Program and Course Structure

School of Medical Science and Research

MS (surgery)

Session: 2020-23

1. Standard Structure of the Program at University Level

1.1 Vision, Mission and Core Values of the University

Vision of the University

To serve the society by being a global University of higher learning in pursuit of academic excellence, innovation and nurturing entrepreneurship.

Mission of the University

1. Transformative educational experience
2. Enrichment by educational initiatives that encourage global outlook
3. Develop research, support disruptive innovations and accelerate entrepreneurship
4. Seeking beyond boundaries

Core Values

- Integrity
- Leadership
- Diversity
- Community

Vision of the School

To serve the society by being a premier institute that promotes a comprehensive approach to human health through excellence inacademics, research and clinical care

Mission of the School

- Provide a transformative educational experience in Medical Science
- Develop skills and competencies to create global leaders in clinical care
- Promote innovative and collaborative research through intellectual and technological advancement
- Establish a center for excellence in preventive, promotive and curative health care

Core Values

- Integrity
- Leadership
- Ethics
- Community Health

1.3 Program Educational Objectives (PEO)

1.3.1 Writing Program Educational Objectives (PEO)

Program educational objectives are broad statements that describe the career and professional accomplishments that the program is preparing graduates to achieve.

Program educational Objectives

A post graduate student upon successfully qualifying in the MS(Surgery)examination should be able to:

1. diagnose and appropriately manage common surgical ailments in a given situation.
2. provide adequate preoperative, post-operative and follow-up care of surgical patients.
3. identify situations calling for urgent or early surgical intervention and refer at the optimum time to the appropriate centers.
4. counsel and guide patients and relatives regarding need, implications and problems of surgery in the individual patient.
5. provide and coordinate emergency resuscitative measures in acute surgical situations including trauma.,organize and conduct relief measures in situations of mass disaster including triage and effectively participate in the National Health Programs especially in the Family Welfare Programs.
6. discharge effectively medico-legal and ethical responsibilities and practice his specialty ethically and must learn to obtain informed consent prior to performance of operative procedure and perform surgical audit on a regular basis and maintain records (manual and/or electronic) for life.
7. update knowledge in recent advances and newer techniques in the management of the patients and participate regularly in departmental academic activities by presenting

Seminar, Case discussion, Journal Club and Topic discussion on weekly basis and maintain logbook.

8. know the basic concepts of research methodology, plan a research project and know how to consult library and should have basic knowledge of statistics.
9. learn the basic methodology of teaching and develop competence in teaching medical/paramedical students.

1.3.2 Map PEOs with Mission Statements:

PEO Statements	**Mission 1** Provide a transformative educational experience in Medical Science	**Mission 2** Develop skills and competencies to create global leaders in clinical care	**Mission 3** Promote innovative and collaborative research through intellectual and technological advancement	**Mission 4** Establish a center for excellence in preventive, promotive and curative health care
PEO1: diagnose and appropriately manage common surgical ailments in a given situation.	**3**	**3**	**3**	**3**
PEO2. provide adequate preoperative, post-operative and follow-up care of surgical patients	**3**	**3**	**3**	**3**

PEO3. identify situations calling for urgent or early surgical intervention and refer at the optimum time to the appropriate centers.	**3**	**3**	**3**	**3**
PE04: counsel and guide patients and relatives regarding need, implications and problems of surgery in the individual patient.	**3**	**3**	**3**	**3**
PEO5: Acquire skills in conducting collaborative research in the field of Microbiology with allied sciences	**3**	**3**	**3**	**3**
PEO6: provide and coordinate emergency resuscitative measures in acute surgical situations including trauma.,organize and conduct relief measures in situations of mass disaster including triage and effectively participate	**3**	**3**	**3**	**3**

in the National Health Programs especially in the Family Welfare Programs				
PEO7: update knowledge in recent advances and newer techniques in the management of the patients and participate regularly in departmental academic activities by presenting Seminar, Case discussion, Journal Club and Topic discussion on weekly basis and maintain logbook.	**3**	**3**	**3**	**3**
PEO8: know the basic concepts of research methodology, plan a research project and know how to consult library and should have basic knowledge of statistics.	**3**	**3**	**3**	**3**
PEO9: learn the basic methodology of teaching and develop	**3**	**3**	**3**	**2**

competence in teaching medical/paramedical students				
PE)10: develop an attitude of cooperation with colleagues nd Provide appropriate care that is ethical, compassionate, responsive	**3**	**3**	**3**	**3**

