperative care, monitoring, and assistance during cardiovascular and thoracic surgical procedures.
4. Apply principles of critical care, infection control, and patient safety in cardiothoracic surgical settings.
5. Familiarize with advances in minimally invasive, robotic, and endovascular cardiothoracic procedures.

COURSE OUTCOMES

Upon successful completion of the course, students will be able to:

1. Explain the etiology, clinical presentation, diagnosis, and management of common cardiovascular and thoracic surgical conditions.
2. Perform patient assessment and assist in diagnostic, operative, and postoperative cardiothoracic procedures.
3. Demonstrate knowledge of perioperative monitoring, hemodynamic management, and intensive care support.
4. Identify and assist in the management of cardiothoracic emergencies and surgical complications.
5. Apply evidence-based approaches and multidisciplinary care in cardiovascular and thoracic surgery practice.

Theory Syllabus

Unit I – Introduction to Cardiovascular and Thoracic Surgery (9 hours)

- History and scope of cardiothoracic surgery
- Anatomy and physiology of the heart, lungs, and mediastinum
- Cardiothoracic surgical instrumentation and operation theatre setup
- Diagnostic investigations:
  - ECG
  - Echocardiography
  - Cardiac catheterization
  - Pulmonary function tests
  - CT and MRI imaging
- Principles of cardiopulmonary bypass
- Preoperative assessment and surgical risk evaluation

Unit II – Cardiovascular Surgical Disorders (9 hours)

- Coronary artery disease and coronary artery bypass grafting (CABG)
- Valvular heart diseases and valve surgery
- Congenital heart diseases and corrective procedures
- Aortic aneurysms and dissections
- Peripheral vascular and endovascular procedures
- Cardiac arrhythmias and surgical interventions
- Heart failure and ventricular assist devices
- Cardiac transplantation basics

Unit III – Thoracic Surgical Disorders (9 hours)

- Pleural diseases and thoracic drainage procedures
- Lung tumours and thoracic oncology surgery
- Pneumothorax and thoracic trauma
- Mediastinal disorders
- Esophageal surgical disorders
- Chest wall deformities and reconstruction

- Thoracotomy and video-assisted thoracoscopic surgery (VATS)
- Respiratory complications following thoracic surgery

Unit IV – Perioperative and Critical Care Management **(9 hours)**

- Preoperative preparation in cardiothoracic surgery
- Intraoperative monitoring and anaesthesia considerations
- Hemodynamic monitoring and ventilatory support
- Postoperative ICU care and recovery
- Fluid, electrolyte, and blood management
- Pain management and rehabilitation
- Infection prevention and wound care
- Recognition and management of postoperative complications

Unit V – Recent Advances and Specialized Procedures **(9 hours)**

- Minimally invasive cardiac and thoracic surgery
- Robotic-assisted cardiothoracic surgery
- Endovascular and hybrid procedures
- ECMO (Extracorporeal Membrane Oxygenation)
- Advances in cardiac imaging and diagnostics
- Enhanced Recovery After Surgery (ERAS)
- Artificial intelligence and digital technologies in cardiothoracic surgery
- Evidence-based updates and current trends in cardiovascular and thoracic surgery

Reference Textbooks

1. Sabiston and Spencer Surgery of the Chest – Frank W. Sellke, Pedro J. del Nido, Scott J. Swanson.
2. Kirklin/Barratt-Boyes Cardiac Surgery – David P. Taggart et al.
3. Shields' General Thoracic Surgery – Joseph LoCicero et al.
4. Bailey & Love's Short Practice of Surgery – Norman S. Williams et al.
5. Schwartz's Principles of Surgery – F. Charles Brunicardi et al.
6. Oxford Handbook of Cardiothoracic Surgery – Joanna Chikwe et al.
7. Textbook of Cardiovascular Medicine – Eric J. Topol.
8. Hurst's The Heart – Valentin Fuster et al.
9. General Thoracic Surgery Review and Assessment – Ali I. Musani et al.
10. Current Diagnosis & Treatment: Surgery – Gerard M. Doherty.

