

CURRICULUM

(TRAINING MANUAL)

Post Graduate Training Program For MS General Surgery



FATIMA JINNAH
MEDICAL UNIVERSITY, LAHORE
Government of The Punjab

**Fatima Jinnah Medical University
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NOMENCLATURE AND DURATION

A. Nomenclature of the Course

The degree programme shall be Master of Surgery.

B. Course Title:

MS General Surgery

C. Training Centers

Departments of General Surgery (accredited by FJMU) in the affiliated hospitals.

D. Duration of Course

The duration of the course shall be four years along with structured training program in the teaching hospitals under the supervisors approved by University.

The course is structured in two parts:

Part I is structured for the first two calendar years. The candidate shall learn fundamental concepts of General Surgery, Applied Basic Medical Sciences, Ethics and Behavioral Sciences, and Biostatistics & Research Methodology. This includes attending mandatory workshops, selecting topic and writing a synopsis for research and mandatory rotations through critical care and orthopedics and trauma. At the completion of two years, intermediate examination is conducted.

Part II is structured for the next two years. It has two components:

1. Clinical training in general surgery and allied specialties as required in the structured training program
2. Research and thesis writing

Definitions

- i. **University** means the Fatima Jinnah Medical University.
- ii. **Affiliated hospital** means teaching hospitals affiliated with Fatima Jinnah Medical University or approved by the university for supervised structured training
- iii. **Applicant** means a person who applies for admission into MS General Surgery

- iv. **Candidate** means a person who will be selected for training in MS General Surgery.
- v. **Curriculum** means the planned learning opportunities and experiences comprising sets of structured courses leading to successful achievement of program objectives and outcomes.
- vi. **Core Curriculum** means mandatory courses of study categorized as 'essential' for all students of MS General Surgery.
- vii. **Generic Competencies** means the defined sets of knowledge, skills and attitudes required for the desired learning outcomes which are applicable to a whole class or group.
- viii. **Specialty Specific Competency** means the qualities or states of being functionally adequate with sufficient knowledge, judgment, skills or strengths which are applicable to the relevant specialty training.
- ix. **Candidate's Training Portfolio** means a professional development portfolio to track progress in the training program. It shall consist of a documented record of acquisition of knowledge, skills and affects.
- x. **Continuous Internal Assessments (CIS)** mean regular assessment of the learning performance related to the structured program that is separate from examinations and has a substantial contribution on the successful completion requirement and examination. It includes regular observation and assessment of workplace performance, skills, attitudes, feedbacks, candidate's training portfolio evaluation and supervisor's annual review report on these evaluations.
- xi. **Error Investigation** means a medical error or incident investigation which involves defining the problem; identifying the causes (analysis) and selecting the best solution (reduce the risk).
- xii. **Assessment** means a formally defined process within the curriculum in which the candidates' progress in the training program is assessed and measured using a range of defined and validated assessment tools.
- xiii. **Intermediate Examination** means the examination which will be conducted at completion of first two years of training.

- xiv. **Examiner** means examiner of clinical and oral examinations of MS General Surgery program.
- xv. **External Examiner** means the one who is not teaching (or has not taught during the academic year) candidates of MS program.
- xvi. **Internal Examiner** means the one who is teaching (or has taught for at least six months within two years of commencement of the concerned examination) candidates MS General Surgery.
- xvii. **Paper Setter** means paper setter for written papers of MS General Surgery examinations.
- xviii. **Paper assessor** means subjects specialists assessing the papers of MS General Surgery Examinations
- xix. **Practice Based Learning (PBL)** means the process of learning to use scientific evidence related to patient's health problems and management and the ability to interpret medical literature and research to decide the evidence-based management most suitable for the index patient.
- xx. **Program Format** means the whole plan of training and assessments designed for achieving the MS Degree.
- xxi. **Supervisor** mean supervisor for overall conduct of his own specialty in MS General Surgery program.
- xxii. **System Based Practice** means competency to understand how patient care relates to the respective health care system as a whole and how to use the system to improve the quality and safety of patient care.
- xxiii. **Systematic critical thinking** means an approach to problem solving, by viewing " problems" as parts of an overall system, rather than reacting to specific part, outcomes or events in isolation and potentially contributing to further development of unintended consequences. System thinking focus on cyclical rather than linear cause and effect.
- xxiv. **Thesis** means a research document written as long essay or dissertation based on university approved research project.

- xxv. **Training Program** means details of structured training of candidate in achieving generic and specialty- specific competencies leading to achievement of MS Degree.
- xxvi. **Workplace-based assessment (WPBA)** means periodic and planned assessment of desired competencies in the real time working environment, including outpatient department, ward, emergency and operation theatre.
- xxvii. **Mini Clinical Evaluation Exercise (Mini-CEX)** means periodic and planned assessment of desirable clinical competencies in the real time workplace environment.
- xxviii. **Directly observation of procedural skills (DOPS)** means period and planned assessment of desirable psychomotor skills in the real time workplace environment.
- xxix. **Case-based evaluation** means assessment of core competencies in real time, based on actual or simulated patients and their problems.
- xxx. **360-Degree evaluation or Multisource Feedback (MSF)** means assessment of generic and specialty specific competencies based on workplace-based multisource feedback, continuous internal evaluations, assessment of candidate’s training portfolio and results of various formative and summative assessments.

PROGRAM MISSIONS AND OBJECTIVES

1. Mission statement

The students of MS General Surgery program will achieve highest levels of cognition, skills and professional behaviors required for safe and ethical scientific practice in the field of general surgery.

2. AIMS & LEARNING OBJECTIVES

a. AIMS

To enable the residents as competent, scientific and empathetic clinicians, surgical practitioners, researchers and teachers in the specialty of general surgery.

b. LEARNING OBJECTIVES

1. Provide training in cognitive, psychomotor and affective domains.
2. Train in general surgery through a competency-based training program.
3. Perform appropriate surgical procedures safely and effectively.
4. Use modern techniques and technologies effectively.
5. Recognize and effectively manage surgical complications.
6. Plan screening and preventive strategies for surgical disorders.
7. Plan appropriate follow up strategies and rehabilitation.
8. Plan palliative surgical care, including end of life decisions.
9. Demonstrate professional, ethical and empathetic surgical practices.
10. Demonstrate skills in planning, designing and conducting research and its application for safe and scientific surgical practices.
11. Reflect and critically analyze own clinical performance for continuous professional improvement.
12. Demonstrate team management and leadership qualities.
13. Develop teaching and training abilities.
14. Recognize and plan management of hazards, risks and disasters.

SCHEME OF PROGRAM

ADMISSION CRITERIA

- a. Application for admission in training programs of Fatima Jinnah Medical University will be invited at the most twice a year (subjected to Government policies), through advertisement in print and electronic media mentioning closing date of applications and date of Entry examination along with eligibility and admission criteria on a prescribed application form.
- b. ELIGIBILITY: the applicant on the last date of submission of applications for admission must possess:

- i. Basic Medical Qualification of MBBS or equivalent medical qualification recognized by Pakistan Medical & Dental Council.
- ii. Experience Certificate of one-year house job in an institution recognized by Pakistan Medical & Dental Council is essential at the time of interview. The applicant may submit a 'Hope Certificate' from the concerned Medical Superintendent that the House Job shall be completed before the interview.
- iii. Valid certificate of permanent or provisional registration with Pakistan Medical & Dental Council.

ENTRY EXAMINATION

- i. The Entry Examination for admission to MS programs will be a competitive examination.
- ii. Entry Examination may be held as Joint Centralized Admission Test (JCAT) or equivalent by the Government of Punjab
- iii. University Entry Examination (when applicable) will be held at the most twice a year on the dates to be announced by the Controller of Examination according to the decision of Deans Committee.
- iv. The total marks of the University Entry Examination (when applicable) will be 200 and to be divided as follows

a. Written Paper	Total Marks=125
b. Video-Projected Clinical Examination/OSCE	Total Marks= 50
c. Interview	Total Marks =25
- v. The Entry Examination will consist of the following components

a. WRITTEN PAPER

- i. The written examination will consist of 125 scenario-based Multiple-Choice Questions with single best answer. Each question will carry 1 mark.
- ii. The MCQ's will be derived from different subjects as follows:

i. Applied Basic Sciences	50 questions
Surgical Anatomy	15 questions
Surgical Physiology	10 questions

Surgical Pathology	10 questions
Surgical Pharmacology	05 questions
Critical care	10 questions
ii. General Medicine (applicable to surgical practice)	10 questions
iii. Principles and Practice of General Surgery	50 questions
iv. Surgical allied specialties	15 questions

The proportional weightage of applied basic & clinical science questions will be decided by Deans' Committee and must be ensured by the final paper setter (or through computer-based system if possible).

The question papers in duplicate and their key i.e. correct response will be signed by the final paper setter or by the computer-based system for the examination Department.

The examination Department will receive sealed envelopes with signatures of the paper setter on the seam overlap of the envelop and then covered with a suitable tape. One of the envelopes will be kept under lock and key in the examination department whereas the second envelop will be submitted to Controller of examinations except for computer based paper generation.