Enter correlation levels 1, 2, or 3 as defined below:

1. **Slight (Low)** **2. Moderate (Medium)** **3. Substantial (High)**

If there is no correlation, put "-"

1.3.2 Program Outcomes (PO's)

1. **Cognitive Domain**

At the end of the course, the student should have acquired knowledge in the following theoretical competencies:

PO1: Demonstrate knowledge of the bedside procedures and latest diagnostics and therapeutics available.

PO2: Describe aetoiology, pathophysiology, principles of diagnosis and management of common surgical problems including emergencies, in adults and children.

PO3: Demonstrate the theoretical knowledge to choose, and interpret appropriate diagnostic and therapeutic imaging including ultrasound, Mammogram, CT scan, MRI.

PO4:Demonstrate the knowledge of ethics, medico-legal aspects, communication skills and leadership skills. The PG student should be able to provide professional services with empathy and humane approach

B Affective domain

At the end of the course, the student should have acquired knowledge in the following theoretical competencies

PO5:Should be able to function as a part of a team, develop an attitude of cooperation with colleagues, and interact with the patient and the clinician or other colleagues to provide the best possible diagnosis or opinion.

PO6:Always adopt ethical principles and maintain proper etiquette in dealings with patients, relatives and other health personnel and to respect the rights of the patient including the right to information and second opinion.

PO7:Develop communication skills to word reports, obtain a proper relevant history and professional opinion as well as to interact with patients, relatives, peers and paramedical staff, and for effective teaching.

PO8:Provide appropriate care that is ethical, compassionate, responsive and cost effective and in conformation with statutory rules.

C**. Psychomotor Domain**

The student should be able to perform independently the following:

PO9:clinical examination including internal examinations and examinations of all organs/systems in adults and children and Write a complete case record with all necessary details. And proper discharge summary

PO10:Arrive at a logical working diagnosis / differential diagnosis after clinical examination. And Order appropriate investigations keeping in mind their relevance (need based). Choose, perform and interpret appropriate imaging in trauma - ultrasound FAST (Focused Abdominal Sonography in Trauma).
PO11:Perform minor operative procedures and common general surgical operations independently and the major procedures under guidance. Perform minimally invasive surgery in appropriate clinical settings. Must have undergone basic training in operative laparoscopy related to general and GI Surgery
PO12:Provide basic and advanced life saving support services in emergency situations and Undertake complete patient monitoring including the preoperative and post operative care of the patient.

At the end of the program, the student should have acquired following competencies(PSOs):

1.3.4 Mapping of Program Outcome Vs Program Educational Objectives

	PEO1	PEO2	PEO3	PEO4	PEO5	PEO6	PEO7	PEO8	PEO9	PEO10
PO1	3	3	3	3	3	3	3	3	3	-
PO2	3	3	3	3	3	3	3	3	3	-
PO3	3	2	3	3	3	3	2	3	2	-
PO4	1	3	1	3	1	3	-	-	-	-
PO5	-	-	-	3	-	-	-	-	-	3
PO6	-	-	-	3	-	-	-	-	-	3
PO7	-	-	-	3	-	-	-	-	-	3
PO8	-	-	-	3	-	-	-	-	-	3
PO9	3	3	3	3	3	3	1	1	1	-
PO10	3	3	3	3	3	3	3	3	3	-
PO11	3	3	3	3	3	3	1	1	1	-
PO12	3	3	3	3	3	3	1	1	1	-

Syllabus

Course Contents: No limit can be fixed and no fixed number of topics can be prescribed as course contents. She/he is expected to know the subject in depth, however, emphasis should be on the diseases/health problems most prevalent in that area. Knowledge of recent advances and basic sciences as applicable to his/her specialty should get high priority.

Competence in surgical skills commensurate with the specialty (actual hands - on training) must be ensured.