This course is designed to equip physician associate students with comprehensive knowledge of cardiovascular and thoracic surgical diseases, perioperative care, critical care management, and modern advancements in cardiothoracic surgery.

Practical Syllabus **(15 hours)**

1. Cardiovascular and respiratory system clinical examination
2. ECG recording and basic interpretation
3. Assisting in echocardiography and cardiac investigations
4. Preparation and assistance in cardiac catheterization procedures
5. Airway management and basic ventilatory support techniques
6. Assisting in chest tube insertion and management (ICD)
7. Preoperative preparation for cardiothoracic surgeries
8. Postoperative monitoring (vital signs, drains, hemodynamic parameters)
9. Infection control and wound care in cardiothoracic patients
10. Assisting in ICU care (ventilator monitoring, basic life support, emergency response)

ETHICS, COMMUNICATION, AND LEADERSHIP SKILLS L/T/P/C
2/-/-/2

COURSE OBJECTIVES

After completion of this course, the student will be able to:

1. Understand the ethical principles, professional values, and responsibilities involved in healthcare practice.
2. Develop effective interpersonal, verbal, non-verbal, and written communication skills in clinical settings.
3. Gain knowledge of leadership principles, teamwork, and healthcare management.
4. Apply ethical decision-making and conflict-resolution strategies in patient care and professional interactions.
5. Foster professionalism, empathy, cultural sensitivity, and lifelong leadership development in healthcare practice.

COURSE OUTCOMES

Upon successful completion of the course, students will be able to:

1. Explain the ethical and legal principles guiding professional healthcare practice.
2. Demonstrate effective communication skills with patients, families, healthcare teams, and the community.
3. Apply leadership and teamwork skills in multidisciplinary healthcare environments.
4. Manage professional conflicts, stress, and ethical dilemmas using appropriate strategies.
5. Exhibit professionalism, accountability, empathy, and patient-centered care in clinical practice.

Theory Syllabus

Unit I – Introduction to Ethics and Professionalism **(6 hours)**

- Definition and scope of ethics in healthcare
- Principles of bioethics:
  - Autonomy
  - Beneficence
  - Non-maleficence
  - Justice
- Professionalism and professional conduct
- Patient rights and responsibilities
- Ethical decision-making models
- Confidentiality and privacy in healthcare
- Cultural competence and respect for diversity

Unit II – Communication Skills in Healthcare **(6 hours)**

- Principles and importance of communication
- Types of communication:
  - Verbal
  - Non-verbal
  - Written
- Effective patient interviewing and counselling
- Communication with critically ill patients and families
- Breaking bad news
- Interprofessional communication and collaboration
- Documentation and medical record communication
- Barriers to communication and strategies for improvement

Unit III – Leadership and Teamwork **(6 hours)**

- Concepts and theories of leadership
- Leadership styles in healthcare
- Team dynamics and multidisciplinary teamwork
- Decision-making and problem-solving skills
- Time management and organizational skills
- Motivation and delegation
- Healthcare management and administration basics

- Role of Physician Associates as healthcare leaders

Unit IV – Ethical and Professional Challenges **(6 hours)**

- Ethical dilemmas in clinical practice
- Informed consent and patient autonomy
- Professional boundaries and accountability
- Conflict management and negotiation skills
- Stress management and emotional intelligence
- Workplace ethics and professional behaviour
- Medico-legal responsibilities in communication
- Ethics in research and healthcare technology

Unit V – Leadership Development and Recent Trends **(6 hours)**

- Leadership in patient safety and quality improvement
- Communication in emergency and critical care settings
- Public speaking and presentation skills
- Health education and community leadership
- Digital communication and telemedicine etiquette
- Evidence-based leadership practices
- Emerging trends in healthcare leadership
- Lifelong learning and professional development

