Chapter III
M.S. General Surgery

Goals

The goals of postgraduate training course in Surgery would be to train a MBBS doctor who will :

- Practice surgery efficiently and effectively, backed by scientific knowledge and skill base.
- Exercise empathy and a caring attitude and maintain high ethical standards.
- Continue to evince keen interest in continuing surgical education irrespective of whether he is in a teaching institution or is a practicing surgeon.
- Be a motivated 'teacher' – defined as a surgeon keen to share his knowledge and skills with a colleague or a junior or any learner.

Objectives:

The following objectives are laid out to achieve the goals of the course. These objectives are to be achieved by the time the candidate completes the course. The Objectives may be considered under the subheadings

1. Knowledge (Cognitive domain)
2. Skills (Psycho motor domain)
3. *Human values, Ethical practice and Communication abilities*

Knowledge:

A list of objectives related to knowledge and higher cognitive abilities that are expected to be achieved during the course is given.

At the end of the training, the candidate must be able to:

- Describe aetoiology, pathophysiology, principles of *diagnosis* and management of common surgical problems including emergencies, in adults and children.
- Describe indications and methods for fluid and electrolyte replacement *therapy* including blood transfusion
- Describe common malignancies in the country and their management including prevention
- Demonstrate understanding of basic sciences relevant to general surgery
- Identify social, economic, environmental and emotional determinants in a given case, and take them into account for planning therapuetic measures.
- Recognize conditions that may be outside the area of his specialty/competence and to refer them to the proper specialist.
- Advise regarding the operative or non-operative management of the case and to carry out this management effectively.
- Update himself by self study and by attending courses, conferences and seminars relevant to surgery.

- Teach and guide his team, colleagues and other students.
- Undertake audit, use information technology tools and carry out research, both basic and clinical, with the aim of publishing his work and presenting his work at various scientific fora.

Skills

- Take a proper clinical history, examine the patient, perform essential diagnostic procedures and order relevant tests and interpret them to come to a reasonable diagnosis about the surgical condition.
- Perform *minor* operative procedures and common general surgical operations independently and the *major* procedures with help from a senior surgeon.
- provide basic and advanced life saving support services (BLS & ALS) in emergency situations
- manage acute abdominal emergencies and poly trauma.
- Undertake thorough wound management, including burn wounds.
- Undertake complete patient monitoring including the preoperative and post operative care of the patient.

Human values, Ethical practice and Communication abilities

- Adopt ethical principles in all aspects of his surgical practice. Professional honesty and integrity are to be fostered. Surgical care is to be delivered irrespective of the social status, caste, creed or religion of the patient.
- Develop communication skills, in particular the skill to explain various options available in management and to obtain a true informed consent from the patient.
- Provide leadership and get the best out of his team in a congenial working atmosphere.
- Apply high moral and ethical standards while carrying out human or animal research.
- Be humble and accept the limitations in his knowledge and skill and to ask for help from colleagues when needed.
- Respect patient's rights and privileges including patient's right to information and right to seek a second opinion.

Essential Knowledge

The course contents have been identified and categorized as essential knowledge as under. This is to enable the student to achieve the objectives of the course. It is recognized that General surgery today mainly covers abdominal operations, thyroid and breast diseases. A general surgeon should also have knowledge of some common problems in allied specialties. Further he should be familiar with complications, current controversies and recent advances in these topics.

The topics are considered under :

- Basic sciences,
- General Surgery topics and
- Specialty topics.

Some overlap between the latter two categories are to be expected.

Basic sciences include anatomy, physiology, biochemistry, microbiology and pathology, as found in current text books. These standard topics are recommended to be studies in as much as they are applicable to the practice of surgery. The stress is on applied anatomy of the parts dealt with by the surgeon as defined by the skills list; patho-physiology and surgical pathology.

General Surgery Topics include the following:

History of surgery
Clinical History and examination – detailed systematic history taking, clinical examination of various systems, coming to a provisional working diagnosis.
Rationale of diagnostic tests – Ordering diagnostic tests with prioritizing the needs, based on the clinical, hospital and the patient's socioeconomic condition
Informed consent / Medico legal issues – Understanding the implications of acts of omission and commission in practice. Issues regarding Consumer Protection Act. – Implications in a medico-legal case like accidents, assaults etc.
Communication skills with patients – Understanding clarity in communication, compassionate explanations and giving emotional support to at the time of suffering and bereavement.
Principles of surgical audit – Understanding the audit of process and outcome. Methods adopted for the same. Basic statistics
Principles of evidence based medicine – Understanding journal based literature study; the value of text book, reference book articles; value of review articles; original articles and their critical assessment. Understanding the value of retrospective, prospective, randomized controlled and blinded studies. – Understanding the principles and meanings of various biostatistical tests applied in these studies.
Medical ethics / Social responsibilities of surgeons
Use of computers in surgery – Components of a computer; its use in practice – principles of word processing, spread sheet functions, database and presentation; the internet and its uses. The value of computer based systems in bio medical equipment.
Health insurance, Health Care financing
Undertaking clinical audit
Prospective data collection / writing case reports and clinical papers