1. General topics: A student should have fair knowledge of basic sciences (Anatomy, Physiology, Biochemistry, Microbiology, Pathology and Pharmacology) as applied to his specialty. Further, the student should acquire in-depth knowledge of his subject including recent advances and should be fully conversant with the bedside procedures (diagnostic and therapeutic) and having knowledge of latest diagnostics and therapeutics available. 1. History of medicine with special reference to ancient Indian texts 2. Health economics - basic terms, health insurance 3. Medical sociology, doctor-patient relationship, family adjustments in disease, organizational behavior, conflict resolution 4. Computers - record keeping, computer aided learning, virtual reality, robotics 5. Hazards in hospital and protection: AIDS, hepatitis B, tuberculosis, radiation, psychological 6. Environment protection - bio-medical waste management 7. Surgical audit, evidence based surgical practice, quality assurance 8. Concept of essential drugs and rational use of drugs 9. Procurement of stores and material & personal management 5 10. Research methodology - library consultation, formulating research, selection of topic, writing thesis protocol, preparation of consent form from patients 11. Bio-medical statistics, clinical trials 12. Medical ethics 13. Consumer protection 14. Newer antibiotics 15. Problem of resistance. 16. Sepsis - SIRS 17. Nosocomial infection 18. Advances in imaging technologies 19. Disaster management, mass casualties, Triage 20. O.T. design, technologies, equipment 21. Critical care in surgical practice 22. Response to trauma 23. Wound healing 24. Fluid and electrolyte balance 25. Nutrition 26. Blood transfusion 27. Brain death 28. Cadaveric organ retrieval 1.

2. Systemic Surgery The student must acquire knowledge in the following important topics are but teaching should not be limited to these topics. A standard text-book may be followed, which will also identify the level of learning expected of the trainees. • Wound healing including recent advances • Asepsis, antisepsis, sterilization and universal precaution • Surgical knots, sutures, drains, bandages and splints • Surgical infections, causes of infections, prevention • Common aerobic and anaerobic organisms and newer organisms causing infection including Helicobacter Pylori • Tetanus, gas gangrene treatment & prevention • Chronic specific infections TB, Filariasis • Boils, cellulites, abscess, narcotizing fascitis and synergistic infection • Antibiotic therapy rationale including antibiotic prophylaxis, misuse, abuse • Hospital acquired nosocomial infection causes and prevention including MRSA etc. • HIV, AIDS and Hepatitis B & C, Universal precautions when dealing with patients suffering from these diseases • Fluid and electrolyte balance including acid – base disturbance, consequences, 6 interpretation of blood gas analysis data and management • Rhabdomyolysis and prevention of renal failure • Shock (septicaemic, hypovolaemic, Neurogenic, anaphylactic), etiology, pathophysiology and management • Blood and blood components, transfusion indication, contraindication, mismatch and prevention and management of complications of massive blood transfusion • Common preoperative preparation (detailed preoperative workup, risk assessment according to the disease and general condition of the patient as per ASA grade) and detailed postoperative complications following major and minor surgical procedures • Surgical aspects of diabetes mellitus particularly management of diabetic foot and gangrene, preoperative control of diabetes, consequences of hypo- and hyperglycaemia in a postoperative setting • Consequences and management of bites and stings including snake, dog, human bites • Mechanisms and management of missile, blast and gunshot injuries • Organ transplantation: Basic principles including cadaver donation, related Human Organ Transplant Acts, ethical and medicolegal aspects. • Nutritional support to surgical patients • Common skin and subcutaneous condition • Sinus and fistulae, pressure sores • Acute arterial occlusion, diagnosis and initiate management • Types of gangrene, Burger's disease and atherosclerosis • Investigations in case of arterial obstruction, amputation, vascular injuries: basic principles and management