Reference Textbooks

1. Medical Ethics – C.M. Francis.
2. Principles of Biomedical Ethics – Tom L. Beauchamp, James F. Childress.
3. Communication Skills for Medicine – Margaret Lloyd, Robert Bor.
4. Skills for Communicating with Patients – Jonathan Silverman, Suzanne Kurtz, Juliet Draper.
5. Oxford Handbook of Medical Ethics and Law – Hope, Savulescu, Hendrick.
6. Leadership and Management in Nursing and Health Care – Elaine Sorensen Marshall, Patricia Kelly.
7. Emotional Intelligence – Daniel Goleman.
8. The Leadership Challenge – James Kouzes, Barry Posner.
9. Professionalism in Healthcare – Jill Thistlethwaite, Spencer Johnson.
10. Interpersonal Relationships: Professional Communication Skills for Nurses – Arnold & Boggs.

This course is designed to strengthen ethical reasoning, professional communication, leadership abilities, and collaborative healthcare skills among physician associate students for effective patient-centred practice.

MEDICAL EDUCATION – III

L/T/P/C
1/-/1/2

COURSE OBJECTIVES

11. To provide clinical exposure in surgical settings.
12. To develop skills in patient assessment and management.
13. To train students in basic surgical procedures.
14. To enhance clinical decision-making abilities.
15. To promote professional and ethical practice.

COURSE OUTCOMES

11. Perform clinical examination and case presentation effectively.
12. Assist in surgical procedures and perioperative care.
13. Apply basic surgical skills in clinical practice.
14. Participate in emergency and trauma management.
15. Demonstrate professionalism and teamwork in healthcare.

SYLLABUS (TOTAL HOURS: 30 HOURS)

21. Clinical postings in surgical wards and OPD
22. History taking and physical examination
23. Pre-operative and post-operative care
24. Assisting in minor and major surgeries
25. Operation theatre protocols and asepsis
26. Ward rounds and case discussions
27. Basic surgical skills (suturing, dressing, catheterization)
28. Emergency and trauma care exposure
29. Maintenance of logbook and records
30. Seminars, case presentations, and teaching sessions

SEMESTER – IV

S.NO	SUBJECT CODE	SUBJECT	L	T	P	C	Max. Marks		
							INT	EXT	TOTAL
1		Neurosurgery	4	-	2	6	25	75	100
2		Orthopedic Surgery	4	-	2	6	25	75	100
3		Pediatric Surgery	3	-	2	5	25	75	100
4		Hepatobiliary Surgery	3	-	1	4	25	75	100
5		Medical Education - IV	1	-	1	2	25	75	100
TOTAL			15	-	8	23	125	375	500

NEUROSURGERY

L/T/P/C
4/-/2/6

COURSE OBJECTIVES

After completion of this course, the student will be able to:

1. Understand the anatomy, physiology, and pathology of the central and peripheral nervous systems relevant to neurosurgical practice.
2. Develop knowledge of common neurosurgical disorders, diagnostic modalities, and management principles.
3. Gain competency in neurological assessment, perioperative care, and assistance during neurosurgical procedures.
4. Apply principles of neurocritical care, patient safety, infection prevention, and rehabilitation in neurosurgical settings.
5. Familiarize with recent advances in microsurgery, minimally invasive neurosurgery, neuroimaging, and neurotechnology.

COURSE OUTCOMES

Upon successful completion of the course, students will be able to:

1. Explain the etiology, clinical features, diagnosis, and management of common neurosurgical conditions.
2. Perform neurological evaluation and assist in diagnostic and therapeutic neurosurgical procedures.
3. Demonstrate knowledge of perioperative and postoperative care of neurosurgical patients.
4. Identify neurosurgical emergencies and participate in emergency stabilization and critical care management.
5. Apply evidence-based and multidisciplinary approaches in neurosurgical patient care.

