SRI VENKATESWARA INSTITUTE OF MEDICAL SCIENCES
TIRUPATI – 517 507

(A University established by an act of Andhra Pradesh State Legislature)

Syllabus of DM / MCh courses at the SVIMS

TIRUMALA TIRUPATI DEVASTHANAMS

CONTENTS

Sri Venkateswara Institute of Medical Sciences, Tirupati

REGULATIONS of 2nd Board of Studies meeting of DM/MCh Courses (Common)

Dt: 03-12-2011

Members present:

01. Dr. B. Vengamma Director, SVIMS,	-	Constituting & Establishing Authority
01. Dr. D. Rajasekhar Dean, SVIMS,	-	Chairman
03. Dr. P.V. Rama Subba Reddy Registrar, SVIMS,	-	Vice Chairman
04. Dr. V. Sivakumar HOD, Dept. of Nephrology,SVIMS,	-	Member
05.Dr.D. Rajasekhar HOD, Dept. of Cardiology, SV IMS	-	Member
06. Dr. B.C.M. Prasad Prof. & Head of Neurosurgery,SV IMS	-	Member
07. Dr. A.K. Roy Dept. of Neurology, SVIMS,	-	Member
08. Dr. T. Kannan Prof. & Head of Medical Oncology, SV IMS	-	Member
09. Dr. Alok Sachan HOD I/c, Dept. of Endocrinology, SV IMS	-	Member
10. Dr. Raja Sundaram HOD, Dept. of Surgical Oncology, SVIMS.	-	Member
11. Dr. P. Sriram HOD I/c, Dept. of Surgical GE, SVIMS.	-	Member
12.Dr.D.Vijaya Kumari Controller of Examinations, SVIMS	-	Member

Members absent:

1.	Dr. Abha Chandra Prof. & Head of CT Surgery, SV IMS	-	Member
2.	Dr. S. Subramanian Prof. & Head of Urology, SVIMS	-	Member

The Director, SVIMS welcomed all the members and asked the Dean to commence the proceedings

The Minutes of the meeting are:

The Board of Studies committee resolved to incorporate the following changes, following are the changes are approved.

1. These regulations may be called Sri Venkateswara Institute of Medical Sciences regulations governing the admission, training and evaluation applicable to DM /MCh courses.

Changes: ***-Nil-***

2. Aim

The aim of the post graduate programmes in DM /MCh shall be to produce a competent specialist and / or medical teacher with the following goals.

a) He/She shall recognize the health needs of the community, and carryout professional obligations ethically and in keeping with the objectives of the national health policy

b) He/She shall have mastered most of the competencies, pertaining to the specialty, that are required to be practiced at the secondary and the tertiary levels of the health care delivery system;

c) He shall be aware of the contemporary advance and developments in the discipline concerned;

d) He shall have acquired a spirit of scientific inquiry and is oriented to the principles of research methodology and epidemiology; and

e) He shall have acquired the basic skills in teaching of the medical and paramedical professionals;

agreed (a) & (b). With minor changes in (c), (d) & (e)

*c) He/She shall be aware of the contemporary advances and developments in the **disciplines/ allied disciplines** concerned;*

d) He/She shall have acquired a spirit of scientific inquiry and is oriented to the principles of research methodology and epidemiology; and

e) He/She shall have acquired the basic skills in teaching of the medical and paramedical professionals;

3. Eligibility for admission

A candidate seeking admission into the course shall have MD/MS/DNB from an Institution recognized by the Medical Council of India or equivalent specified for each specialty as per the norms of MCI. He/ She shall also obtain the permanent registration certificate of both UG and PG qualification from any state medical council / MCI at the time of application / counseling. The candidate also should submit the AP State medical council for both the qualifications on or before one month from the date of admission, failing which the admission shall stand cancelled.

Changes : ***-Nil-***

4. Duration of the Programme:

The period of training for obtaining DM/ MCh qualification shall be three completed years (including the examination period) from the date of joining the course.

Changes : ***-Nil-***

5. Bond:

The post graduate selected for admission is to submit the following bonds.