The applicant scoring 50 % of marks will pass the written examination.

b. OSCE/VIDEO – PROJECTED CLINICAL EXAMINATION (VPCE)

- i. The Video – Projected Clinical Examination/OSCE will consist of 10 video/slides/stations
- ii. The video/slides/stations will consist of data and images based on the subject of General Surgery and allied specialties.
- iii. Each station will carry 5 marks
- iv. The applicant scoring 50 % of marks will pass the Video-Projected Clinical Examination/OSCE

c. INTERVIEW

- i. Only those applicants, who pass the written paper and video-projected clinical examination/OSCE scoring 50% marks in each of these components, will be called for interview.
- ii. All applicants shall be required to present their original academic credentials at the time of interview including certificates of completion of House Job by the Medical Superintendent

and Good conduct from the Institute/Heads of Department otherwise they shall not be eligible for appearance in the interview.

- iii. The interview will be conducted by a Committee constituted by the Vice Chancellor

Declaration of Result of Entry Examination

- i. The Candidate must have passed all components of Entry examination securing at least 50% marks in each component of the examination and 60 % in total to be declared to have passed the examination. Cumulative score of 60% marks to be calculated by adding up secured marks of each component of the examination and then calculating its percentage.
- ii. Entry examination result shall be valid for the particular match or admission and shall not be valid for subsequent admissions.
- iii. Result will be declared and displayed on university notice board and website.
- iv. Passing in entry examination shall not automatically guarantee admission to training program which will be dependent on available slots and open merit.

ADMISSION PROCESS

- i. All seats will be filled by open merit. However, graduates of FJMU will be given 10% weightage while assigning merit.
- ii. The candidates selected as per admission criteria, will be notified and offered admission in the MS General Surgery training program.
- iii. The slots available for each program will be decided by the university depending upon the available human resource, infrastructure, curriculum, track record of the program and other parameters as decided by the university according to the HEC Guidelines.
- iv. The acceptance of offer of admission by the candidate is to be submitted to the Registrar within 07 days after which it will automatically stand invalid.
- v. On receipt of acceptance from the Registrar's office, it shall be transmitted to the Human Resource Department (HRD). The candidate will be responsible to provide all necessary documents to the HRD. After codal formalities, the Registrar of the University will allocate a registration number to each candidate within 15 days. Failure on the part of candidate to provide all documents within stipulated time will disqualify the candidate and the seat will be declared vacant.

- vi. After registration, the candidate will submit certificate of acceptance from the supervisor of the concerned department as allocated on merit and as directed by the Registrar's office. Failure to do so within stipulated time will disqualify the candidate and seat will be declared vacant.
- vii. The candidate shall have to get the joining report proforma signed by the supervisor and failure to do within 07 days will result in declaration of seat being vacant.
- viii. The vacant seats created by failure of a selected candidate to follow the admission policy may be filled in by the next available candidate on merit.
- ix. In case of any grievances, appeal can be filed within 15 days before the Grievance Committee/Vice Chancellor whose decision shall be final.
- x. The Registrar shall maintain a record of registration of all candidates.
- xi. The university will charge the fee (non-refundable) for the following components at the time of admission. The exact quantum of fee may be decided and adjusted from time to time by the university.
 - a) Registration fee
 - b) Four Mandatory University Workshops fee (ATLS® is mandatory, trainee will pay the fee to respective institute where the course is held)
 - c) Yearly tuition fee to be deposited according to a schedule (SOP's to be developed by the academic council in consultation with Director Finance from time to time).
 - d) Hostel fee if university accommodation is available and availed. University is not obliged to provide accommodation to the selected candidates.
 - e) Utility Charges (Electricity, Gas and Water) if hostel accommodation is availed.
 - f) After a default of more than 30 days duration for the payment of any of the dues, the candidate will be expelled from the program except in special circumstances where it will be endorsed by the Deans Committee.
- xii. The change of specialty of training shall be permissible within 06 months from the date of admission and the candidate will pay a non-refundable transfer fee of Rs. 25000/-.
- xiii. If change of specialty allowed, it will be considered a new admission and would start training from the next induction date of MS program.
- xiv. In case of change of specialty, the candidate will prepare new synopsis but the credit of attended mandatory workshops will be transferrable.

STRUCTURED TRAINING PROGRAM

The trainee of MS General Surgery will undergo through a structured training program. There will be rotational training of 16 months in various allied specialties, including radiology and pathology, and 32 months of training in General Surgery during the full 4 years program. The trainee will have 2 weeks to attend various mandatory workshops in the first year of training. Total credit hours for the whole program are 168 (24-144); 84 (12-72) credit hours each for Part I and II.

RESEARCH, EVALUATION & ACCEPTANCE OF THESIS

- i. The candidate will select a topic for research and write a synopsis in the first 12 months of training. The topic should reflect a true research and not mere collection of data or audit. The topic should be important for scientific national and international community and preferably be of national interest.
- ii. The candidate will get the synopsis approved by the University Board of Studies, Board of Faculties, Ethics Review Committee and Board of Advance Studies (Institutional Review Board).
- iii. The candidate will have to submit the Certificates of Approval by the concerned Boards and Committees as part of compulsory eligibility criteria for appearing in the Intermediate Examination upon completion of 2 years of training.
- iv. The candidate may start collecting relevant data after approval of synopsis by Board of Advance Studies.
- v. The candidate will start compiling the research data and write a thesis after getting registered for last 2 years of general surgery training upon successful completion of Intermediate Examination.
- vi. The candidate will submit a regular progress report on his thesis, duly signed by supervisor, at 4 months interval to the Board of Faculties and Institutional Review Board and to the Registrar Office.
- vii. The candidate will submit his thesis at least 06 months prior to completion of training.
- viii. The thesis along with a certificate of approval from the supervisor will be submitted to The Registrar's office who would record the date / time etc and get it received from the Controller of examination within 06 working days of receiving.

- ix. The Controller of Examination will ensure that thesis is complete in every respect.
- x. The Controller of Examination will submit a panel of eight examiners, preferably including at least one examiner from abroad subjected to availability, for evaluation of thesis within 07 days for selection of four examiners by the Vice Chancellor. The Vice Chancellor shall return the final panel within 06 working days to the controller of examination for processing and assessment. In case of any delay the controller of examination would bring the case personally to the Vice Chancellor.
- xi. The supervisor shall not act as an examiner of the candidate and will not take part in evaluation of thesis.
- xii. The Controller of Examination will make sure that the Thesis is submitted to evaluators in appropriate fashion and a reminder is sent after every 15 days.
- xiii. The thesis will be evaluated by the examiners within a period of 06 weeks.
- xiv. In case the examiners fail to complete the task within 06 weeks with 02 fortnightly reminders by the Controller of Examinations, the Controller of Examination will bring it to the notice of Vice Chancellor in person.
- xv. In case of difficulty in finding an internal examiner for thesis evaluation, the Vice Chancellor would, in consultation with the concerned Deans, appoint any relevant subject specialist as examiner.
- xvi. There will be two internal and two external examiners. In case of difficulty in finding examiners, they Vice Chancellor would, in consultation with the concerned Deans, appoint minimum of three, one internal and two external examiners.
- xvii. The total marks of thesis evaluation will be 250. An oral assessment of 30 Marks will be made about thesis research methodology, significant findings, results, national and international comparison, conclusion, recommendations and limitations in the final examination.
- xviii. The thesis will be considered 'accepted' if the cumulative score of all the examiners is 60%.
- xix. The candidate will be considered 'successful' only if he scores 60% in evaluation of thesis by examiners and 60% in the oral component of thesis assessment in final examination.
- xx. The Clinical training will end at completion of stipulated training period, but the candidate will become eligible to appear in the Final Examination at completion of clinical training and after acceptance of thesis. In case clinical training ends earlier, the slot will fall vacant after stipulated training period.

CONTINUOUS INTERNAL ASSESSMENT (CIS)

CIS will include training progress of candidate in terms of punctuality, attendance, attitudes and behavior, clinical and operative work, record keeping, patient management including follow up, log book, journal club, morbidity mortality meetings, multidisciplinary meetings, clinical audits, clinicopathological meetings, presentations, assignments, participations and presentations in seminars, symposia and conferences, workshops, Mini-CEX, DOPS, CBS, MSF, portfolio and other academic and research activities. A record of any inquiry against the candidate or disciplinary action must be maintained and communicated to the Registrar office and Controller Examinations.