Giving presentations / Computer presentations
Preoperative workup – concept of fitness for surgery; basic medical workup; workup in special situations like, diabetes, renal failure, cardiac and respiratory illness; risk stratification;
Principles of operative surgery like asepsis, antisepsis, sterilization
Surgical sutures, drains, prosthetic grafts
Postoperative care – concept of recovery room care; airway management; assessment of wakefulness; management of cardiovascular instability in this period; criteria for shifting to a ward; pain management.
Basic surgical instrumentation – Principles of surgical instrumentation; their maintenance and sterilization.
Surgical diathermy, lasers
Wound management – wound healing; factors influencing healing; basic surgical techniques; properties of suture materials ; appropriate use of sutures.
Assessment of head, chest and abdominal trauma and triage – Assessment of a trauma victim; resuscitation; care at the site; triage; care in the accident department; criteria for immediate surgery; immediate workup and logical referral criteria.
Fluid and electrolyte balance / Acid – Base metabolism – The body fluid compartments; metabolism of water and electrolytes; factors maintaining homeostasis; causes for and treatment of acidosis and alkalosis.
Blood transfusion – Blood grouping; cross matching; blood component therapy; complications of blood transfusion; blood substitutes; auto transfusions; cell savers.
Surgical infections – asepsis and antisepsis; microbiological principles; rational use of antibiotics; special infections like synergistic gangrene and diabetic foot infections. Hepatitis and AIDS
Surgical nutrition – nutritional assessment; metabolic response to stress; need for nutritional support; enteral nutrition; routes of access to GI tract; parenteral nutrition; access to central veins for nutritional support.
Principles of laparoscopy / GI endoscopy – laparoscopic instrumentation; physiology of pneumoperitoneum; complications of laparoscopy; diagnostic and therapeutic applications. GI endoscopic instrumentation; Diagnostic and therapeutic applications of upper GI, Lower GI and ERCP studies.
Principles of oncology – cell kinetics; causation of tumours; principles of oncologic surgery, radiotherapy and chemotherapy; paraneoplastic syndromes; cancer pain management; palliative care
Principles of burn management – types of thermal injury; assessment of extent; immediate management; late management; skin cover; rehabilitation
Principles of fracture management – fracture healing; principles of immobilization; complications; principles of internal fixation.
Airway obstruction / management – anatomy of the airway; principles of keeping the airway patent; mouth to mouth resuscitation; oropharyngeal airway;

endotracheal intubation; crico-thyroidotomy; tracheostomy.
Shock and Pulmonary failure – types of shock; diagnosis; resuscitation; pharmacologic support; ARDS and its causes; prevention; ventilatory support.
Anaesthesia – stages of anaesthesia; pharmacology of inhalational, intravenous and regional anaesthetics; muscle relaxants
Assessment of trauma; Multiply injured patient/ closed abdominal and chest injuries / penetrating injuries; fractures pelvis; urological injuries; vascular injuries; trauma scores
Acute abdomen – Appendicitis / Peritonitis / Perforated viscus / Intestinal obstruction
Hernias – simple and complicated – various types of hernias; their repair; prosthetic materials
Critical care – Cardiorespiratory failure – management of shock; including monitoring; sepsis scores; pharmacological support.
Pain control – acute and chronic pain; cancer and non-cancer pain; patient controlled analgesia.
Breast disease – benign and malignant disease; diagnosis; investigation; screening for cancer; genetics of breast cancer
Thyroid disease – solitary nodule; investigations; multinodular goiter; Hashimoto's disease; cancer
Upper GI disease – oesophageal and gastro-duodenal disorders
Hepato-biliary disease
Pancreatic disease
Colo-rectal disease / Anal disease
Soft-tissue neoplasms
Endocrine disease

The specialty topics include the following:

- GI endoscopy and Laparoscopy:

Principles of GI endoscopy
Complications including infective considerations
Diagnostic and therapeutic GI endoscopy including upper GI, lower GI and pancreato-biliary systems
Physiology of pneumoperitoneum
Diagnostic laparoscopy
Laparoscopic therapeutic procedures

- Neurosurgery

Head and neck trauma; acute management and rehabilitation
Concept of brain death / medico-legal implications

Peripheral nerve injuries
Neoplasms of the brain and meninges
Acute and chronic infections of the brain and meninges
Hydrocephalus
Spinal injuries
Monitoring intracranial tension

- Urology

Urological injuries
Urothelial tumours / Chemotherapy
Prostatic hypertrophy
Hypospadias
Pyleonephritis / perinephric abscess
GU tuberculosis
Scrotal disease
Endourology
Peritoneal dialysis / CAPD / haemodialysis
Transplantation / harvesting kidney
Urinary diversion
Infertility / Vasectomy
Pyeloplasty / hydronephrosis

- Oncology

Imaging CT/ MRI CT guided FNAB/C
Breast, thyroid and GI malignancies
Head and neck tumours
Chemotherapy / Adjuvant therapy
Post excision reconstruction
Radiotherapy

- Plastic Surgery

Burns management
Facial injuries
Principles of tissue transfer
Cleft lip and palate
Congenital defects of hand
Pressure sores
Principles of microsurgery

Hypospadias
Details of skin flap
Nerve repair
Vascular repair
Hand injuries / tendon injury

- Cardio-thoracic surgery

Flail chest / thoracic trauma
Bronchogenic carcinoma Lobectomies
Pneumonectomie
Endocarditis prophylaxix
Pulmonary function tests
Control of major haemorrhage
Operations on the diaphragm
Coronary artery disease
Valvular heart disease
Lobectomies and pneumonectomies
Oesophageal disease
Operations on thoracic aorta
Mediastinal tumours
Basics of congenital heart disease

- Vascular Surgery

Vascular imaging
AV malformations
Exposure of major arteries and veins / vascular anastamosis
Varicose veins
Chronic venous insufficiency.
Vascular emergencies – trauma, embolism
Peripheral vascular disease – Atherosclerosis, arteritis
Details of vascular prosthesis

- Paediatric Surgery

Fluid and electrolyte management
Preparation for surgery / postop care
Hernias
Spinal fusion defects

Ventral defects
Undescended testes
Hypertrophic pyloric stenosis
Hirshprung's disease
Diaphragmatic hernia
Tracheo oesophageal fistula
Anorectal anomolies
Necrotising enteritis

- Gynaecological Surgery

Pelvic inflammatory disease
Ectopic pregnancy
Ovarian Cysts
Caesarean section
Family planning

Essential Surgical Skills

Surgery is a skill-based discipline. The following list is drawn up with a view to specifying basic minimum skills to be acquired. While an attempt has been made to specify the year wise distribution of the learning of skills (in the latter part of this curriculum), it is recognized that the process is a continuous one. The principle of giving graded responsibility to the student is to be applied throughout the course. The year wise distribution of the skills recommended are to be used as general guideline. Some overlap may be there. Provision of training in various specialty subjects has been made during the second year of the course. Skills in specialty subjects may be acquired both during the specialty postings and during the general surgical postings in the parent department, if the procedures are carried out. The list within the tables, indicates the surgical procedures that the students should, by the end of the course, be able to perform independently (PI) by himself/herself or should have performed with assistance (PA) during the course. The other categories of surgical procedures mentioned form a general guide for the procedures that the student should either have observed (O) or have assisted the operating surgeon (A). Note, for all categories, the student washes up in the operating room. There may an overlap in the skill list between the general surgery list and the specialty list. Where different numbers are mentioned for the same/similar procedures between the general surgery and specialty lists, the higher number is applicable as the prescribed number. (Note that the total number is not the sum of the numbers mentioned for the same/similar procedures in the general surgery and specialty lists.)