Theory Syllabus

Unit I – Introduction to Neurosurgery **(12 hours)**

- History and scope of neurosurgery
- Functional neuroanatomy and neurophysiology
- Neurological history taking and examination
- Principles of neuroimaging:
  - CT scan
  - MRI
  - Angiography
  - Functional imaging
- Neurosurgical instrumentation and operating room setup
- Sterilization, infection control, and patient safety
- Principles of neurocritical care

Unit II – Cranial Neurosurgery **(12 hours)**

- Traumatic brain injury and head trauma
- Intracranial hematomas:
  - Epidural hematoma
  - Subdural hematoma
  - Intracerebral haemorrhage
- Brain tumours and principles of surgical oncology
- Hydrocephalus and CSF diversion procedures
- Cerebrovascular disorders:
  - Aneurysms
  - Arteriovenous malformations
- Raised intracranial pressure and cerebral oedema
- Cranial surgical procedures and postoperative care

Unit III – Spinal Neurosurgery **(12 hours)**

- Anatomy and physiology of the spinal cord and vertebral column
- Degenerative spine disorders
- Intervertebral disc prolapses and spinal stenosis
- Spinal trauma and spinal cord injury
- Spinal tumours and infections
- Congenital spinal anomalies
- Principles of spinal stabilization and instrumentation
- Rehabilitation following spinal surgery

Unit IV – Peripheral Nerve and Functional Neurosurgery **(12 hours)**

- Peripheral nerve injuries and repair
- Entrapment neuropathies
- Trigeminal neuralgia and facial pain syndromes
- Epilepsy surgery
- Functional neurosurgery and movement disorders
- Deep brain stimulation (DBS)
- Stereotactic and radio surgical procedures
- Neurophysiological monitoring in surgery

Unit V – Recent Advances and Specialized Neurosurgery **(12 hours)**

- Microsurgical techniques and operating microscope
- Endoscopic neurosurgery
- Minimally invasive spine surgery
- Neuronavigation and image-guided surgery

- Robotic-assisted neurosurgery
- Neurointensive care and advanced monitoring
- Artificial intelligence and digital technologies in neurosurgery
- Evidence-based neurosurgical practices and recent updates

Reference Textbooks

1. Youmans and Winn Neurological Surgery – H. Richard Winn.
2. Greenberg's Handbook of Neurosurgery – Mark S. Greenberg.
3. Schmidek and Sweet: Operative Neurosurgical Techniques – Alfredo Quiñones-Hinojosa.
4. Principles of Neurological Surgery – Richard G. Ellenbogen et al.
5. Adams and Victor's Principles of Neurology – Allan H. Ropper et al.
6. Merritt's Neurology – Elan D. Louis, Stephan A. Mayer.
7. Clinical Neuroanatomy – Richard S. Snell.
8. Bailey & Love's Short Practice of Surgery – Norman S. Williams et al.
9. Oxford Handbook of Neurology – Hadi Manji et al.
10. Handbook of Neurosurgery – Mark S. Greenberg.

This course is designed to provide physician associate students with comprehensive knowledge of neurosurgical disorders, perioperative management, neurocritical care, and modern neurosurgical technologies required for multidisciplinary neurosurgical practice.

Practical Syllabus **(30 hours)**

1. Neurological history taking and detailed clinical examination
2. Assessment of Glasgow Coma Scale (GCS) and level of consciousness
3. Assisting in neuroimaging procedures (CT, MRI basics interpretation)
4. Preoperative preparation of neurosurgical patients
5. Assisting in neurosurgical procedures (cranial and spinal surgeries)
6. Monitoring of intracranial pressure (ICP) and neurological status
7. Postoperative care (neuro-observation, wound and drain care)
8. Basic management of neurosurgical emergencies (head injury, seizures)
9. Infection control and aseptic techniques in neurosurgery
10. Rehabilitation support and patient counselling in neurological conditions

ORTHOPAEDIC SURGERY L/TP/C 4/-/2/6

COURSE OBJECTIVES

After completion of this course, the student will be able to:

1. Understand the anatomy, physiology, biomechanics, and pathology of the musculoskeletal system relevant to orthopaedic surgery.
2. Develop knowledge of common orthopaedic disorders, trauma, diagnostic procedures, and surgical management principles.
3. Gain competency in orthopaedic patient assessment, perioperative care, and assistance during orthopaedic procedures.
4. Apply principles of fracture management, rehabilitation, infection control, and patient safety in orthopaedic practice.
5. Familiarize with recent advances in minimally invasive orthopaedic surgery, arthroscopy, joint replacement, and orthopaedic technologies.