- i. The 3 monthly continuous internal assessment will be submitted by the supervisor in sealed envelope to the Registrar's office for appropriate action. The same CIS proforma will be submitted by the appropriate supervisor after completion of rotation of any duration. A copy will be sent to Controller Examinations for record.
- ii. The Registrar's office will be responsible for collection of data on three monthly basis and compile yearly performance report by averaging the submitted reports.
- iii. The trainee would prompt his/her supervisor to submit his/her completed assessment proforma every 3 months or upon completion of rotation of any duration.
- iv. The trainee would inform the Registrar in case of any delay/difficulty in CIS proforma submission as soon as possible.
- v. Failure of the supervisor to submit CIS proforma after 02 reminders fortnight apart by the Registrar, would be reported to the Academic Council by the Registrar.
- vi. A cumulative score of 75% shall be required to pass the yearly continuous internal assessments to be allowed to continue in the training program.
- vii. A candidate, who fails to achieve a cumulative score of 75% on yearly assessments, will be presented to an appropriate forum/Deans Committee to be considered for remediation/elimination from the program. The Board of Faculty will develop standard operating procedure for this purpose.
- viii. The cumulative score of all training years will be added together to provide a final cumulative score of continuous internal assessment by the examination department.

LOG BOOK

A complete and duly verified log book is part of the requirement to sit for MS General Surgery examination. It includes required number of specified diagnostic and therapeutic procedures observed and performed (from Levels 1 to 5) on elective and emergency patients, including those in the allied subspecialties rotations. Training at various levels includes: Level 1 – Observer status, Level 2 – Assistant status as First Assistant, Level 3 – Performed under direct supervision, Level 4 – Performed independently under observation, Level 5 – Performed Independently. Logbook will also include any complications and brief follow up of the patients.

Moreover, case presentations in CPCs, Journal club presentations, Morbidity and Mortality meetings, workshops, presentations in symposia, seminars, conferences, Multidisciplinary Team Meetings, ward presentations, assignments and other academic participations will also be entered. The candidate will get the monthly activities signed by the concerned supervisor at the end of each month.

CRITERIA FOR MS SUPERVISOR

The supervisors and mentors of the MS General Surgery program will have the required post graduate qualification (MS, FCPS, FRCS, FACS or equivalent) as recognized by HEC. They must be working in the institute as member of the teaching faculty and must be at level of Professor, Associate Professor and Assistant Professor with at least 4-years of teaching, training and research experience in an HEC-recognized university/teaching organization after acquiring the MS or equivalent qualification and has co-supervised at least 2 MS theses along with a senior approved supervisor. The Supervisor must be approved by the Board of Faculties, Dean Committee and the Vice Chancellor. The committees must ensure that the Supervisor possesses the required qualification and experience and fulfils the HEC Supervisory Criteria. A supervisor can have maximum of 5 MS General Surgery candidates at a given time provided the bed and learning resources criteria of the training unit are in accordance with HEC guidelines. The supervisor must ensure that the total number of registered trainees do not exceed the approved number by the university. Both, the supervisor and the trainee, have to mutually agree for the training and enter in a moral and ethical contractual obligation for the completion of training.

Change of Supervisor:

Supervisor, one selected with mutual consent, cannot be changed. However, in unusual circumstances, if a supervisor does not want to train the trainee, due to his undesirable attitudes and attributes, or the candidate wants to change the supervisor for any reason, both must produce enough acceptable evidence with written request to the Registrar for such a change. The registrar will forward the application to the Deans committee. The decision of Deans committee will be considered final. Vice Chancellor may use his discretionary powers upon a grievance/reconsideration appeal. However, the decision of Vice Chancellor must be approved by the Deans committee before the change is implemented. Such a change must be formally notified by the Registrar and communicated to the Vice Chancellor and the Controller of examinations. If a supervisor is transferred/retired during the training, he must intimate in writing to the Dean of the Faculty and recommend another supervisor for the trainee. Such a change will then be recommended by the Deans committee and formally notified by the Registrar with written intimation to the Controller of examinations and all concerned.

Community-oriented Training:

The trainee will be sent on supervised rotational training for 2 months, one month in each 2-years phase of training, to one of the affiliated/constituent teaching hospitals of the university in the periphery, or to any university-approved peripheral hospital where facilities of supervised training is available.

Training Leaves, Absence and Disciplinary Action:

MS General Surgery is a hectic program requiring emergency, outpatients, inpatients and operation theatre duties during training period. The trainee may avail, after approval of supervisor, 3 leaves in 2 months of training. Such leaves are not cumulative. Leaves more than 7 days in continuity are not allowed. However, under unusual circumstances leave up to 7 days in continued can be availed only after production of evidence for the circumstances and due approval by the supervisor and dean of faculty. If due to unusual circumstances, trainee may have to avail leaves for more than 7 days, approval will be

needed by the Dean of Faculty and the Registrar. In such a case for more than 7 days in continuity, the trainee has to compensate the extra leave period with the extra duties as assigned by the supervisor. The period of leave and its duty compensation will be notified to the Registrar and Controller of Examinations. Under no circumstances, the total training period will exceed the total stipulated period of the program for first and second phase of registered training. If a candidate is absent without prior intimation and approval of supervisor for more than 7 days in continuity, his training will be halted from the time of his last attendance and will be notified to the Registrar and the Disciplinary Committee. The training will not be recommenced without approval by the Supervisor, Dean and Registrar of the university. The recommencement will be considered only with the written decision on such a matter and recommendations about training period compensation by the concerned committees.

Maternity leaves may be availed only once during the training period and will be governed according to 'maternity leave rules' as prescribed in the Government and the University Regulations. However, the trainee has to complete the training period/credit hours for the leaves availed in such a case.

Any disciplinary action initiated against the trainee during the training period will be dealt with according to the Disciplinary Rules and Regulations of the university.

In exceptional circumstances, after production of enough acceptable evidence, a trainee may apply to freeze the training for a period not exceeding 6 months for the 4-year program. However, such a freezing must have a prior approval by concerned supervisor and recommended by the Dean of Faculty allowed by the Deans Committee. The Registrar shall then issue the formal notification after approval of by the Vice Chancellor. A clear decision and modus operandi of training compensation for this period must be communicated to the concerned supervisor and controller of examinations upon recommencement of training in such a case. Under no circumstances, freeze in training be allowed for more than 6 months period in continuity.

Study Leaves:

The trainee is encouraged to attend and participate in various workshops, symposia, conferences, or any concerned academic activity as approved by the supervisor. Such leaves must have a prior approval of the supervisor and will be counted in training only after the candidate will produce a certificate of having attended such an activity.

A trainee may be allowed 'study leave' to complete his research and thesis work for a period not exceeding 15 days in the final year of training period. Such leaves must be recommended by the supervisor and the Dean of Faculty and be approved by the Board of Advance Studies and Research. The Registrar then issue a formal notification with an intimation to the Controller of Examinations.

3. WRITTEN PART OF INTERMEDIATE EXAMINATION.

- i. The candidate will appear in the subject of Principles and Practice of General Surgery.
- ii. The written examination will consist of 100 single best answer type multiple choice questions and 10 short Essay questions.
- iii. Each correct answer in the single best answer type multiple choice question (MCQ) paper will carry 1 mark. The short essay question will be clinical scenario or practice based, and each question will carry 10 marks.
- iv. The total marks of the written examination will be 200 and to be divided as follows:
 1. Multiple Choice Question paper Total Marks = 100 120 minutes
 2. Short Essay question paper Total Marks = 100 60 minutes
- v. The MCQs will be scenario or practice based and will be derived from different subject as follows:
 1. Applied Basic Science Subjects = 25
 2. Principles and Practice of General Surgery = 50
 3. Orthopedic and Trauma = 15
 4. Critical care and Anaesthesia = 10
- vi. The candidates scoring 50% marks in multiple choice question paper and 50% marks in short essay question paper will pass the written examination.
- vii. The candidate will be eligible to appear in the clinical and oral examination only after he is declared successful in written examination.

4. CLINICAL & ORAL PART OF INTERMEDIATE EXAMINATION.

- i. The clinical examination will evaluate patient care competencies in detail.
- ii. A panel of four examiners will be appointed by the Vice Chancellor and of these two will be from FJMU while two will be the external examiners. In case of difficulty in finding an internal examiner in given subject, the Vice Chancellor would, in consultation with the concerned Deans will appoint any relevant subject expert from inside/ outside the University as an examiner.

iii. The examination will be of 3 hours duration and carry 300 total marks.

It will consist of the following components

1. Two to Four Short Cases Total Marks =100 (40 Minutes)
2. One Long Case Total Marks= 75 (30 Minutes)
3. Oral examination Total Marks = 100 (60 Minutes)
 - a. Imaging = 25 (20 Minutes)
 - b. Instruments, sutures, tubes = 25 (20 Minutes)
 - c. Theatre techniques and Operative surgery = 50 (20 Minutes)
4. OSCE Total Marks = 25 (30 Minutes)

- Each short case will be of 10 minutes duration 5 minutes will be for examining the patient and 5 minutes for discussion.
- The long case will be of 30 minutes duration
- Oral examination will each be of 20 minutes duration
- OSCE will have 6 stations and assess various clinical competencies. Each station will carry 5 Marks and of 5 minutes duration

iv. Four candidates will be examined in one day

v. The Candidates scoring 50% marks in each component of the Clinical & Oral examination will pass this part of the intermediate Examination.