Skills may be considered under the following headings.

a) Basic graduate skills
b) Ward procedures
c) ICU procedures
d) Emergency room procedures
e) Preoperative workup procedures
f) Postoperative procedures
g) Minor surgical procedures
h) Major operating room techniques
i) General surgical procedures
j) Speciality surgical procedures

a) Basic graduate skills

The student should have acquired the certain skills during his under-graduation and internship. These skills have to be reinforced at the beginning of the training period.s These skills include:

Procedure	Category	Year	Number
Insertion of I.V.lines, nasogastric tubes, urinary catheters, etc.,	PI	I	50
Minor suturing and removal of sutures	PI	I	50
Removal of tubes and drains	PI	I	50
Routine wound dressings	PI	I	50

b) Ward Procedures

Ward work forms an important part of the training of the surgeon. In addition to the touting examination of the patient with proper recording of findings, diligent practice of the following is recommended.

Procedure	Category	Year	Number
Abdominal Paracentesis including Diagnostic Peritoneal Lavage	PI	I	5
Ability to teach UG's and Interns	PI	I	NA
Blood sampling – venous and arterial	PI	I	NA
Bone Marrow Aspiration	PI	I	2
Burns dressing	PI	II	10
Communication skills with patients, relatives, colleagues and paramedical staff	PI	I	NA*

Ordering of the requisite laboratory and Radiological investigations and Interpretation of the reports in light of the clinical picture	PI	I	NA
Proficiency in common ward procedures	PI	I	NA
Skills for Per-rectal examination and Proctoscopy	PI	I	NA
Thoracocentesis	PI	II	5
Universal precautions against communicable diseases	PI	I	NA
Venesection	PI	I+II+III	5

NA: Not Applicable

c) ICU Procedures:

Procedure	Category	Year	Number
Insertion of Arterial lines	PI	II	10
Insertion of Central venous lines	PI	I	10
Insertion of Endotracheal tubes	PI	II	10
Insertion of Peritoneal Dialysis Catheters	A/PA	I,II,III	5
Intercostal Drainage	PI	II	5
Suprapubic Puncture/ Stab Cystostomy	PI	II	5
Tracheotomy	PI	I	2
Working Knowledge of Ventilators and various Monitors	PI	I	NA
Interpretation of Arterial blood gases	PI	I	NA
Correction of Electrolyte disturbances	PI	I	NA
Prescribing Parenteral & Enteral nutrition	PI	I	NA

d) Emergency Room Procedures

Procedure	Category	Year	Number
Application of Splints for Fractures	PI	I	NA
Arterial and Venous Lines	PI	I	NA
Assessment and initial management of Polytrauma	PI	I	NA
Cardiopulmonary Resuscitation	PI	I	NA

Management of Airway Obstruction	PI	I	NA
Management of Shock and Cardiac / Respiratory failure	PI	I	NA
Recognition and Initial management of Surgical Emergencies	PI	I	NA
Suturing Techniques	PI	I	NA

e) Pre-operative Workup

Procedure	Category	Year	Number
Ability for adequate pre-operative preparation in special situations like Diabetes, renal failure, cardiac and Respiratory failure etc. and risk Stratification	PI	I	NA
Communication skills with special reference to obtaining Informed Consent	PI	I	NA
Proper pre-operative assessment and preparation of patients including DVT prophylaxis, Blood transfusion and Antibiotics	PI	I	NA

f) Post-operative Care

Procedure	Category	Year	Number
Airway management	PI	I	NA
Basic Physiotherapy	PI	I	NA
Management of epidural analgesia	PI	I	NA
Management of Fistulae	PI	I	NA
Management of postoperative hypo and hypertension	PI	I	NA
Postoperative pain control	PI	I	NA
Skills for Nutritional rehabilitation of patients	PI	I	NA
Skills for proper Fluid & Antibiotic management	PI	I	NA
Stoma care	PI	I	NA

g) Minor O.T. procedures

Procedure	Category	Year	Number
Circumcision under Local Anesthesia	PI	I	5
Drainage of Abscesses	PI	I	5
FNAC	PI	I	5
Major dressings	PI	I	20
Minor Anorectal Procedures (Haemorrhoids – Banding, Cryotherapy, Suturing etc,; Anal dilatation and Fissures), Fistulectomy	PI	III	10
Minor Biopsies – Lymph node, ulcer, swellings etc.,	PI	I	20
Reduction and plaster application of simple fractures and dislocations	PA	II	10
Removal of simple subcutaneous swellings	PI	I	10
Sigmoidoscopy and Upper G.I. endoscopy (preferable in and endoscopy room)	PA/A/O	II	10
Suturing Techniques	PI	I	20
Vasectomy	PI/PA	I	5
Wound debridement	PI	I	10

h) Major Operating room techniques

Procedure	Category	Year	Number
Instrument arrangement and trolley layout	PA	I	NA
Skills in Sterilization techniques, O.T.Layout and Asepsis	O	I	NA
Skin preparation – painting and draping	PI	I	NA
Techniques of scrubbing and gowning	PI	I	NA

i) General Surgical Operative Procedures

Procedure	Category	Year	Number
Appendicectomy	PA	I	10

Appendicectomy	PI	III	5
Cholecystectomy	PI and PA	III	1 and 3
Closure of Colostomy	PA	III	2
Closure of peptic ulcer / under-running bleeding ulcer / vagotomy drainage	PI	III	3
Colostomy	PA	III	2
Cysts and sinuses of the neck	PA	III	2
Diagnostic laparoscopy	PA	III	3
Drainage of breast abscess / Excision of breast lump	PI	I	10
Groin Hernia repair	PI	II / III	5
Gynaecomastia	PA	III	2
Haemorrhoidectomy / Fissurectomy / Simple fistulectomy	See Minor OT procedures		
Hemicolectomy	PA	III	1
Herniotomy / Orchidopexy in children	PA	III	3
Laparotomy for abdominal trauma / splenectomy	PI	III	3
Laparotomy for intestinal obstruction / bowel resections / bowel anastamosis	PI	III	3
Management of complex wounds	PI	I	10
Mastectomy	PA/A	III	2
Opening and closing the abdomen	PI	I	5
Opening and closing the chest	PI	III / III	1
Parotidectomy	A	III	2
Release of bands and simple adhesive obstruction	PI	II	5
Thyroid lobectomy	PA	III	3
UGI endoscopy / Flexible sigmoidoscopy	A/O	II/III	10
Ventilation	PI	II	5
Wide excision of breast tumours / mastectomy / microdochectomy	PA	III	3
Gastrostomy / feeding jejunostomy	PA	III	3

j) Speciality Procedure

There may be repetition of some of the procedures listed under this category and those listed under General surgical procedures. Where different numbers are mentioned for the same/similar procedures between the general surgery and specialty lists, the higher number is applicable as the prescribed number. (Note that the total number is not the sum of the numbers mentioned for the same/similar procedures in the general surgery and specialty lists.)