COURSE OUTCOMES

Upon successful completion of the course, students will be able to:

1. Explain the etiology, clinical presentation, diagnosis, and management of common orthopaedic conditions and injuries.
2. Perform musculoskeletal assessment and assist in orthopaedic diagnostic and operative procedures.
3. Demonstrate knowledge of fracture management, immobilization techniques, and postoperative orthopaedic care.
4. Identify orthopaedic emergencies and participate in emergency stabilization and trauma management.
5. Apply evidence-based and multidisciplinary approaches in orthopedic surgical care and

rehabilitation.

Theory Syllabus

Unit I – Introduction to Orthopaedic Surgery **(12 hours)**

- History and scope of orthopaedics
- Anatomy and physiology of bones, joints, muscles, and ligaments
- Biomechanics of the musculoskeletal system
- Orthopaedic history taking and physical examination
- Imaging in orthopaedics:
  - X-ray
  - CT
  - MRI
  - Bone scan
- Principles of orthopaedic surgery
- Sterilization, infection control, and operation theatre protocols

Unit II – Fractures and Trauma Management **(12 hours)**

- Classification of fractures
- Principles of fracture healing
- Initial management of trauma patients
- Splints, casts, and traction methods
- Open and closed reduction techniques
- Internal and external fixation devices
- Complications of fractures
- Polytrauma and damage control orthopaedics

Unit III – Common Orthopaedic Disorders **(12 hours)**

- Osteoarthritis and rheumatoid arthritis
- Osteomyelitis and bone infections
- Metabolic bone diseases
- Congenital and developmental disorders
- Spine disorders and deformities
- Sports injuries and soft tissue trauma
- Hand and foot orthopaedic conditions
- Bone tumours and musculoskeletal oncology

Unit IV – Orthopaedic Surgical Procedures and Rehabilitation **(12 hours)**

- Arthroscopy and minimally invasive procedures
- Joint replacement surgery
- Spine surgery principles
- Paediatric orthopaedic procedures
- Amputations and prosthetics
- Preoperative and postoperative orthopaedic care
- Physiotherapy and rehabilitation
- Pain management and patient education

Unit V – Recent Advances and Specialized Orthopaedics **(12 hours)**

- Robotic and computer-assisted orthopaedic surgery
- Regenerative medicine and stem cell therapy
- Ortho biologics and tissue engineering
- Advanced trauma care and navigation systems
- 3D printing in orthopaedics
- Enhanced Recovery After Surgery (ERAS)
- Evidence-based orthopaedic practices
- Current trends and recent updates in orthopaedic surgery

Reference Textbooks

1. Campbell's Operative Orthopaedics – Frederick M. Azar et al.
2. Apley & Solomon's System of Orthopaedics and Trauma – Louis Solomon et al.

3. Rockwood and Green's Fractures in Adults – Charles M. Court-Brown et al.
4. Turek's Orthopaedics: Principles and Their Application – Stuart L. Weinstein, Joseph A. Buckwalter.
5. Bailey & Love's Short Practice of Surgery – Norman S. Williams et al.
6. Schwartz's Principles of Surgery – F. Charles Brunicardi et al.
7. Oxford Handbook of Orthopaedics and Trauma – Gavin Bowden, Michael R. Thomas.
8. Clinical Orthopaedic Examination – Ronald McRae.
9. Essentials of Musculoskeletal Care – American Academy of Orthopaedic Surgeons (AAOS).
10. Textbook of Orthopaedics and Trauma – G.S. Kulkarni.

This course is designed to equip physician associate students with comprehensive knowledge of orthopaedic diseases, musculoskeletal trauma, operative principles, rehabilitation, and modern advancements in orthopaedic surgical practice.