5. DECLARATION OF RESULT

- i. The candidate will have to score 50% marks in written and 50 % marks in the clinical and oral examination with a cumulative score of 60% to be declared successful in the intermediate Examination. Cumulative score of 60% marks to be calculated by adding up secured marks of each component of the examination and then calculating its percentage.
- ii. A maximum of 3 consecutive attempts (availed or unavailed) will be allowed to continue the training program. If the candidate fails to pass his intermediate examination within 3 consecutive attempts, the candidate shall be removed

from the training program, and the seat would fall vacant, stipend/scholarship if any would be stopped.

- iii. Special exemption for attempts in extraordinary circumstances may be granted upon approval by concerned supervisor, Faculty of Surgery, Deans Committee and Vice Chancellor.

II. REGISTRATION FOR POST-INTERMEDIATE EXAMINATION TRAINING & RESEARCH

(Part II)

- i. The candidate will register for second phase of residency training.
- ii. The candidate will submit an application and the result of passing intermediate examination to the registrar's office as soon as possible, but no later than 90 days after the declaration of intermediate examination result.
- iii. Initiation of research will be intimated by the candidate to the Registrar.
- iv. The fee structure for this phase of training will be governed by as per rules.

15. FINAL EXAMINATION

I. Eligibility:

- i. To have submitted the result card of passing intermediate examination.
- ii. To have submitted the certificate of completion of training issued by the supervisor will be mandatory.
- iii. To have achieved a cumulative score of 75% in continuous internal assessments of all training years.
- iv. To have got the research thesis approved and accepted.
- v. To have submitted no dues certificate from all relevant departments including library, hotel, cashier etc.
- vi. To have submitted evidence of submission examination fee.

II. FINAL EXAMINATION SCHEDULE AND FEE

- i. Final examination will be held twice a year.
- ii. The candidate has to satisfy eligibility criteria before permission is granted to take the examination.
- iii. Examination fee will be determined and varied at periodic intervals by the university.
- iv. The examination fee once deposited cannot be refunded / carried over to the next examination under any circumstances.
- v. The controller of examination will issue an admittance card with a photograph of the candidate on receipt of prescribed application form, documents satisfying eligibility criteria and evidence of payment of examination fee. This card will also show the roll number, date/ time and venue of examination.

III. COMPONENTS OF FINAL EXAMINATION.

- | | |
|---|-----------------------|
| 1. Written part of Final Examination | Total Marks 200 (20%) |
| 2. Clinical & Oral Part of Final Examination | Total Marks 450 (45%) |
| 3. Contribution of CIS to the Final Examination | Total Marks 100 (10%) |
| 4. Thesis evaluation | Total Marks 250 (25%) |

1. WRITTEN PART OF FINAL EXAMINATION

- i. There will be two written papers which will cover the whole syllabus of the specialty of training with total marks of 200.
- ii. The written examination will consist of 100 single best answer type Multiple Choice Questions and 10 short questions. Each correct answer in multiple choice question paper will carry 1 mark. Each short essay question will carry 10 marks.
- iii. The total marks of the written examination will be 200 and to be divided as follows.

Multiple choice question paper	100 Questions	Total marks=100	120 Minutes
Short Essay question paper	10 Questions	Total marks=100	60 Minutes
- iv. The candidates scoring a score of 50% marks in multiple choice question paper and short essay question paper will pass the written part of the final examination

and will become eligible to appear in the clinical and oral examination. A total of 2 more consecutive written attempts (availed or unavailed) will be allowed. A candidate who fails to succeed in 3 consecutive written attempts will be considered to have failed the Degree Program.

- v. The written part result will be valid for 2 consecutive attempts for appearing in the clinical and oral part of the Final Examination. After that the candidate will have to re-sit the written part of the Final examination.
- vi. A total of 3 consecutive written attempts (availed or unavailed) will be allowed further if the candidate is not successful in the 2 consecutive attempts (following failure in initial/first attempt after clearing the written examination) of oral and practical examination.
- vii. A candidate who fails to succeed in 3 additional consecutive attempts of written followed by 2 attempts of oral and practical examination will be considered to have failed the Degree Program. His case will then be forwarded to the Deans' Committee for elimination from the program. The recommendations of the Deans' Committee will be forwarded to the Vice Chancellor as 'competent authority' to make the final decision.

2. CLINICAL AND ORAL PART OF FINAL EXAMINATION:

Short Cases	Time 40 Minutes	Total Marks = 120
Long Case	Time 30 Minutes	Total Marks = 100
Oral Examination		
General surgery	Time 50 Minutes	Total Marks = 100
Trauma & Critical Care	Time 20 Minutes	Total Marks = 50
Pathology specimens and relevant surgical management	Time 20 Minutes	Total Marks = 50
Research and Thesis	Time 20 Minutes	Total Marks = 30
Total	Time 3 Hours	Total Marks = 450

- i. Not more than 3 candidates should be examined on one day.
- ii. A panel of five examiners will be appointed by the Vice Chancellor and of these two will be from FJMU whilst the other three will be the external examiners. Senior internal examiner will act as a coordinator. The Internal examiners will not examine the candidates for whom he has acted as 'supervisor' and will be substituted by another internal examiner.
- iii. The clinical and oral examination will consist of 2 to 4 short cases, 1 long case and oral examination with 2 stations for a pair of internal and external examiners.
- iv. Short cases will carry 120 Marks and will be evaluated by both internal and external examiners with equal distribution of cases and numbers.
- v. Long case will be of 100 Marks and of 40 minutes duration. The long case will be evaluated by both internal and examiners with equal distribution of marks.
- vi. The Oral examination will consist of 4 Table Viva.
- vii. One examiner (internal or external) will assess the candidate on use of instruments, sutures, tubes and drains with their related operative surgery viva. This Table will have 25 Marks and of 15 minutes duration.
- viii. One examiner (internal or external) will assess the candidate on imaging and related operative surgery. This Table will carry 25 Marks and of 15 minutes duration.
- ix. One examiner (internal or external) will evaluate the candidate on problem solving and critical thinking skills in practical/oral operative surgery, complications, follow up, prevention and log book. This Table will carry 50 Marks and will be of 20 minutes duration. The practical evaluation may be a real time in the workplace.
- x. One (internal or external) examiner will assess the candidate on Trauma and Critical Care. This Table will carry 50 Marks and will be of 20 minutes duration.
- xi. One (external) examiner will assess the candidate on Morbid Pathology specimens and related surgical application. This Table will carry 50 Marks and will be of 20 minutes duration.
- xii. One examiner (external) will evaluate the candidate on his thesis and research. This component will carry 30 Marks and will be of 20 minutes duration.

- xiii. In case of difficulty in finding the examiners in a given subject, the Vice Chancellor would, in consultation with the concerned Deans, appoint any relevant subject expert with appropriate qualification and experience from inside or outside the university as examiner.
- xiv. The candidate needs to score 50% marks in each component of the clinical and oral examinations to be eligible for consideration towards final computation for declaration of result.
- xv. The candidates will have two additional consecutive attempts in oral examination after passing a written examination.
- xvi. Failing 2 consecutive additional attempts of oral examination (availed or unavailed), the candidate has to pass the written examination again.
- xvii. If a candidate fails to pass 3 consecutive sets of written followed by 2 oral examinations after the initial set of final examination (Total of 4 sets including the final annual examination), his case will be forwarded to Deans' Committee with recommendation that he may be eliminated from the program.
- xviii. Special exemption for attempts in extraordinary circumstances may be granted upon approval by concerned supervisor, Faculty of Surgery, Deans Committee and Vice Chancellor.

3. CONTINUOUS INTERNAL ASSESSMENT (CIS)

Continuous internal assessment is a stand-alone component. The marks for continuous internal assessment as per 10% weightage formula will be 100 and will be added to the marks of other components of the final examination and those of Thesis evaluation.

CIS should be evaluated and verified at regular intervals of 6-12 weeks (not later than 12 weeks) by the supervisors in general surgical and rotational training. Duly verified record will be submitted to the Registrar office every 6 months. Failure to get the record verified and submit the duly verified record timely will lead to debarring the candidate from the examination and will be the responsibility of the candidate.

4. THESIS EVALUATION

- i. The total marks of thesis evaluation will be 250. An oral assessment of 30 Marks will be made about thesis research methodology, significant findings, results, national and international comparison, conclusion, recommendations and limitations in the final examination.
- ii. The thesis will be considered 'accepted' if the cumulative score of all the examiners is 60%.
- iii. The candidate will be considered 'successful' only if he scores 60% in evaluation of thesis by examiners and 60% in the oral component of thesis assessment in final examination.

16. DECLARATION OF RESULT

For the declaration of result:

- i. The candidate must get his thesis accepted and pass its oral assessment component.
- ii. The candidate must have passed the final written examination with 50% marks and the clinical & oral examination securing 50% marks. The cumulative passing score from the written and clinical / oral examination shall be 60%. Cumulative score of 60% marks to be calculated by adding up secured marks of each component of the examination i.e. written and clinical / oral and then calculating its percentage.
- iii. The MS degree shall be awarded after acceptance of thesis and success in the final examination.
- iv. On completion of stipulated training period, irrespective of the result (pass or fail) the training slot of the candidate shall be declared vacant.