Laparoscopy And GI Endoscopy

Procedure	Category	Year	Number
Diagnostic and therapeutic Upper and Lower GI endoscopy	PA	III	10
Diagnostic laparoscopy	PA	III	3
Diagnostic Upper GI endoscopy	PA	III	10
Laparoscopic Cholecystectomy	A	III	3

Neurosurgery

Procedure	Category	Year	Number
Craniotomy	A	II	2
Management of paraplegia	A	II	2
Peripheral nerve repair	A	II	2
Prevention of nerve injury – specific operations	A	II	2
Suturing complex scalp wounds	PI	II	2
Trephining	PA	II	2

Urology

Procedure	Category	Year	Number
Carcinoma penis	PA/A	II	3
Catheterization	PI	I	NA
Circumcision	PI	I	10
Diagnostic cystoscopy	PA/A	II	3
Inguinal Block Dissection	PA	II	1
Meatotomy	PI	II	3

Nephrectomy – partial / total	A	II	3
Nephrolithotomy	A	II	3
Orchidectomy	PA/A	II	3
Orchidopexy	A	II	3
Retroperitoneal lymph node dissection	O	II / III	1
Supra pubic cystostomy	PI	II	3
Total amputation of penis	A	II	1
TUR / Open prostatectomy	A	II	5
Ureterolithotomy	A	II	3
Urethral / Urogenital injuries	A	II	3
Urethral dilatation	PI	II	5
Varicocele	PA/A	II	3
Vasectomy	PI	I / II / III	10

Oncology

Procedure	Category	Year	Number
All radical operations – Breast, Thyroid, GI and Facio-maxillary malignancies	A	II	2 EACH
Breast lumpectomy	PI	II	5
Functional neck node dissection	A	II	3
Gastrectomy / Bowel resection	A	II	3
Imprint cytology	PA	II	3
Metastatic workup	PA	II	5
Stoma care	PI	II	5
Thyroid surgery	A	II	5
U/s guided biopsy	A/O	II	3

Plastic Surgery

Procedure	Category	Year	Number
Burn resuscitation	PI	I	5
Lip surgery	A	II	5

Local blocks in anaesthesia	PI	I	10
Minor hand injuries (specify)	PI	II	5
Nerve repair	A	II	2
Post excision reconstruction	A	II	2
Reimplantation of digits	O	II	1
Skin flap surgery	O	II	2
Split skin graft	PI	II	3
Stitch craft	PI	I	NA
Tendon repair	PA	II	2
Wound debridement	PI	I	10

Paediatric Surgery

Procedure	**Category**	**Year**	**Number**
Anorectal anomalies	A	II	2
Circumcision / meatoplasty	PA	II	10
Herniotomy	PA	II / III	2
Intercostal aspiration	PI	II	2
Laparotomy for peritonitis	PA	II	5
Lymph node biopsy	PI	II / III	5
Non operative treatment of volvulus	A/O	II	2
Orchidopexy	PA/A	II	5
Ostomies	PA	II	2
Paediatric emergencies	A/PA	II	10
Pyloromyotomy	PA/A	II / III	5

Cardiothoracic Surgery

Procedure	**Category**	**Year**	**Number**
Canulation of artery and vein	A	II	2
Chest injuries	PA	II /III	5
Empyema drainage / decortication	PI	II	2
Endotracheal intubation	PI	I	10

Intercostal drainage	PI	I	5
ITU duties	PI	II/III	NA
Lobectomies and pneumonectomies	O	II	2
Oesophageal surgery	O	II/III	2
Opening and closing the chest	PA	II	2
Pericardiectomy	O	II	2
Removal of FBs	A	II / III	2
Remove pulse generator (pacing)	PA/A	II	1
Rib resection	PA	II / III	2
Tracheostomy	PI	III	5
Undertake sternotomies	PA	II / III	2
Vein and arterial harvesting	PA/A	II / III	2
Ventilator management	PA	I	10

Vascular Surgery

Procedure	**Category**	**Year**	**Number**
AV shunts for vascular access	PA	II / III	2
Bypass graft – prosthetic	A	II / III	2
Conservative amputations	PI	II / III	5
Embolectomy	PA	II / III	2
Post-traumatic aneurysms	A	II / III	2
Sympathectomy	PA	II / III	2
Use of heparin	PI	II / III	10
Varicose vein surgery	PI	II / III	2
Vascular suturing	PA	II / III	2
Vein graft	A/O	II / III	2
Vein patch repair	A/O	II / III	2

Teaching and Learning Activities

A candidate pursuing the course should work in the institution as a full time student. No candidate should be permitted to run a clinic/laboratory/nursing home while studying postgraduate course. Each year should be taken as a unit for the purpose of calculating attendance.

Every student shall attend teaching and learning activities during each year as prescribed by the department and not absent himself / herself from work without valid reasons.

A list of teaching and learning activities designed to facilitate students acquire essential knowledge and skills outlined is given below:

1. *Lectures* : Lectures are to be kept to a minimum. They may, however, be employed for teaching certain topics. Lectures may be didactic or integrated.
   a) Didactic Lectures: Recommended for selected common topics for post graduate students of all specialties. Few topics are suggested as examples:
      1) Bio-statistics
      2) Use of library,
      3) Research Methods
      4) Medical code of Conduct and Medical Ethics
      5) National Health and Disease Control Programmes
      6) Communication Skills etc.