• Venous disorders: Varicose veins • Diagnosis, principles of therapy, prevention of DVT: basic principles and management • Lymphatic: Diagnosis and principles of management of lymphangitis and lymphedema • Surgical management of Filariasis • Burns: causes, prevention and management • Wounds of scalp and its management • Recognition, diagnosis and monitoring of patients with head injury, Glasgow coma scale • Undergo advanced trauma and cardiac support course (certified) before appearing in final examination • Recognition of acute cerebral compression, indication for referrals. • Cleft lip and palate • Leukoplakia, retention cysts, ulcers of tongue 7 • Oral malignancies • Salivary gland neoplasms • Branchial cyst, cystic hygroma • Cervical lymphadenitis nonspecific and tuberculous, metastatic lymph nodes and lymphomas. • Diagnosis and principles of management of goitre • Thyroglossal cyst and fistula • Thyrotoxicosis • Thyroid neoplasms • Management of solitary thyroid nodule • Thoracic outlet syndrome • Management of nipple discharge • Breast abscess • Clinical breast examination, breast self examination • Screening and investigation of breast lump • Concept of Single Stop Breast Clinic • Cancer breast diagnosis, staging and multimodality management (common neoadjuvant and adjuvant and palliative chemotherapy protocols and indications of radiation and hormonal therapy, pathology and interpretation of Tumour Markers, breast cancer support groups and counseling) • Recognition and treatment of pneumothorax, haemothorax • Pulmonary embolism: Index of suspicion, prevention/recognition and treatment • Flail chest, stove in chest • Postoperative pulmonary complication • Empyema thoracis • Recognition of oesophgeal atresisa and principles of management • Neoplasms of the lung including its prevention by tobacco control • Cancer oesophagus: principles of management including importance of early detection and timely referral to specialist • Achalasia cardia • Gastro-esophageal reflux disease (GERD) • Congenital hypertrophic pyloric stenosis • Aetiopathogenesis, diagnosis and management of peptic ulcer including role of H. Pylori and its diagnosis and eradication • Cancer stomach • Signs and tests of liver dysfunction • Amoebic liver abscess and its non-operative management • Hydatid cyst and its medical and surgical management including laparoscopic management • Portal hypertension, index of suspicion, symptoms and signs of liver failure and 8 timely referral to a specialist center •

Obstructive jaundice with emphasis on differentiating medical vs surgical Jaundice, algorithm of investigation, diagnosis and surgical treatment options • Neoplasms of liver • Rupture spleen • Indications for splenectomy • Clinical features, diagnosis, complications and principles of management of cholelithiasis and cholecystitis including laparoscopic cholecystectomy • Management of bile duct stones including endoscopic, open and laparoscopic management • Carcinoma gall bladder, incidental cancer gallbladder, index of suspicion and its staging and principles of management • Choledochal cyst • Acute pancreatitis both due to gallstones and alcohol • Chronic pancreatitis • Carcinoma pancreas • Peritonitis: causes, recognition, diagnosis, complications and principles of management with knowledge of typhoid perforation, tuberculous peritonitis, postoperative peritonitis • Abdominal pain types and causes with emphasis on diagnosing early intraabdominal acute pathology requiring surgical intervention • Intestinal amoebiasis and other worms manifestation (Ascariasis) and their surgical complications (Intestinal Obstruction, perforation, gastrointestinal bleeding, involvement of biliary tract) • Abdominal tuberculosis both peritoneal and intestinal • Intestinal obstruction • Appendix: Diagnosis and management of acute appendicitis • Appendicular lump and abscess Colon • Congenital disorders, Congenital megacolon • Colitis infective / non infective • Inflammatory bowel diseases • Premalignant conditions of large bowel • Ulcerative colitis • Carcinoma colon • Principles of management of types of colostomy Rectum and Anal Canal: • Congenital disorders, Anorectal anamolies • Prolapse of rectum 9 • Carcinoma rectum • Anal Canal: surgical anatomy, features and management of fissures, fistula - in – ano. • Perianal and ischiorectal abscess • Haemorrhoids – Non-operative outpatient procedures for the control of bleeding (Banding, cryotherapy, injection) operative options - open and closed haemorrhoidectomy and stapled haemorrhoidectomy • Anal carcinoma • Clinical features, diagnosis, complication and principles of management of inguinal hernia including laparoscopic repair • Umbilical, femoral hernia and epigastric hernia • Open and Laparoscopic repair of incisional/primary ventral hernia • Urinary symptoms and investigations of urinary tract • Diagnosis and principles of management of urolithiasis • Lower Urinary tract symptoms or prostatism • Benign prostatic hyperplasia; diagnosis and management • Genital tuberculosis in male • Phimosis and paraphimosis • Carcinoma penis