17. DISCIPLINARY ACTION

- i. For all such offences by the candidate that occur in the institution, affiliated hospitals and hostel premises, the Vice Chancellor may at his discretion refer the case to the disciplinary committee of the institution, which shall be appointed by the Vice Chancellor approved by the Academic Council from time to time. This disciplinary committee shall have the power to hear any student or students or any member of the staff or any member of public and is empowered to send its

- recommendations to the Vice Chancellor who may or may not seek the ratification of these recommendations by the Academic Council.
- ii. The disciplinary committee will consist of at least three professors / senior associate professors.
 - iii. After considering the recommendations of the Disciplinary committee, disciplinary action by the Vice Chancellor against the trainee committing an offence might take one or more of the following depending upon severity of the offence:
 - a. The student may be asked to tender and apology, verbal or written. This shall be placed on the student's record.
 - b. A student may be placed on probation with monthly report from the supervisor securing 70 % score for a period of up to one year. If during the period of probation he/she fails to improve his/her conduct, he/she may be expelled from the institution.
 - c. A student may be fined up to Rs. 10,000/- or an amount which may be decided and adjusted from time to time by the University.
 - d. Stipend/ scholarship if any may be suspended or stopped.
 - e. A student may be suspended from the roll of the institution for a period determined by the Vice Chancellor on recommendations of disciplinary committee.
 - f. The student may be expelled from the institution by the Vice Chancellor on the recommendation of the Disciplinary Committee.
 - iv. Regulation related to expulsion.
 - a. Expulsion whenever imposed on a student shall mean the loss of a specific duration of studies and training as determined by the Vice Chancellor and will mean his/her being debarred from the university examination during the period of his /her expulsion without refund of fee.
 - b. A student expelled from an institution shall not be readmitted before the expiry of the period of his/ her expulsion.

- c. Cases of expulsion shall be reported to the Pakistan Medical and Dental Council by the Vice Chancellor for registration and notification.
- v. A student shall continue to be under the disciplinary jurisdiction of the Vice Chancellor till the declaration of the result of final examination of the program.
- vi. The student shall keep in their possession firearms, other weapons of offence and narcotics, involvement in sectarian or anti Pakistan activities in the premises of the institution, attached hospitals and hostels. Appropriate disciplinary action shall be taken against the students found guilty of contravening this rule.
- vii. The Vice Chancellor is competent to impose and remit fines.
- viii. The Vice Chancellor is competent to impose punishment as deemed necessary.
- ix. The decision of the Vice Chancellor in all cases shall be considered as final and will not be challengeable in any court of law.
- x. The above disciplinary rules may be amended by the Vice Chancellor on recommendation of The Academic Council.

18. GENERAL CLAUSES

- i. Fee for application form, prospectus and procession charges and can be revised periodically by the university.
- ii. The entry examination as prescribed can be revised from time to time by the university (if not organized by the Government).
- iii. Cumulative score of 60% shall mean 60% marks to be calculated by adding up secured marks of each component of the examination.
- iv. The number of seats of each MS training program will be allocated according to the number of available training slots, trainers/ supervisors and the availability of relevant equipment as well as infrastructure and others within the training units of this institution. These parameters will be subject to annual audit and review by the University.
- v. In all university examinations, the candidate has to pass the theory examination before appearing in the clinical, oral practical examinations.

- vi. An MS candidate may freeze his training for a length of period not exceeding one year in total at a stretch or in parts. VC may grant a maximum extension of 30 days in exceptional circumstance over and above this one year limit. This period may be modified on recommendation of the Academic Council from time to time. No further extension will be permissible and the training in the allocated program will be terminated.
- vii. The leave rules will be adopted as per directive of the Government for postgraduate trainees or as issued by competent authority would be applicable to the trainees.
- viii. The supervisor can only be appointed for a program if he / she holds qualification equivalent or greater than the qualification being offered in the program.
- ix. The examiner can only be appointed for an examination if he / she holds qualification equivalent or greater than the qualification being offered in the program.
- x. In case of any ambiguity or difficulty in interpretation of these regulations, the Vice Chancellor will use his / her authority to decide the issue.
- xi. In case of difficulty in interpretation of the rules the candidates may appeal to the Academic Council and subsequently to the Vice Chancellor. The decision of the Vice Chancellor will be final and could not be challenged in any court of law.

19. EQUIVALENCE OF QUALIFICATION, SCOPE AND PLACES OF WORK

MS General Surgery degree program is designed to be equivalent to some other major postgraduate diplomas, like FCPS, FRCS, FACS, subjected to recognition by concerned regulatory bodies, including PM&DC and HEC. The qualified doctor is able to work in the field of general surgery both in the country and abroad (subjected to local regulations of the country).

20. MANDATORY WORKSHOPS

1. Each Candidate of MS program would attend 5 mandatory workshops and any other workshop as required by the University.
2. The Five mandatory workshops include the following:
 - i. Research Methodology, Biostatistics
 - ii. Synopsis and Thesis Writing
 - iii. Communication skills
 - iv. Surgical skills
 - v. Advance Trauma Life Support® (CPSP)
3. Each workshop will be of 02-03 days duration
4. Each workshop will have fee as prescribed by the university.

21. INSTRUCTIONAL TOOLS AND STRATEGIES

The postgraduate trainees of MS General Surgery undergo training in the affiliated/constituent hospitals of Fatima Jinnah Medical University or hospitals of other medical universities approved for structured training in allied specialties required for completion of the program.

A trainee will have at least 5 beds assigned in the ward for learning day to day management of surgical patients. He is required to document history, examination, diagnosis, differential diagnosis, management plan, perioperative care, operation notes, daily progress notes, complications, discharge, histopathology report (if applicable) and follow up of his patients.

During the training, the following methods will be used for teaching of the residence.

- i. Case presentations during ward rounds
- ii. Lectures and presentations
- iii. Assignments
- iv. Morbidity and Mortality Meetings
- v. Multidisciplinary Team Meetings
- vi. Journal clubs
- vii. Ward work and rounds
- viii. Out Patient Department

- ix. Emergency duties
- x. Elective and emergency operation theater work
- xi. Clinicopathological conference
- xii. Seminars, conference, seminar, workshops, symposia
- xiii. Internet-based assignments
- xiv. Small group discussion, problem and case-based learning
- xv. Teaching and training of undergraduates and junior trainees
- xvi. Formative assessments

22. INSTITUTIONAL SUPPORT AND LEARNING OPPORTUNITIES

During the training program of MS Surgery, the resident will be provided following learning experiences and opportunities:

- i. Teaching faculty and supervisor
- ii. Indoor patients
- iii. Out Patient Department
- iv. Emergency & Trauma
- v. Elective Operation Theatre
- vi. Rotations in the surgical specialties
- vii. Lecture theatres
- viii. Library support
- ix. Administrative support
- x. Radiology and Pathology
- xi. Information Technology facilities
- xii. Department of Medical Education support
- xiii. Workshops and Research
- xiv. Financial support (if and where applicable and subjected to approval of competent authority)

STRUCTURED TRAINING SCHEDULE

Part I - FIRST 2 YEARS OF TRAINING		
PRINCIPLES OF GENERAL SURGERY & TRAUMA RESEARCH SYNOPSIS		
First Year of Training		
Rotations and Workshops	Duration	General Surgery
Radiology	1.5 Months	9 Months
Pathology	1 Month	
Workshops	15 Days	
Second Year of Training		
Critical Care & Anesthesia	2 Months	8 Months
Orthopaedics & Trauma	2 Months	
Total training (Part I)	7 Months	17 Months
INTERMEDIATE EXAMINATION		
PART II		
LAST 2 YEARS OF TRAINING		
SYSTEMIC SURGERY RESEARCH		
Third Year of Training		
Rotations	Duration	General Surgery
Neurosurgery	1.5 Months	3 Months
Pediatric surgery	1.5 Months	
Thoracic surgery	1.5 Months	
Cardiovascular	1.5 Months	
Urology	1.5 Months	
Plastic surgery	1.5 Months	
Total training	9 Months	3 Months
Fourth Year of Training		12 Months
Total Training in General Surgery (Part II)		15 Months

CREDIT HOURS

Credit Hours for Part I (First 2 Years) – 84 (12-72)

Credit Hours for Part II (Final 2 Years) – 84 (12-72)

Total Credit Hours for 4 years Training Program - 168 (24-142)

Research –7 Credit Hours (2 contact session of 50 minutes each with supervisor or co-supervisor during each week in Modules 9, 10, 11, 12)