   These topics may preferably taken up in the first few weeks of the 1st year.

b) *Integrated Lectures*: These are recommended to be taken by multidisciplinary teams for selected topics, eg. Jaundice, Diabetes mellitus, Thyroid etc.

2. *Journal Club* : Recommended to be held once a week. All the PG students are expected to attend and actively participate in discussion and enter in the Log Book relevant details. Further, every candidate must make a presentation from the allotted journal(s), selected articles at least four times a year and a total of 12 seminar presentations in three years. The presentations would be evaluated using check lists and would carry weightage for internal assessment (See checklist in Chapter IV). A time table with names of the student and the moderator should be announced at the beginning of every year.

3. *Subject Seminar*: Recommended to be held once a week. All the PG students are expected to attend and actively participate in discussion and enter in the Log Book relevant details. Further, every candidate must present on selected topics at least four times a year and a total of 12 seminar presentations in three years. The presentations would be evaluated using check lists and would carry weightage for internal assessment (See checklist in Chapter IV). A timetable for the subject with names of the student and the moderator should be scheduled at the beginning of every year.

4. *Student Symposium*: Recommended as an optional multi disciplinary programme. The evaluation may be similar to that described for subject seminar.

5. *Ward Rounds*: Ward rounds may be service or teaching rounds.
   a) *Service Rounds*: Postgraduate students and Interns should do every day for the care of the patients. Newly admitted patients should be worked up by the PGs and presented to the seniors the following day.

   b) *Teaching Rounds* : Every unit should have 'grand rounds' for teaching purpose. A diary should be maintained for day to day activities by the students.

   Entries of (a) and (b) should be made in the Log book.

6. *Clinico-Pathological Conference*: Recommended once a month for all post graduate students. Presentation be done by rotation. If cases are not available due to lack of clinical postmortems, it could be supplemented by published CPCs.

7. *Inter Departmental Meetings*: Strongly recommended particularly with departments of Pathology and Radio-Diagnosis at least once a week. These meetings should be attended by post graduate students and relevant entries must be made in the Log Book.

   Pathology: A dozen interesting cases may be chosen and presented by the post graduate students and discussed by them as well as the senior staff of Surgery department. The staff of Pathology department would then show the slides and present final diagnosis. In these sessions the advance immuno-histo-chemical techniques, the burgeoning markers other recent developments can be discussed.

   Radio-diagnosis: Interesting cases and the imaging modalities should be discussed.

8. *Teaching Skills* : Post graduate students must teach under graduate students (Eg. medical, nursing) by taking demonstrations, bed side clinics, tutorials, lectures etc. Assessment is made using a checklist by surgery faculty as well students. (See model check in Chapter IV). Record of their participation be kept in Log book. Training of post graduate students in Educational Science and Technology is recommended.

9. *Continuing Medical Education Programmes (CME)* : Recommended that at least 2 state level CME programmes should be attended by each student in 3 years.

10. *Conferences*: Attending conferences is optional. However it is encouraged.

Rotation and posting in other departments

The listed knowledge and skills are to be learnt over a period of 3 years. The process is a continuous one. However the recommended period and timing of training in basic subjects, allied departments and specialty departments is given below.

In the first year, during the morning session, student should work in the parent department. It is recommended that 2 years and 4 months are spent in General Surgery and 8 months in allied and specialty departments. Depending on the time and opportunities available, some of the procedures listed for second year activity can be shifted either to the first or the third year. Students must be 'on call' on a regular basis. The total duration of postings in core and other specialties will be eight months.

Basic Science

Basic science should be an essential part of training. It should be done as concurrent studies during the 1st year of training. Atleast two hours daily may be in the first six months of the course. In the first year, during the morning session, time is spent in the parent department. In the afternoons basic science teaching relevant to surgery can be done in the respective departments.

Topics for study to include Anatomy, Physiology, Pathology, Microbiology, Pharmacology, Anaesthesia and Radiology

Pathology – Concurrent study - Recommend daily Grossing sessions, weekly Surgical pathology sessions and monthly CPCs.

Radiology – Concurrent study – adequate exposure to modern imaging modalities like u/s, CT, MRI and angiography

Allied Specialty Training

Students are posted to core allied specialty subjects Viz. Anaesthesia and ICU for one month and Orthopaedics including trauma (Accident and emergency) for 2 months during the second year of training. Posting to the Department of Obstetrics and Gynaecology for one month is optional. This posting may be in lieu of one of the other specialties (except the core specialties) depending on the choice of the candidate.

Other Surgical Speciality Subjects

Postings to other speciality departments will be during the second year. The departments and duration of postings are as under:

Department	Duration
• Paediatric surgery	4 weeks
• Plastic surgery	4 weeks — 15 days
• Cardiothoracic surgery	4 weeks — 15 days

- Vascular surgery — 4 weeks
- Neurosurgery — 4 weeks
- Urology — 4 weeks
- Oncology — 4 weeks

Dissertation

Every candidate pursuing MD/MS degree course is required to carry out work on a selected research project under the guidance of a recognised post graduate teacher. The results of such a work shall be submitted in the form of a dissertation.

The dissertation is aimed to train a post graduate student in research methods and techniques. It includes identification of a problem, formulation of a hypothesis, search and review of literature, getting acquainted with recent advances, designing of a research study, collection of data, critical analysis, comparison of results and drawing conclusions.

Every candidate shall submit to the Registrar (Academic) of the University in the prescribed proforma, a synopsis containing particulars of proposed dissertation work within six months from the date of commencement of the course on or before the dates notified by the University. The synopsis shall be sent through the proper channel.

Such synopsis will be reviewed and the dissertation topic will be registered by the University. No change in the dissertation topic or guide shall be made without prior approval of the University.

The dissertation should be written under the following headings:

i. Introduction
ii. Aims or Objectives of study
iii. Review of Literature
iv. Material and Methods
v. Results
vi. Discussion
vii. Conclusion
viii. Summary
ix. References
x. Tables
xi. Annexures

The written text of dissertation shall be not less than 50 pages and shall not exceed 150 pages excluding references, tables, questionnaires and other annexures. It should be neatly typed in double line spacing on one side of paper (A4 size, 8.27" x 11.69") and bound properly. Spiral binding should be avoided. The dissertation shall be certified by the guide, head of the department and head of the Institution.

our copies of dissertation thus prepared shall be submitted to the Registrar (Evaluation), six months before final examination on or before the dates notified by the University.