Practical Syllabus **(30 hours)**

1. Musculoskeletal history taking and clinical examination
2. Identification and interpretation of basic orthopaedic imaging (X-ray)
3. Application of splints, casts, and immobilization techniques
4. Assisting in fracture reduction (closed reduction basics)
5. Preparation and assistance in orthopaedic surgeries (ORIF, arthroscopy)
6. Traction methods and maintenance (skin and skeletal traction)
7. Wound care and dressing in orthopaedic patients
8. Postoperative care and rehabilitation exercises
9. Assessment and initial management of orthopaedic emergencies (fractures, dislocations)
10. Infection control and OT aseptic techniques in orthopaedics

PAEDIATRIC SURGERY

L/T/P/C
3/-/2/5

COURSE OBJECTIVES

After completion of this course, the student will be able to:

1. Understand the anatomy, physiology, and surgical conditions unique to infants, children, and adolescents.
2. Develop knowledge of common congenital and acquired paediatric surgical disorders and their management.
3. Gain competency in paediatric patient assessment, perioperative care, and assistance during paediatric surgical procedures.
4. Apply principles of paediatric anaesthesia, nutrition, infection control, and postoperative care in children.
5. Familiarize with recent advances in minimally invasive paediatric surgery and multidisciplinary paediatric surgical care.

COURSE OUTCOMES

Upon successful completion of the course, students will be able to:

1. Explain the etiology, clinical features, diagnosis, and management of common paediatric surgical conditions.
2. Perform paediatric surgical assessment and assist in diagnostic and operative procedures.
3. Demonstrate knowledge of perioperative and postoperative care in paediatric surgical patients.
4. Identify paediatric surgical emergencies and participate in timely stabilization and management.
5. Apply evidence-based and child-centred approaches in paediatric surgical care and rehabilitation.

Theory Syllabus

Unit I – Introduction to paediatric Surgery **(9 hours)**

- History and scope of paediatric surgery
- Growth and development relevant to surgery
- Anatomical and physiological differences in children
- Paediatric history taking and clinical examination
- Fluid, electrolyte, and nutritional management in children
- Paediatric anaesthesia considerations
- Ethical and legal issues in paediatric surgical care

Unit II – Congenital Anomalies and Neonatal Surgery (9 hours)

- Principles of neonatal surgical care
- Congenital anomalies of:
  - Gastrointestinal tract
  - Respiratory system
  - Genitourinary system
- Tracheoesophageal fistula and oesophageal atresia
- Congenital diaphragmatic hernia
- Anorectal malformations
- Hirschsprung disease
- Neonatal intestinal obstruction and abdominal wall defects

Unit III – Paediatric General Surgical Disorders (9 hours)

- Paediatric hernias and hydrocele
- Acute abdomen in children
- Appendicitis in paediatric patients
- Intussusception and pyloric stenosis
- Paediatric trauma and burns
- Soft tissue infections and abscesses
- Paediatric tumours and oncology basics
- Urological disorders in children

Unit IV – Paediatric Orthopaedic, Thoracic, and Neurosurgical Conditions (9 hours)

- Congenital orthopaedic deformities
- Fractures and musculoskeletal injuries in children
- Paediatric thoracic surgical disorders
- Paediatric neurosurgical conditions:
  - Hydrocephalus
  - Neural tube defects
  - Brain tumours
- Airway management and respiratory care in paediatric surgery
- Rehabilitation and physiotherapy in paediatric patients

Unit V – Advances and Specialized Areas in Paediatric Surgery (9 hours)

- Minimally invasive and laparoscopic paediatric surgery
- Paediatric endoscopy and interventional procedures
- Paediatric transplant surgery basics
- Neonatal and paediatric intensive care
- Pain management in children
- Family-centered care and counselling
- Advances in paediatric surgical technology
- Evidence-based practices and recent updates in paediatric surgery