Total Credit Hours for 4 Years MS Program: Training + Research = 168 + 7 = 175

Year	Semester Duration	Credit Hours Theory (50 Minutes)	Credit Hours Clinical Work	Total Credit Hours
PART I				
First Year				
Module 1	16 weeks	2 Days x 50 Minutes	6 Days x 4 Hours	14 (2-12)
Module 2	16 weeks	2 Days x 50 Minutes	6 Days x 4 Hours	14 (2-12)
Module 3	16 weeks	2 Days x 50 Minutes	6 Days x 4 Hours	14 (2-12)
Second Year				
Module 4 (2 Rotations)	16 weeks	2 Days x 50 Minutes	6 Days x 4 Hours	14 (2-12)
Module 5	16 weeks	2 Days x 50 Minutes	6 Days x 4 Hours	14 (2-12)
Module 6	16 weeks	2 Days x 50 Minutes	6 Days x 4 Hours	14 (2-12)
Total	96 weeks			84 (12-72)
Intermediate Examination (4 weeks)				
PART II				
Third Year				
Module 7 (3 Rotations)	18 weeks	2 Days x 50 Minutes	6 Days x 4 Hours	14 (2-12)
Module 8 (3 Rotations)	18 weeks	2 Days x 50 Minutes	6 Days x 4 Hours	14 (2-12)
Module 9	14 weeks	2 Days x 50 Minutes	6 Days x 4 Hours	14 (2-12)
Fourth Year				
Module 10	16 weeks	2 Days x 50 Minutes	6 Days x 4 Hours	14 (2-12)
Module 11	16 weeks	2 Days x 50 Minutes	6 Days x 4 Hours	14 (2-12)
Module 12	16 weeks	2 Days x 50 Minutes	6 Days x 4 Hours	14 (2-12)
Total	98 weeks			84 (12-72)
Final Examination (4 weeks)				

TABLE OF SPECIFICATION

WRITTEN EXAMINATION INTERMEDIATE EXAMINATION

1. Applied Basic Science Subjects		25 MCQs	2 SAQ
i. Applied Anatomy	10		
ii. Applied Pathology	6		
iii. Applied Physiology	6		
iv. Applied Biochemistry & Pharmacology	3		
2. Principles and Practice of Surgery		50 MCQs	4 SAQs
3. Orthopedic and Trauma		15 MCQs	2 SAQ
i. Principles or fractures and dislocations	3		
ii. Upper limb fractures and dislocations	3		
iii. Lower limb and pelvic fractures dislocations	3		
iv. Spinal column disorders and fractures	2		
v. Inflammatory & metabolic disorders	2		
vi. Primary & secondary tumours	2		
4. Critical care and Anaesthesia		10 MCQs	2 SAQs
i. Organ dysfunction, failure & management	3		
ii. Sepsis	2		
iii. Oxygenation and assisted ventilation	2		
iv. Monitoring	1		
v. Invasive & image-guided procedures	1		
vi. Pain control	1		

TOS FOR PART I

TOPIC	Etiopathogenesis	Clinical Features	Diagnosis	Management	Complications
Metabolic Response to Injury	X	X	X	X	X
Shock & Blood Transfusion, Blood Components	X	X	X	X	X
Fluids, Electrolytes & Acid-Base Balance	X	X	X	X	X
Wounds, Healing & Tissue Repair	X	X	X	X	X
Tissue Engineering & Regeneration	X				
Immunology & Transplantation	X	X	X	X	X
Surgical infections	X	X	X	X	X
Basic Surgical Skills & Anastomosis	X	X	X	X	X
Principles of Laparoscopic and Robotic Surgery	X		X	X	X
Principles of Paediatric Surgery	X	X	X	X	X
Principles of Surgical Oncology, including Radiotherapy & Chemotherapy	X	X	X	X	X
Surgical Audit & Research	X	X	X	X	X
Surgical Ethics and Law	X			X	X
Human factors, Patient Safety and Quality Improvement	X		X	X	X
Investigations and Diagnosis	X	X	X	X	X
Perioperative Care (Perioperative, Intraoperative, Postoperative)	X	X	X	X	X
Anaesthesia & Pain Relief	X	X	X	X	X
Nutrition & Fluid Therapy	X	X	X	X	X
Day Case Surgery	X	X	X	X	X
Trauma (Assessment & Management, Maxillofacial, Head & Neck, Spine, Torso including specific organ & urogenital trauma)	X	X	X	X	X
Skin and Subcutaneous Tissues	X	X	X	X	X
Burns	X	X	X	X	X
Disaster Surgery	X	X	X	X	X
Conflict Surgery	X	X	X	X	X
Arterial, Venous & Lymphatics disorders	X	X	X	X	X
TOTAL	5	10	15	15	5

TABLE OF SPECIFICATION

WRITTEN EXAMINATION FINAL

1. Trauma & Orthopedics	15 MCQs	2 SAQ
2. Gastrointestinal Tract	35 MCQs	3 SAQ
3. Abdominal wall, peritoneum, retroperitoneum	05 MCQs	
4. Head and Neck	05 MCQs	1 SAQ
5. Urology	06 MCQs	} 3 SAQ
6. Neurosurgery	06 MCQs	
7. Plastic surgery	06 MCQ	
8. Thoracic surgery	06 MCQs	
9. Cardiovascular surgery	06 MCQs	
10. Pediatric surgery	06 MCQs	
11. Operative surgery	04	1 SAQ

TOS FOR PART II

TOPIC	Morbid Anatomy	Pathophysiology	Clinical Features	Diagnosis	Management	Complications
Trauma & Orthopedics	X	X	X	X	X	X
Upper GIT						
Oral cavity, Pharynx, Tongue	X	X	X	X	X	X
Esophagus	X	X	X	X	X	X
Stomach & Duodenum	X	X	X	X	X	X
Lower GIT						
Jejunum and Ileum	X	X	X	X	X	X
Colon	X	X	X	X	X	X
Appendix	X	X	X	X	X	X
Rectum	X	X	X	X	X	X
Anal canal	X	X	X	X	X	X
Abdominal wall, Hernia, Umbilicus	X	X	X	X	X	X
Mesentery, Peritoneum and Retroperitoneum	X	X	X	X	X	X
Liver (Excluding Trauma)	X	X	X	X	X	X
Spleen	X	X	X	X	X	X
Gall Bladder & Biliary Tract	X	X	X	X	X	X
Pancreas	X	X	X	X	X	X
Urogenital System						
Kidney	X	X	X	X	X	X
Ureters	X	X	X	X	X	X
Urinary Bladder	X	X	X	X	X	X
Seminal vesicles & Prostate	X	X	X	X	X	X
Urethra	X	X	X	X	X	X
Scrotum & Testes	X	X	X	X	X	X
Breast & Endocrines						
Breast	X	X	X	X	X	X
Thyroid and Parathyroid	X	X	X	X	X	X
Adrenals	X	X	X	X	X	X
Endocrine Pancreas	X	X	X	X	X	X
Salivary Glands	X	X	X	X	X	X
Pediatric surgery	X	X	X	X	X	X
Cardiovascular surgery	X	X	X	X	X	X
Thoracic surgery	X	X	X	X	X	X
Plastic & Reconstructive Surgery	X	X	X	X	X	X
Neurosurgery including Brain and Spinal Cord Trauma	X	X	X	X	X	X
Operative Surgery	X	X	X	X	X	X
TOTAL	5	5	15	25	35	15

SYLLABUS & CONTENTS OUTLINE IN PROFESSIONAL EDUCATION

During the first Year the trainee is expected to acquire the knowledge of relevant basic sciences:

1. Applied anatomy & Histology

- Regional and applied anatomy of thorax, abdomen, pelvis, perineum, limbs, spine, head and neck, including important gross relations and surface anatomy as appropriate for surgical access/approach/operations.
- A substantial applied knowledge of human musculoskeletal system, including bones, joints and important muscle groups.
- Applied histological features of tissues and organ systems of human body.
- Developmental anatomy and congenital abnormalities of:
 - Cardiovascular system
 - Respiratory system
 - Gastrointestinal tract and abdominal wall
 - Urogenital system
 - Nervous system
 - Musculoskeletal system
 - Endocrine system
- Imaging anatomy

2. Applied physiology & critical care

- Metabolic response to trauma
- Pain control
- Fluid, electrolytes and acid-base balance and abnormalities
- Shock, Transfusion of blood and blood products, Hemostasis
- Coagulation disorders and anticoagulation
- Nutrition
- Respiratory physiology, gas exchange and arterial blood gases
- Cardiovascular physiology
- Blood and coagulation
- Gastrointestinal tract
- Hepatobiliary and pancreatic functions
- Endocrine system
- Urogenital tracts, renal failure
- Growth and metabolism
- Nervous system
- Intensive and High Dependency Care Units
- Critical care in perioperative period
- Monitoring of the critically ill patients
- Supplemental oxygenation
- Ventilatory support

- Care of high-risk patients and patients with comorbidities
- Burns
- Trauma including principles of damage control surgery
- Sepsis, Systemic Inflammatory Response
- Immune system
- Multiorgan dysfunction and failure
- Dialysis
- Terminal care and Brain death