The dissertation shall be valued by examiners appointed by the University. Approval of dissertation work is an essential precondition for a candidate to appear in the University examination.

For some more details regarding Guide etc., please see Chapter I and for books on research methodology, ethics, etc., see Chapter IV.

Monitoring Learning Progress

It is essential to monitor the learning progress of each candidate through continuous appraisal and regular assessment. It not only helps teachers to evaluate students, but also students to evaluate themselves. The monitoring be done by the staff of the department based on participation of students in various teaching / learning activities. It may be structured and assessment be done using checklists that assess various aspects. Checklists are given in Chapter IV.

The learning out comes to be assessed should included: (i) Personal Attitudes, (ii) Acquisition of Knowledge, (iii) Clinical and operative skills, (iv) Teaching skills and (v) Dissertation.

i) ***Personal Attitudes.*** The essential items are:

- Caring attitudes
- Initiative
- Organisational ability
- Potential to cope with stressful situations and undertake responsibility
- Trust worthiness and reliability
- To understand and communicate intelligibly with patients and others
- To behave in a manner which establishes professional relationships with patients and colleagues
- Ability to work in team
- A critical enquiring approach to the acquisition of knowledge

The methods used mainly consist of observation. It is appreciated that these items require a degree of subjective assessment by the guide, supervisors and peers.

ii) ***Acquisition of Knowledge*** : The methods used comprise of `Log Book' which records participation in various teaching / learning activities by the students. The number of activities attended and the number in which presentations are made are to be

recorded. The log book should periodically be validated by the supervisors. Some of the activities are listed. The list is not complete. Institutions may include additional activities, if so, desired.

Journal Review Meeting (Journal Club): The ability to do literature search, in depth study, presentation skills, and use of audio- visual aids are to be assessed. The assessment is made by faculty members and peers attending the meeting using a checklist (see Model Checklist – I, in Chapter IV)

Seminars / Symposia: The topics should be assigned to the student well in advance to facilitate in depth study. The ability to do literature search, in depth study, presentation skills and use of audio- visual aids are to be assessed using a checklist (see Model Checklist-II, Chapter IV)

Clinico-Pathological conferences : This should be a multidisciplinary case study of an interesting case to train the candidate to solve diagnostic and therapeutic problems by using an analytical approach. The presenter(s) are to be assessed using a check list similar to that used for seminar.

Surgical Audit: Periodic morbidity and mortality meeting be held. Attendance and participation in these must be insisted upon. This may not be included in assessment.

iii) ***Clinical Operative skills***

Day to Day work : Skills in outpatient and ward work should be assessed periodically. The assessment should include the candidates' sincerity and punctuality, analytical ability and communication skills (see Model Checklist III, Chapter IV).

Clinical meetings : Candidates should periodically present cases to his peers and faculty members. This should be assessed using a check list (see Model checklist IV, Chapter IV).

Clinical and Operative skills : The candidate should be given graded responsibility to enable learning by apprenticeship. The performance is assessed by the guide by direct observation. Particulars are recorded by the student in the log book. (Table No.3, Chapter IV)

iv) Teaching skills : Candidates should be encouraged to teach undergraduate medical students and paramedical students, if any. This performance should be based on assessment by the faculty members of the department and from feedback from the undergraduate students (See Model checklist V, Chapter IV)

*v) **Dissertation in the Department :*** Periodic presentations are to be made in the department. Initially the topic selected is to be presented before submission to the University for registration, again before finalisation for critical evaluation and another before final submission of the completed work (See Model Checklist VI & VII, Chapter IV)

vi) *Periodic tests:* The departments may conduct three tests, two of them be annual tests, one at the end of first year and the other in the second year. The third test may be held three months before the final examination. The tests may include written papers, practicals / clinicals and viva voce.

vii) Work diary / Log Book- Every candidate shall maintain a work diary and record his/her participation in the training programmes conducted by the department such as journal reviews, seminars, etc. Special mention may be made of the presentations by the candidate as well as details of clinical or laboratory procedures, if any conducted by the candidate.

viii) *Records:* Records, log books and marks obtained in tests will be maintained by the Head of the Department and will be made available to the University or MCI.

Log book

The log book is a record of the important activities of the candidates during his training, Internal assessment should be based on the evaluation of the log book. Collectively, log books are a tool for the evaluation of the training programme of the institution by external agencies. The record includes academic activities as well as the presentations and procedures carried out by the candidate.

Format for the log book for the different activities is given in Tables 1,2 and 3 of Chapter IV. Copies may be made and used by the institutions.

Procedure for defaulters: Every department should have a committee to review such situations. The defaulting candidate is counselled by the guide and head of the department. In extreme cases of default the departmental committee may recommend that defaulting candidate be withheld from appearing the examination, if she/he fails to fulfill the requirements in spite of being given adequate chances to set himself or herself right.

Scheme of Examination

*i) **Theory***

There shall be four question papers, each of three hours duration. Each paper shall consist of two long essay questions each question carrying 20 marks and 6 short

essay questions each carrying 10 marks. Total marks for each paper will be 100. Questions on recent advances may be asked in any or all the papers. Details of distribution of topics for each paper will be as follows:

Paper I: Basic Sciences - 100 marks

1. Anatomy
2. Physiology
3. Other basic science topics covered in syllabus

Introduction to Surgery, Basic Surgical Principles. Wounds, tissue repair and scars. Critical care; fluid, electrolyte and acid-base balance; blood transfusion. Nutritional support and rehabilitation. Anaesthesia and pain relief. Wound infection. Special infections. Acquired immunodeficiency Syndrome (AIDS). Sterile precautions. Transplantation. Tumours, Cysts, Ulcers, Sinuses. Plastic and reconstructive surgery, skin lesions. Burns. Arterial disorders. Venous disorders. Lymphatic system. Day surgery. Audit in surgery. Surgical ethics.