• Diagnosis and principles of treatment of undescendecd testis • Torsion testis • Hydrocele, haematocele and pyocele Varicocele: Diagnosis (Medical Board for fitness) • Varicocele: Diagnosis (Medical Board for fitness) • Acute and chronic epididymo-orchitis • Testicular tumours • Principles of management of urethral injuries • Management of soft tissue sarcoma • Prosthetic materials used in surgical practice • Telemedicine, teleproctoring and e-learning • Communication skills A student should be expert in good history taking, physical examination, providing basic life support and advanced cardiac life support, common procedures like FNAC, Biopsy, aspiration from serous cavities, lumber puncture etc. The student should be able to choose the required investigations.

3. Clinical cases and Symptoms-based approach to the patient with: 1. Ulcers in oral cavity 10 2. Solitary nodule of the thyroid 3. Lymph node in the neck 4. Suspected breast lump 5. Benign breast disease 6. Acute abdominal pain 7. Blunt Trauma Abdomen 8. Gall stone disease 9. Dysphagia 10. Chronic abdominal pain 11. Epigastric mass 12. Right hypochrondium mass 13. Right iliac fossa mass 14. Renal mass 15. Inguino-scrotal swelling 16. Scrotal swelling 17. Gastric outlet obstruction 18. Upper gastrointestinal bleeding 19. Lower gastrointestinal bleeding 20. Anorectal symptoms 21. Acute intestinal obstruction 22. Obstructive jaundice 23. Acute retention of Urine 24. Bladder outlet obstruction 25. Haematuria 26. Peripheral vascular disease 27. Varicose veins 28. New born with developmental anomalies 29. Hydronephrosis , Pyonephrosis, perinephric abscess 30. Renal tuberculosis 31. Renal tumors 32. Carcinoma prostate 33. Genital tuberculosis in male

4. At the end of the course, post graduate students should be able to perform independently (including perioperative management) the following: • Start IV lines and monitor infusions • Start and monitor blood transfusion • Venous cut-down • Start and manage a C.V.P. line • Conduct CPR (Cardiopulmonary resuscitation) 11 • Basic/ advance life support • Endotracheal intubation • Insert nasogastric tube • Proctoscopy • Urethral catheterisation • Surgical management of wounds • Biopsies including image guided • Manage pneumothorax / pleural space collections • Infiltration, surface and digital Nerve blocks • Incise and drain superficial abscesses • Control external hemorrhage • Vasectomy

(Preferably non-scalpel) • Circumcision • Surgery for hydrocele • Surgery for hernia • Surgery and Injection/banding of piles • Management of all types of shock • Assessment and management of burns • Hemithyroidectomy • Excision of thyroglossal cyst • Excision Biopsy of Cervical Lymphnode • Excision of benign breast lump • Modified Radical mastectomy • Axillary Lymphnode Biopsy • Excision of gynaecomastia • Excision of skin and subcutaneous swellings • Split thickness skin graft • Management of hernias • Laparoscopic and open cholecystectomy • Management of Liver abscess • appendectomy • Management of intestinal obstruction, small bowel resection, perforation and anastomosis • Colostomy The student must have observed or assisted (the list is illustrative) in the following: • Hartmann's procedure for cancer rectum • Spleenectomy (emergency) • Stomach perforation • Varicose Vein surgery 12 • Craniotomy (Head Injury) • Superficial parotidectomy • Submandibular gland excision • Soft tissue tumours including sarcoma • Pancreaticoduodenal resection • Hydatid cyst liver • Pancreatic surgery • Retroperitoneal operations

ASSESSMENT FORMATIVE ASSESSMENT, i.e., assessment during the training

Formative assessment should be continual and should assess medical knowledge, patient care, procedural & academic skills, interpersonal skills, professionalism, self directed learning and ability to practice in the system.

General Principles

Internal Assessment should be frequent, cover all domains of learning and used to provide feedback to improve learning; it should also cover professionalism and communication skills. The Internal Assessment should be conducted in theory and practical/clinical examination.

Quarterly assessment during the MD programme should be based on:

1. Journal based / recent advances learning
2. Patient based /Laboratory or Skill based learning
3. Self directed learning and teaching
4. Departmental and interdepartmental learning activity
5. External and Outreach Activities / CMEs

The student to be assessed periodically as per categories listed in postgraduate student appraisal form (Annexure I).