(i) The candidate shall execute a bond on a stamp paper (non-judicial) of Rs. 100/- value along with two sureties undertaking that in the event of the candidate discontinuing the studies at any time during the course, he/she shall be bound to pay a sum of Rs. 1,00,000/- (Rupees one lakh only) along with the full stipend amount received by him/her back to the institute.

(ii) The candidate shall also execute another bond (annexure - II) that in the event of not willing to work in the post and pay offered by the institute after successful completion of the course in the department (subject to availability of vacancy and requirement of the institute) for a period specified in the bond, he/she shall be bound to pay a sum of Rs. 20,00,000/- (Rupees twenty lakhs only).

Changes :

The director informed not to include the bond condition for discussion in BOS meeting, since it is an administrative, issue and it does not come under the purview of BOS.

Dr.Kannan enquired whether there are any criteria for recruiting the faculty from among the successful candidates, when the candidates are more and vacancies are less. The members advised to inform the P.G. candidate, three months in advance, in case their services are not required to SVIMS, after completion of their course.

6. Training Programme:

The candidate joining the course must work as full time resident during the period of his/her post graduate training.

i) Teaching /learning methods:

a) Learning will essentially be self-learning.
b) Following teaching-learning methods shall be followed :
- Group teaching sessions:
- Journal review
- Subject seminar presentation
- Group discussion
- Clinical case presentations pertaining to the specialty.
- Presentation of the findings of an exercise on any of the sub-specialties.
- Participation in CME programs and conferences

ii) Hands on experience (practical training)

a. The training given with due care to the post graduate students in the recognized institutions for the award of various Post Graduate medical degrees / diplomas shall determine the expertise of the specialist and / or medical teachers produced as a result of the educational programme during the period of stay in the institution.

b. All candidates joining the post graduate training programme shall work as full time residents during the period of training, attending not less than 80% (Eighty percent) of the training during each calendar year, and given full time responsibility, assignments and participation in all facets of the educational process.

Changes : *-Nil-*

7. Procedure for Discontinuation:

After closure of the admissions, the Post graduate is not permitted to discontinue the study, unless he/ she fulfill the bond executed by him/her mentioned under rule 5.

Changes :

The Post graduate is not permitted to discontinue the study, unless he/ she fulfills the bond executed by him/her mentioned under rule 5.

8. Syllabus:

The heads of the department concerned shall prepare and approve the syllabus. It shall be reviewed periodically.

The members informed that, they will submit the syllabus after convening individual BOS meetings.

9. Admission:

Applications are invited by the University from the eligible candidates belonging to Andhra Pradesh, through a notification released preferably in the month of April in each academic year. The candidates are admitted purely based on merit in the entrance examination conducted by the university.

Note: *The admission regulations may change from time to time as per the directions of the Medical Council of India.*

Changes:

Applications are invited by the University from the eligible candidates ***"as per Andhra Pradesh Educational Institutions (Regulation of admissions) 1974 (G.O.Ms.No.453, Gen.Admn.SPF-B), dt:03.07.1974"****, through a notification released preferably in the month of April in each academic year and as per the guidelines mentioned in the prospectus. The candidates are admitted purely based on merit in the entrance examination conducted by the university.*

Note: *The admission regulations may change from time to time as per the directions of the Medical Council of India.*

10. Attendance

No candidate shall be permitted to appear for the examination unless he/she has put in a minimum of 80 % attendance during his / her period of study and training and produces the necessary certificate of study, attendance and progress from the Head of the department.

If a post graduate availed maternity leave, medical leave or extraordinary leave and fall short of the requisite attendance, the period of training will be extended proportionately. The stipend will not be paid during the time of availing such leave. No stipend is payable for the extended period of training beyond the regular three year academic schedule.

The candidate will be allowed for appearing University examination along with the regular candidates and results will be declared on completion of the extended training period.