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Reference Textbooks

1. Ashcraft's Paediatric Surgery – George W. Holcomb III, J. Patrick Murphy.
2. Paediatric Surgery – Arnold G. Coran et al.
3. Operative Paediatric Surgery – Lewis Spitz, Arnold Coran.
4. Nelson Textbook of Paediatrics – Robert M. Kliegman et al.
5. Bailey & Love's Short Practice of Surgery – Norman S. Williams et al.
6. Schwartz's Principles of Surgery – F. Charles Brunicardi et al.
7. Oxford Handbook of Paediatric Surgery – Peter J. Turnock, Mark Davenport.
8. Paediatric Surgery Digest – Michael E. Höllwarth et al.

9. Clinical Paediatric Surgery – Sherif Emil.
10. Principles and Practice of Paediatric Surgery – Keith T. Oldham et al.

This course is designed to provide physician associate students with comprehensive knowledge of paediatric surgical disorders, perioperative paediatric care, neonatal emergencies, and advances in modern paediatric surgical practice.

Practical Syllabus **(30 hours)**

1. Paediatric history taking and age-appropriate clinical examination
2. Growth assessment and vital signs monitoring in infants and children
3. Interpretation of basic paediatric imaging (X-ray, ultrasound)
4. Preoperative preparation of paediatric patients
5. Assisting in common paediatric surgical procedures (hernia repair, appendectomy)
6. Neonatal care: handling, resuscitation basics, and thermal regulation
7. Fluid and electrolyte management in paediatric patients
8. Wound care, dressing, and infection control in children
9. Postoperative care and monitoring in paediatric surgical patients
10. Identification and initial management of paediatric surgical emergencies

HEPATOBILIARY SURGERY L/TP/C 3/-/1/4

COURSE OBJECTIVES

After completion of this course, the student will be able to:

1. Understand the anatomy, physiology, and pathology of the liver, gallbladder, biliary tract, and pancreas relevant to hepatobiliary surgery.
2. Develop knowledge of common hepatobiliary disorders, diagnostic methods, and surgical management principles.
3. Gain competency in perioperative assessment, surgical assistance, and postoperative care of hepatobiliary surgical patients.
4. Apply principles of infection control, nutritional support, and critical care in hepatobiliary surgery.
5. Familiarize with minimally invasive, endoscopic, and advanced hepatopancreatobiliary surgical techniques.

COURSE OUTCOMES

Upon successful completion of the course, students will be able to:

1. Explain the etiology, clinical presentation, diagnosis, and management of common hepatobiliary and pancreatic disorders.
2. Perform patient assessment and assist in diagnostic and operative hepatobiliary procedures.
3. Demonstrate knowledge of perioperative and postoperative management in hepatobiliary surgery.
4. Identify hepatobiliary emergencies and participate in patient stabilization and multidisciplinary management.
5. Apply evidence-based and patient-centred approaches in hepatobiliary surgical care.

Theory Syllabus

Unit I – Introduction to Hepatobiliary Surgery **(9 hours)**

- History and scope of hepatobiliary surgery
- Surgical anatomy and physiology of:
  - Liver
  - Gallbladder
  - Biliary tract
  - Pancreas
- Hepatic blood supply and portal circulation
- Hepatobiliary history taking and clinical examination
- Diagnostic investigations:

  - Liver function tests
  - Ultrasound
  - CT scan
  - MRI/MRCP
  - ERCP
- Principles of hepatobiliary surgical care

Unit II – Gallbladder and Biliary Tract Disorders **(9 hours)**

- Cholelithiasis and cholecystitis
- Obstructive jaundice
- Choledocholithiasis
- Cholangitis
- Benign biliary strictures
- Gallbladder carcinoma
- Cholangiocarcinoma
- Laparoscopic cholecystectomy and biliary drainage procedures

Unit III – Liver Disorders and Hepatic Surgery **(9 hours)**

- Liver abscess and cystic diseases
- Benign liver tumours
- Hepatocellular carcinoma
- Metastatic liver disease
- Portal hypertension and its surgical management
- Liver trauma and hepatic resection
- Principles of liver transplantation
- Postoperative liver care and complications