SUMMATIVE ASSESSMENT, i.e., assessment at the end of training

The summative examination would be carried out as per the Rules given in POSTGRADUATE MEDICAL EDUCATION REGULATIONS, 2000.

The post-graduate examinations should be in three parts:

1. **Thesis**.

   Every post graduate student shall carry out work on an assigned research project under the guidance of a recognized Post Graduate Teacher, the result of which shall be written up and submitted in the form of a Thesis. Work for writing the Thesis is aimed at contributing to the development of a spirit of enquiry, besides exposing the 26 post graduate student to the techniques of research, critical analysis, acquaintance with the latest advances in medical science and the manner of identifying and consulting available literature. Thesis shall be submitted at least six months before the Theory and Clinical / Practical examination. The thesis shall be examined by a minimum of three examiners; one internal and two external examiners, who shall not be the examiners for Theory and Clinical examination. A post graduate student shall be allowed to appear for the Theory and Practical/Clinical examination only after the acceptance of the Thesis by the examiners.

2. **Theory Examination**

The examinations shall be organized on the basis of 'Grading' or 'Marking system' to evaluate and to certify post graduate student's level of knowledge, skill and competence at the end of the training. Obtaining a minimum of 50% marks in 'Theory' as well as 'Practical' separately shall be mandatory for passing examination as a whole. The examination for M.D./ MS shall be held at the end of 3rd academic year. An academic term shall mean six month's training period.

There should be four theory papers:

Paper I: Basic Sciences

Paper II: Principles and practices of Surgery

Paper III: Principles and practice of Operative Surgery

Paper IV: Recent Advances in Surgery

3. **Clinical/Practical and Oral/viva voce Examination**

Clinical examination shall be conducted to test the knowledge, skills, attitude and competence of the post graduate students for undertaking independent work as a specialist/Teacher, for which post graduate students shall examine a minimum one long case and two short cases.

Oral/Viva-Voce Examination:

TThe Oral examination shall be thorough and shall aim at assessing the post graduate student's knowledge and competence about the subject, investigative procedures, therapeutic technique and other aspects of the specialty, which form a part of the examination

Assessment may include Objective structured clinical examination.(OSCE) Oral/Viva-voce examination needs to assess knowledge on X-rays, instrumentation, operative procedures. Due weightage should be given to Log Book Records and dayto-day observation during the training.

Recommended Reading:

Books (Latest edition)

1. Text Book of Surgery, by Christopher Davis
2. .ASI Text Book of Surgery
3. Surgery of Colon, Rectum and Anal canal, by Goligher J C
4. Schwartz Text Book of Surgery 5. Textbook on Laparoscopic Surgery
5. Trauma (Mattox)
6. Recent Advances in Surgery
7. Year Book of Surgery

8. Surgical Clinics of North America
9. Short practice of Surgery by Bailey and Love
10. A manual of clinical Surgery, by S Das
11. Hamilton Bailey's demonstration of clinical signs
12. Pye's Surgical Handicraft

Journals 03-05 international Journals and 02 national (all indexed) journals

Annexure I

Postgraduate Students Appraisal Form Pre / Para /Clinical Disciplines

Name of the Department/Unit :

Name of the PG Student :

Period of Training : FROM……TO……

Sr. No.	PARTICULARS	Not Satisfactory	Satisfactory	More Than Satisfactory	Remarks
		1 2 3	4 5 6	7 8 9	
1	Journal based / recent advances learning				
2	. Patient based /Laboratory or Skill based learning				
3	Self directed learning and teaching				
4	Departmental and interdepartmental learning activity				
5	External and				

	Outreach Activities /				
6	CMEs				
7	Thesis / Research work				
8	Log Book Maintenance				

Publications **Yes/ No**

Remarks*_____

_____

_____

_____

_____

_____ _____ *REMARKS: Any significant positive or negative attributes of a postgraduate student to be mentioned. For score less than 4 in any category, remediation must be suggested. Individual feedback to postgraduate student is strongly recommended.

SIGNATURE OF ASSESSEE SIGNATURE OF CONSULTANT SIGNATURE OF HOD