3. Applied Biochemistry

- Membrane biochemistry
- Tissue metabolism
- Gene expression and the synthesis of proteins
- Enzymes and biologic catalysis
- Bioenergetics; fuel oxidation and the generation of ATP
- Carbohydrate metabolism
- Lipid metabolism
- Nitrogen metabolism
- Biotechnology and concepts of molecular biology with special emphasis on use of recombinant DNA techniques in medicine and the molecular biology of cancer

4. Applied Pharmacology

- Mechanisms of Drug Action
- Pharmacokinetics & Pharmacodynamics of important drugs
- Use in special circumstance
- Drugs used in anesthesia
- Analgesics
- Antibiotics
- Diuretics
- Anticoagulants
- Chemotherapeutic agents
- Drugs used in treatments of common respiratory, cardiovascular, nervous, gastrointestinal, endocrine, urogenital, blood and immunological disorders as applied to management of surgical patients

5. Applied General & Systemic Pathology

- General pathological principles including:
 - Inflammation
 - Wound healing and healing in specialized tissues
 - Cellular injury and tissue death including necrosis, apoptosis, gangrene and infarction
 - Vascular disorders (Arteries, Veins, Lymphatics)

- Disorders of growth, differentiation and morphogenesis.
- Surgical immunology
- Surgical haematology
- Principles of neoplasia and oncology including:
 - Classification of tumours
 - Tumour development and growth including metastasis
 - Staging and grading of cancers
 - Cancer therapy including surgery, radiotherapy, chemotherapy, immunotherapy and hormone therapy
 - Cancer registration
 - Cancer screening
- Pathology of specific organ systems relevant to surgical care including the cardiovascular, respiratory, gastrointestinal, genitourinary, central and peripheral neurological, skin, lymphoreticular and musculoskeletal systems
- Pathology of the breast, endocrine and exocrine glands
- Transplantation
- Handling the biopsy specimens
- Microbiology as applied to surgical practice
- Surgically important micro-organisms including bloodborne viruses.
- Soft tissue infections including cellulitis, abscesses, necrotizing fasciitis
- Gangrene
- Sources of infection
- Sepsis and septic shock
- Asepsis and antisepsis
- Principles of disinfection and sterilization.
- Antibiotics including prophylaxis and resistance
- Principles of high-risk patient management
- Hospital-acquired infections

6. Imaging

- Core knowledge of diagnostic and interventional imaging as applied to surgical disorders
- Diagnostic and Interventional imaging techniques
- Basic interpretation of X-rays, ultrasound, contrast imaging, CT, MRI, PET and radionuclide scanning.

7. Biostatistics & Research Methodology

- Introduction to Bio-Statistics and Research
- Statistics and computing in surgery
- Principles of research and design and analysis of clinical trials
- Criteria for a good research

- Ethics in health research
- Writing a scientific paper
- Critical appraisal of research
- Use of Statistical Package for the Social Sciences (SPSS) in research
- Plagiarism

8. Behavioral Sciences/Ethics/Professionalism/Attitudes

- Models of health care
- Communication skills
- Interdisciplinary and Multidisciplinary management approach
- Leadership and team management
- Counseling
- Informed consent
- High risk consent
- Information giving and taking
- Breaking bad news
- Crisis/disaster management
- Conflict resolution
- Conflict of interest
- Breaking bad news
- Medical ethics, professionalism and doctor-patient relationship
- Psychological aspects
- Ethical and legal obligations of surgeons
- Principles of teaching and to training
- Keeping up to date and evidence-based information
- Understanding and managing people and resources within the health environment
- Promoting good health and community-based surgical practice
- Leadership and team management
- Hippocratic Oath
- Medical/legal ethics and medico-legal aspects of surgery
- Outcome of Surgery
- The evaluation and critical appraisal of published research in general surgery
- Multidisciplinary team approach and meeting
- Decision-making in surgery
- Clinical audit
- Critical evaluation of innovations - technical and pharmaceutical
- Health service management and economic aspects of surgical care

Surgical Management of common congenital and acquired surgical conditions

Objectives

- Demonstrates an understanding of the relevant basic scientific principles for surgical conditions
- Demonstrates history taking and physical examination of elective and emergency patients, including trauma patients
- Identifies the surgical disorder and formulates appropriate differential diagnosis
- Suggests appropriate investigations to confirm the diagnosis
- Suggests appropriate and relevant perioperative clinical care
- Makes decision for appropriate curative/palliative surgical care
- Provides appropriate surgical/palliative surgical care
- Identifies complications and suggests a management plan
- Provides appropriate care of surgical complications
- Formulates a follow up plan
- Makes end of life decisions
- Demonstrates an understanding of brain death and organ donation
- Suggests screening and prevention

1. Gastrointestinal diseases

- Common congenital anomalies
- Abdominal wall hernia
- Peritoneal and mesenteric disorders of surgical importance
- Benign and malignant disease of oesophagus, stomach, small and large bowel and appendix
- Benign and malignant disease of the liver, gall bladder, pancreas and spleen
- Perianal and rectal disease
- Acute abdominal emergencies, including adhesions, peritonitis and perforation of a viscus.
- Stomas
- Acute presentation of gynaecological pathologies

2. Breast diseases

- Benign breast disorders
- Malignant diseases of breast
- Male breast disorders

3. Vascular diseases

- Common congenital anomalies
- Intermittent claudication
- Ischaemic rest pain
- Gangrene and ischaemic ulceration
- Acute limb ischaemia (embolism, thrombosis)
- Leg ulceration
- Venous thromboembolism
- Varicose veins
- Swollen leg
- Pulsatile abdominal mass
- Transient ischaemic attacks and stroke *To include the following conditions*
- Atherosclerotic arterial disease affecting the cerebral, mesenteric, renal and upper and lower limb arteries
- Embolic and thrombotic arterial occlusive disease
- Diseases of the veins and lymphatics
- Lymphoedema
- Vascular and neuropathic consequences of diabetes
- Abdominal and peripheral arterial aneurysms
- Amputations and rehabilitation

4. Cardiovascular and pulmonary diseases

- Benign and malignant lung diseases of surgical importance
 - Obstructive airways disease
 - Restrictive lung disease
 - Acute and chronic respiratory infection
 - Neoplasms of Lung
 - Pleural diseases (effusions, empyema, neoplasia)
- Cardiovascular conditions of surgical importance
 - Cardiac trauma
 - Cardiac tamponade
 - Valvular heart diseases
 - Principles and complications of Coronary Artery Bypass Graft
 - Vascular grafts

5. Genitourinary diseases in males and females

- Benign and malignant disorders of kidneys and ureters
- Benign and malignant disorders of urinary bladder
- Benign and malignant disorders of prostate and seminal vesicles
- Benign and malignant conditions of scrotum
- Benign and malignant conditions of testis
- Benign and malignant disorders of urethra
- Benign and malignant disorders of penis
- Acute and chronic gynaecological conditions relevant to general surgery
- Benign and malignant disorders of vulva (as applied to general surgery)
- Urinary diversions
- Renal transplantation

6. Diseases of the skin

- Benign conditions of skin and associated glands
- Malignant diseases of skin and associated glands
- Burns

7. Diseases of head and neck

- Benign and malignant conditions head and neck
 - Common congenital conditions of surgical importance
 - Common maxillofacial conditions of surgical importance
 - Oral cavity, pharynx and larynx
 - Tongue
 - Salivary glands disorders
 - Neurovascular disorders of head and neck of general surgical importance
 - Head and neck trauma
 - Neurovascular tumours of neck

8. Neurology and neurosurgery

- Common congenital anomalies
- Space-occupying lesions from bleeding and tumour
- Cranial and peripheral nerve palsies
- General features of cerebral abscess and meningitis
- Brain death

9. Endocrine diseases

- Common congenital anomalies
- Multiple endocrine neoplasia
- Thyroid disorders
- Parathyroid diseases

- Adrenal gland disease
- Abdominal endocrine disorders
- Diabetes
- Morbid obesity and Bariatric surgery
- Endocrine crisis

10. Diseases of the Lymphoreticular system

- Acute and chronic inflammatory conditions
- Lymph adenopathy
- Benign and malignant lymphoreticular conditions
- Lymphoedema
- Immunosuppression

11. Trauma and orthopaedics

- Basic Life Support
- Advanced Trauma Life Support
- Compartment syndrome
- Gunshot, blasts and warfare injuries
- Damage control approach in trauma
- Torso trauma
- Disasters and Triage
- Common congenital bones and joints anomalies of general surgical importance
- Degenerative and inflammatory joint disease
- Principles of management of fractures and dislocations
- Fractures and joint dislocations of general surgical importance
- Pelvic fractures
- Bone and joint infection
- Benign and malignant vertebral and spinal conditions of surgical importance
- Spinal nerve root entrapment and spinal cord compression
- Metastatic bone cancer
- Metabolic bone disease
- Common peripheral neuropathies and nerve injuries
- Diabetic foot
- Amputations and rehabilitation
- Common sports injuries
- Pediatric orthopaedics of surgical importance
- Paediatric trauma
- Geriatric trauma
- Trauma in pregnancy

PROCEDURAL SKILLS

Objectives

1. Evaluate and manage trauma and acute surgical emergencies.
2. Undertake Critical care
3. Applies principles of general surgical procedures and techniques
4. Performs minor operative procedures
5. Performs common major general surgical operations independently
6. Identifies intraoperative and postoperative complications
7. Manages intraoperative and postoperative complication
8. Provides appropriate care of wounds
9. Provides appropriate care of surgical drains and tubes

The following list is not exhaustive. The Trainee is expected to get the maximal operative exposure possible. The range of exposure depends upon the type of surgeries performed in the units (where the Trainee is posted for general surgical and specialty training) is performing. However, the list, though not complete, provides a minimal list of desirable procedures the trainee is expected to perform.