Unit IV – Pancreatic Surgery and Critical Care **(9 hours)**

- Acute and chronic pancreatitis
- Pancreatic cysts and pseudocysts
- Pancreatic tumours and periampullary cancers
- Whipple's procedure and pancreatic resections
- Nutritional support in hepatopancreatobiliary surgery
- Fluid and electrolyte management
- Infection prevention and ICU care
- Pain management and rehabilitation

Unit V – Advances and Specialized Hepatobiliary Procedures **(9 hours)**

- Minimally invasive hepatobiliary surgery
- Robotic-assisted hepatobiliary procedures
- Endoscopic and interventional radiological techniques
- Enhanced Recovery After Surgery (ERAS)
- Hepatobiliary oncology and multidisciplinary management
- Artificial liver support systems
- Advances in transplant surgery and immunosuppression
- Evidence-based practices and recent updates in hepatobiliary surgery

Reference Textbooks

1. Blumgart's Surgery of the Liver, Biliary Tract and Pancreas – William R. Jarnagin.
2. Shackelford's Surgery of the Alimentary Tract – Charles J. Yeo.
3. Mastery of Surgery – Josef E. Fischer.
4. Sabiston Textbook of Surgery – Courtney M. Townsend Jr. et al.
5. Schwartz's Principles of Surgery – F. Charles Brunicardi et al.
6. Bailey & Love's Short Practice of Surgery – Norman S. Williams et al.
7. Oxford Handbook of Hepatobiliary and Pancreatic Surgery – Marco Del Chiaro et al.
8. Hepatobiliary and Pancreatic Surgery – Rowan W. Parks et al.
9. Current Diagnosis & Treatment: Surgery – Gerard M. Doherty.
10. Textbook of Hepato-Pancreato-Biliary Surgery – Graeme J. Poston et al.

This course is designed to equip physician associate students with comprehensive knowledge of hepatobiliary and pancreatic surgical disorders, perioperative management, critical care, and modern advancements in hepatopancreatobiliary surgery.

Practical Syllabus **(15 hours)**

1. Hepatobiliary history taking and focused clinical examination
2. Interpretation of liver function tests (LFTs) and coagulation profile
3. Interpretation of imaging (ultrasound, CT, MRCP) in hepatobiliary diseases
4. Preoperative preparation of hepatobiliary surgical patients
5. Assisting in procedures (laparoscopic cholecystectomy, ERCP basics)
6. Sterile techniques and OT assistance in hepatobiliary surgeries
7. Postoperative monitoring (drains, vitals, complications like bile leak)
8. Nutritional assessment and support in liver and pancreatic disorders
9. Fluid and electrolyte management in hepatobiliary patients
10. Identification and initial management of hepatobiliary emergencies (acute pancreatitis, cholangitis, obstructive jaundice)

MEDICAL EDUCATION – IV L/T/P/C 1/-/1/2

COURSE OBJECTIVES

1. To provide clinical exposure in surgical settings.
2. To develop skills in patient assessment and management.
3. To train students in basic surgical procedures.
4. To enhance clinical decision-making abilities.
5. To promote professional and ethical practice.

COURSE OUTCOMES

1. Perform clinical examination and case presentation effectively.
2. Assist in surgical procedures and perioperative care.
3. Apply basic surgical skills in clinical practice.
4. Participate in emergency and trauma management.
5. Demonstrate professionalism and teamwork in healthcare.

SYLLABUS (TOTAL HOURS: 30 HOURS)

1. Clinical postings in surgical wards and OPD
2. History taking and physical examination
3. Pre-operative and post-operative care
4. Assisting in minor and major surgeries
5. Operation theatre protocols and asepsis
6. Ward rounds and case discussions
7. Basic surgical skills (suturing, dressing, catheterization)
8. Emergency and trauma care exposure
9. Maintenance of logbook and records
10. Seminars, case presentations, and teaching sessions