Paper II: 100 marks

Eye and orbit. Cleft lip and palate, developmental abnormalities of the face, palate, jaws and teeth. Maxillofacial injuries. Nose and sinuses. Ear. Oral and oropharyngeal cancer and procancer. Salivary gland disorders. Pharynx, larynx and neck. Thyroid gland and the thyroglossal tract. Parathyroid and Adrenal glands. Breast. Thorax. Heart and Pericardium

Paper III: 100 marks

Anastomoses, Oesophagus. Stomach and duedenum. Liver. Spleen. Gallbladder and bile ducts. Pancreas. Peritoneum, omentum, mesentery and retroperitoneal space. Small and large intestines. Intestinal obstruction. Vermiform appendix. Rectum. Anus and anal canal. Hernias, Umbilicus, Abdominal wall. Principles of Laparoscopic surgery.

Paper IV: 100 marks

Orthopedics: Musculoskeletal disorders. Fracture and Dislocations - General, specific. Diseases of bones and joints - infection, tumours, generalised diseases and chronic joint diseases, congenital disorders. Wrist and hand. Foot.
Nervous system: Neurological disorders affecting the musculoskeletal system. Spine, vertebral column and spinal cord. Nerves. Cranium (Scalp, skull, brain).
Genito -Urinary System: Urinary symptoms, Investigation of the urinary tract, anuria. Kidneys and ureters. Urinary bladder. Prostate and seminal vesicles. Urethra and penis. Testis and scrotum.

Note: The distribution of chapters / topics shown against the papers are suggestive only.

ii) ***Clinical*** 200 marks

There shall be one long case and two short cases to be examined and presented by each candidate.

Type of cases

Long case	1	100 marks
Short cases	2 (50x2)	100 marks

iii) ***Viva voce*** 100 marks

1) Viva-voice Examination: (80 marks)
All examiners will conduct viva-voice conjointly on candidate's comprehension, analytical approach, expression and interpretation of data. It includes all components of course contents. In addition candidates may be also be given case reports, charts, gross specimens, Histo pathology slides, X-rays, ultrasound, CT scan images, etc., for interpretation. Questions on operative surgery and use of instruments will be asked. It includes discussion on dissertation also.

2) Pedagogy Exercise: (20 marks)
A topic be given to each candidate in the beginning of clinical examination. He/she is asked to make a presentation on the topic for 8-10 minutes.

iv.

	Theory	Practical	Viva	Grand Total
Maximum marks for M.S Gen. Surgery	400	200	100	700

Recommended books and Journals

Text books

1. Charles V. Mann, R.C.G. Russell, Norman S. Willians, Bailey and Love's Short Practice of Surgery, 23rd Edition, 2000, Chapman & Hall
2. David C. Sabiston : Text book of Surgery : The Biological Basis of Modern Surgical Practice, 15th Edition, 1971, W.B. Saunders
3. Seymour I. Schwarts, G. Tom Shines, Frank C. Spencer, Wendy Cowles Husser: Principles of Surgery, Vol. 1 & 2, 7th Edition, 1999, Mc.Graw Hill
4. JSP Lumley : Hamilton Bailey's Physical Signs, 18th Edition, 1997, Butterworth/Heinemann.
5. R.W.H. McMinn : Last's Anatomy : Regional and Applied, 10th Edition, 1999, Churchill Livingstone

6. Sir Charles Illingworth, Bruce M. Dick, A Text Book of Surgical Pathology, 12th Edition, 1979, Churchill Livingstone.
7. K.Das : Clinical Methods in Surgery, 8th Edition, 1968, Suhas Kumar Dhar, Calcutta
8. R.F. Rintoul : Farqharson's Text Book of Operative Surgery, 8th Edition, 1995, Churchill Livingstone
9. Somen Das : A practical Guide to Operative Surgery, 4th Edition, 1999, S. Das, Calcutta.
10. Pankaj Patel, V.V.Dewoodkar, Handbook of Surgical Instruments for Undergraduates, 1992, Bhalani publishing, House
11. R.A.Jamieson and A.W.Kay : Text book of Surgical Physiology, Lavingstone.
12. James Kyle : Pye's Surgical Handicraft, Indian Edition, K.M. Varghese Company.

Reference text books

1. William F. Ganong : Review of Medical Physiology, 2000, Lange Medical Publication
2. Roshan Lall Gupta : Year Book of Surgery, (Series) Jaypee Brothers
3. Roshan Lall Gupta : Recent advances in Surgery, (Series) Jaypee Brothers
4. I. Taylor and C.D. Johnson : Recent Advances in Surgery, (Series) Churchill Livingstone.
5. Lloyd M. Nyhus, Robert J.Baker and Joseph E. Fischer : Mastery of Surgery Vol. 1 & 2, 3rd Edition, 1997, Little Brown & Company.
6. Peter J.Morris and Ronald A Malt : Oxford Text Book of Surgery, Vol. 1 & 2, 1994, Oxford University Press
7. Charles Rob and Rodney Smith : Operative Surgery (All Volumes), 2nd Edition, 1971, Butterworths.
8. C.Palanivelu : Art of Laparoscopic Surgery, 1999, Paras Publishing
9. Michael J. Zinner, Seymour I. Schartz and Haroid Ellis : Maingot's abdominal operations, Vol. 1 & 2, 10th Edition, 1997, Prentice Hall International.
10. Kevin G. Burnand and Anthony E. Young : The New Aird's companion to surgical studies, 1992, Curchill Livingstone.
11. Guyton : Text Book of Medical Physiology, 9th Edition, 1998, W.B. Saunders.
12. Hamilton Bailey : Emergency Surgery, 1999, Butterwoth
13. Cuschiery : Essentials of Surgical Practice, 3rd Edition, 1995, K.M. Verghese Company
14. Goliger : Surgery of the Anus, Ractum and Colon.