CRITICAL CARE

- Vascular access
- Central venous catheterization and central venous pressure monitoring
- Catheterization of the radial and femoral artery
- Endotracheal intubation
- Tracheostomy, Cricothyroidotomy
- Real-time ultrasound technique for vascular localization
- Administration of oxygen and administrative devices
- Airway management
- Arterial blood gas analysis and correction of acid base abnormalities
- Peripheral and total parenteral nutrition
- Ventilatory support – principles, techniques, pitfalls
- Image-guided procedures of surgical relevance
- Thoracentesis
- Paracentesis
- Pericardiocentesis
- Nasogastric tube placement
- Urinary catheterization
- Suprapubic cystostomy
- Critical care of acute renal failure

- Patient controlled analgesia and epidural analgesia
- Measurement of compartment pressures (abdomen, extremity)
- Defibrillation and cardioversion

Emergency Room Procedures

- Tetanus prophylaxis
- Focused Assessment Sonography in Trauma (FAST) and Extended FAST
- Diagnostic peritoneal lavage
- Suturing of lacerations
- Drainage of abscesses
- Wound debridement and excision
- Reduction and Plaster application of simple fractures and dislocations
- Anal dilatation and sphincterotomy
- Phimosis and paraphimosis

Minor Surgical Procedures

- Biopsies
- Excision of swellings
- Excision of sinuses and fistulas
- Day case surgical procedures
- Circumcision
- In growing toe nail
- Proctosigmoidoscopy
- Haemorrhoidal injection sclerotherapy and band ligation
- Vasectomy

Major surgical procedures

- Open and laparoscopic laparotomy
- Open and laparoscopic Cholecystectomy
- Common bile duct exploration
- Biliary-enteric bypass and drainage
- Excision of liver cyst
- Metastatic liver disease
- Liver resections
- Splenectomy and splenic preservation
- Pancreatic Cystogastrostomy
- Pancreatic resections
- Abdominal wall and groin hernia repair
- Oesophagectomy
- Procedures for oesophageal motility disorders

- Gastrectomy
- Gastroenterostomy
- Esophagogastric devascularization
- Portosystemic shunts
- Segmental resection and anastomosis of bowel
- Intestinal stricturoplasty
- Enterocutaneous fistulas
- Meckel's diverticulectomy
- Laparotomy for obscure gastrointestinal bleeding
- Hemicolectomy
- Subtotal and total colectomy
- Proctocolectomy
- Hartman's procedure
- Anterior resection
- Abdominoperineal resection
- Panproctocolectomy
- Rectal pouches
- Stomas and reversal of stomas
- Rectal prolapse
- Rectal polyps
- Anal sphincterotomy
- Fistulectomy
- Haemorrhoidectomy
- Rectovesical and rectovaginal fistula repair
- Procedures for pilonidal sinus
- Endoscopy
- Mastectomy
- Axillary sampling and clearance
- Breast Lump Excision, microdochectomy, major duct excision (cone excision)
- Thyroidectomy (subtotal, neartotal and total)
- Parathyroid exploration
- Neck lymph node dissection (radical, selective, regional)
- Adrenalectomy
- Excision of parotid and submandibular gland
- Excision of benign and malignant lesions of skin
- Bloch dissection of groin nodes
- Procedures for peritoneal metastases (cytoreduction, HIPAC)

Emergency surgery

- Trauma laparotomy and damage control surgery
- Exploratory laparotomy
- Management and repair of oesophageal perforation
- Laparotomy for intestinal obstruction
- Laparotomy for intestinal perforation
- Pancreatic necrosectomy
- Splenectomy and spleen preservation
- Liver repair and resections
- Closure of peptic ulcer perforation
- Bleeding peptic ulcer
- Typhoid enteric perforation
- Resection and anastomosis of bowel
- Obstructed and strangulated hernias
- Appendectomy
- Appendicular mass and abscess
- Amputations
- Embolectomy
- Vascular repair
- Nerve and tendon repair
- Trauma thoracotomy
- Emergency laparotomy in pediatric abdominal emergencies
- Emergency laparotomy in gynaecological emergencies

Subspecialties

1. Orthopaedics and Trauma

- Reduction and splinting of common long bone fractures
- Reduction of common major joint dislocations
- Plaster and splinting techniques
- Compartment syndrome
- Fasciotomy
- Pelvic fractures
- Spinal trauma

2. Neurosurgery

- Monitoring of intracranial pressure
- Care of scalp wounds – sutures and dressings

- Depressed skull fractures management
- Intracranial hematoma management
- Ventriculoperitoneal shunts

3. Urology & Transplantation

- Circumcision
- Phimosis and paraphimosis
- Perirenal abscess
- Pyelolithotomy
- Nephrectomy
- Ureterolithotomy
- Cystolithotomy
- Ureteric and vesical repair
- Prostatectomy
- Transurethral resection of prostate
- Procedures for Hydrocoele
- Procedures for Varicocele
- Testicular biopsy
- Scrotal exploration for testicular torsion
- Orchidopexy
- Orchiectomy
- Suprapubic cystostomy
- Urethral repair
- Excisional and associated procedures for Fournier gangrene
- Peritoneal dialysis
- Transplant surgery

4. Pediatric surgery

- Abdominal access
- Emergency laparotomy
- Vascular access in pediatric patients
- Cleft lip and palate
- Intussusception
- Congenital hypertrophic pyloric stenosis
- Inguinal herniotomy
- Abdominal wall hernia repair
- Obstructed and strangulated abdominal wall and groin hernia repair
- Orchidopexy

- Cystic hygroma
- Hemangiomas
- Pediatric intestinal obstruction
- Imperforate anus
- Rectal prolapse
- Rectal polyp

5. Cardiovascular surgery

- Vascular access and exposure
- Vascular repairs and grafts
- Vascular aneurysm
- Vascular access for dialysis
- Varicose veins
- Arteriovenous malformations
- Arteriovenous fistula
- Pericardiocentesis
- Median sternotomy
- Principles of coronary arterial bypass graft (CABG)
- Principles of valvular heart repair

6. Plastic surgery

- Excision of benign and malignant skin lesions and reconstruction
- Split and full thickness skin graft
- Common skin flaps
- Release of contractures
- Cosmetic and reconstructive plastic surgical procedures
- Tissue expansion
- Breast oncoplastic procedures
- Breast reconstructive procedures
- Reduction and augmentation mammoplasty

7. Thoracic surgery

- Elective and emergency thoracotomy
- Thoracostomy and chest tube management
- Lung resections
- Empyema thoracis
- Decortication
- Diaphragm repair
- Diaphragmatic hernia repair

RECOMMENDED BOOKS AND JOURNALS

Anatomy

Last's Anatomy -Regional and Applied
Snell's Clinical Anatomy – By Regions
Langman's Medical Embryology
Surgical Anatomy and Technique – A pocket Manual
Hewer's Textbook of Histology

Physiology

Ganong's Review of Medical Physiology

Pathology

Walter and Israel General Pathology
Robbin and Cotran Pathologic Basis of Disease

Pharmacology

Review of Pharmacology By: Lippincott's

Biochemistry

Harper's illustrated biochemistry

Critical Care

Washington Manual of Critical Care

Surgery

Hamilton Bailey's Demonstration of Physical Signs in Clinical Practice
Browse's Introduction to the Symptoms and Signs of Surgical Diseases
Bailey and Love's Short Practice of Surgery
Schwartz's Principles of Surgery
Essential Surgical Practice: Higher Surgical Training in General Surgery by Alfred Cuschieri
Fischer's Mastery of Surgery
Clinical Surgery in General: RCS Course Manual
Pye's Surgical Handicraft
Washington Manual of Surgery
Apley and Solomon's System of Orthopaedics and Trauma
Smith and Tanagho's General Urology
General Thoracic Surgery by Thomas Shield, Joseph LoCicero, Carolyn Reed, Richard Feins

Operative Surgery

Atlas of General Surgery. Rob & Smith
Atlas of Emergency Surgery – Hamilton Bailey
Kirk's General Surgical Operations
Farquharson's Textbook of Operative General Surgery

Journals:

British Journal of Surgery
American Journal of Surgery
Annals of Surgery
Surgery (UK)
Journal of Surgery and Acute Care Surgery