15. Lee Mcgregor : Synopsis of Surgical Anatomy, 12th (Indian) Edition, 1998, K.M. Verghese Company
16. W.T. Irvine : Modern Trends in Surgery, Series, Butterworths

Reference books

1. Irving Taylor, Timothy G. Cooke and Perra Guillou : Essential General Surgical Oncology, 1996, Churchil Livingstone.
2. James A, O'Neil, Marc I. Owe, Jay L. Grosfeld, Eric W. Fopnkalsrud and Amold G. Coran : Pediatric Surgery, Vol.1 & 2, 5th Edition, 1998, Mosby
3. Anthony S. Fauci and Others : Harrison's Principles of Internal Medicine, Vol. 1 & 2, 14th Edition, 1998, Mc Graw Hill
4. Sheila Sherlock and James Dooley : Diseases of the Liver and Biliary System, 10th Edition, 2000, Blackwell Scientific Publication
5. Incent J. Devita, Samuel Hellman and Steven A. Roseberg, Cancer : Principles and Practice of Oncology, 6th Edition, 2000, Lippincott
6. Blumgart : Surgery of Liver & Bilary Tract, Vol. 1 & 2, 2nd Edition, 1994, Churchill Livingstone
7. Campbell and Smith : Urology, Vol. 1,2 & 3, 5th Edition, 1986, W.B. Saunders
8. Smith : General Urology
9. Grab and Smith : Plastic Surgery, 5th Edition, 1997

Journals for reference

Indian Journal of Surgery
British Journal of Surgery
American Journal of Surgery
Surgery International
New England Journal of Medicine
Surgery, Gynaecology & Obstetrics
Year Book of Surgery
Surgical Clinics of North America
Lancet
British Medical Journal
Urological Clinics of North America
Indian Journal of Medical Research

Additional reading

1. Compondium of Recommendations of Various Committees on Health and Development (1943-1975) DGHS, 1985Central Bureau of Health Intelligence, Directorate General of Health Services, Min. Of Health and Family Welfare, Govt. Of Indian, Nariman Bhawan, New Delhi, P – 335
2. National Health Policy : Min. of Health & Family Welfare, Nirman Bhawan, New Delhi, 1983
3. Samosh Kumar : The Elements of Research, writing and editing 1994, Dept. Of Urology, JIMPER, Pondicherry
4. Srinivasa D K etal : Medical Education Principles and Practice, 1995. National Teacher Training Centre, JIPMER, Pondicherry
5. Indian Council of Medical Research : "Policy Statement of Ethical considerations involved in Research on Human Subjects", 1982, I.C.M.R., New Delhi.
6. Code of Medical Ethics framed under section 33 of the Indian Medical Council Act, 1956. Medical Council of India, Kotla Road, New Delhi.
7. Francis C M : Medical Ethics, Jaypee Publications, Bangalore; 1993.
8. Indian National Science Academy, Guidelines for care and use of animals in Scientific Research, New Delhi, 1994.
9. Internal National Committee of Medical Journal Editors, Uniform requirements for manuscripts submitted to biomedical journals, N Engl J Med 1991, 424-8
10. Kirkwood B.R.: Essentials of Medical Statistics, 1st Ed., Oxford, Blackwell Scientific Publications 1988.
11. Mahajan B.K. : Methods in Bio-statistics for Medical Students, 5th Edition, New Delhi, Jaypee Brothers Medical Publishers, 1989.
12. Raveendran B Gitanjali : A Practical approach to PG dissertation, New Delhi, Jaypee Publications, 1998.
13. R.K. Chaube : Consumer Protection Act and Medical Profession, 1st Edition, 1999, Jaypee Brothers.

SRI SIDDHARTHA UNIVERSITY

M.S. Degree Examination – Model Question Paper

[Time: 3 Hours] [Max. Marks: 100]

GENERAL SURGERY

PAPER I

Q.P. CODE :

Your answers should be specific to the questions asked.
Draw neat labeled diagrams wherever necessary. Answer all questions

LONG ESSAY **2 X 20 = 40 Marks**

1. Discuss care of a "Diabetic foot" and describe in details the management of a 55 years old male patient with diabetic gangrene of forefoot
2. Discuss "Nosocomial infection" and various measures for infection control in surgery

SHORT ESSAY **6 X 10 = 60 Marks**

3. Enteral nutrition in surgery
4. Endoscopic ultrasonography (EUS)
5. Critically ischaemic lower limb
6. Brain death
7. Hamartomas
8. Deep venous thrombosis

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SRI SIDDHARTHA UNIVERSITY

M.S. Degree Examination – Model Question Paper

[Time: 3 Hours] [Max. Marks: 100]

GENERAL SURGERY

PAPER II

Q.P. CODE :

Your answers should be specific to the questions asked.
Draw neat labeled diagrams wherever necessary. Answer all questions

LONG ESSAY **2 X 20 = 40 Marks**

1. Discuss the etiology, clinical features of M.N.G and management of multinodular thyroid goiter in a 45 years old female patient
2. Discuss salivary tumors. Clinical features investigation and management of adenoid cystic carcinoma of parotid

SHORT ESSAY **6 X 10 = 60 Marks**

3. Pheochromocytoma
4. Cleft lip and palate
5. Neck dissections in oral malignancy
6. C.P.R management
7. Breast cystic conditions
8. Recurrent Laryngeal nerve paralysis

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SRI SIDDHARTHA UNIVERSITY

M.S. Degree Examination – Model Question Paper

[Time: 3 Hours] [Max. Marks: 100]

GENERAL SURGERY

PAPER III

Q.P. CODE:

Your answers should be specific to the questions asked.
Draw neat labeled diagrams wherever necessary. Answer all questions

LONG ESSAY **2 X 20 = 40 Marks**

1. Discuss the causes of Blunt Liver Injuries. Discuss in detail types, diagnosis and management of blunt liver trauma
2. Classify tumors of colon. Discuss investigations management of carcinoma transverse colon

SHORT ESSAY **6 X 10 = 60 Marks**

3. Gastrectomy and complications
4. Management of pseudocyst of the pancreas
5. Chemical sphincterotomy for anal fissure
6. TIPSS
7. Laparoscopic appendicetomy
8. Umbilical hernia

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SRI SIDDHARTHA UNIVERSITY

M.S. Degree Examination – Model Question Paper

[Time: 3 Hours] [Max. Marks: 100]

GENERAL SURGERY

PAPER IV

Q.P. CODE :

Your answers should be specific to the questions asked.
Draw neat labeled diagrams wherever necessary. Answer all questions

LONG ESSAY **2 X 20 = 40 Marks**

1. Describe the development of testes. Discuss the management of incompletely descended testis
2. Discuss the aetiopathogenesis and management of carcinoma prostate

SHORT ESSAY **6 X 10 = 60 Marks**

3. Charcot's joint
4. Ulnar nerve compression
5. ESWL
6. Wilm's tumor
7. Stricture urethra
8. Frozen shoulder

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