Changes:

No candidate shall be permitted to appear for the examination unless he/she has put in a minimum of 80 % attendance ***in each academic year during*** *his / her period of study and training and produces the necessary certificate of study, attendance and progress from the Head of the department.*

If a post graduate availed maternity leave, medical leave or extraordinary leave and fall short of the requisite attendance, the period of training will be extended proportionately. The stipend will not be paid during the time of availing such leave. No stipend is payable for the extended period of training beyond the regular three year academic schedule.

"The candidates, who fall short of 80% attendance, shall be at the discretion of the HoD, Dean & Director whether to permit the candidate for the examinations".

11. Dissertation

Every candidate shall carry out work on an assigned research project under the guidance of a recognized post graduate teacher, the result of which shall be written up and submitted in the form of a dissertation. The dissertation work is aimed at contributing to the development of a spirit of enquiry, besides exposing the candidate to the techniques of research, critical analysis, acquaintance with the latest advances in medical science and the manner of identifying and consulting available literature.

a) Guide

The dissertation work shall be done under the guidance of the faculty recognized as post graduate teacher as per the norms laid down by the MCI. The HoD concerned may take decision on allocation of a guide to each post graduate.

b) Co-guide

The faculty recognized as postgraduate teacher as per the norms laid down by the MCI from the same or other departments who are involved in actively guiding the student may be proposed as co-guide/s by the guide, subject to approval by the head of the department.

The non-medical scientists/statisticians who are actively involved in guiding the dissertation may also be proposed as co-guide/s by the guide, subject to the approval by the head of the department.

c) The dissertation topic

The dissertation topic shall be chosen before the end of eight months from the date of joining the course. The dissertation topic must be approved in the thesis protocol approval committee (TPAC) constituted by the institution, during its meeting held in the month of April in each year.

After obtaining approval from TPAC, the dissertation protocol shall be submitted to Institutional Ethics Committee (IEC) for its clearance.

The student should submit five copies of the dissertation, six months before the final examination to the Controller of Examinations. Only those students whose dissertation work have been approved by the panel of external examiners shall be eligible to appear for the final examination. The same external examiners shall also conduct practical / viva examinations and evaluation of theory papers. However, if the examiner, who evaluated the dissertation but not in a position to attend the practical /viva examination, the same dissertation evaluation report will be considered as eligibility to appear for final examinations.

Changes: ***-Nil-***

11 A. External posting:

The post graduate may be posted for a period of one month, at the discretion of the HoD to a reputed academic institute, for speciality training, when it is not available in the institute. The external training period shall be treated as on duty. Posting to corporate hospitals is not permissible. They may be posted preferably in the second (or) third year.

11 B. Attending conferences & paper publications:

A post graduate student of super specialities would be required to present one poster presentation, to read one paper at a national/state conference and to present one research paper which should be published/accepted for publication/ sent for publication during the period of his postgraduate studies so as to make him eligible to appear at the postgraduate degree examination.

Changes:

i) ***External posting:***
The HoD concerned may decide for one month external posting

ii) ***Attending conferences & paper publications:***
Agreed to incorporate the following as per the PG medical education regularations-2000 norms mention undersec.13.9. A post graduate student of super specialities would be required to present one poster presentation, to read one paper at a national/state conference and to present one research paper which should be published/accepted for publication/ sent for publication during the period of his postgraduate studies so as to make him eligible to appear at the postgraduate degree examination.

12. Internal assessment:

Internal assessment will be done daily to assess the training and to identify the strengths and weaknesses of the postgraduate student.

(a) The log book with details of duration of postings, skills performed with remarks of the teacher/faculty member will be maintained and periodically updated by the postgraduate student (Appendix 1).

(b) Maintenance of Log Book:

(i) The postgraduate shall maintain a record of skills he/she has acquired during the training period certified by the various heads of departments where he/ she has undergone training including outside the institution.
(ii) The candidate should also be required to participate in the teaching and training programme of post-graduate and paramedical students.
(iii) In addition, the Head of the Department shall involve their post-graduate candidates in seminars, journal clubs, group discussions and participation in clinical meetings and conferences.
(iv) Every post graduate candidate should be encouraged to present short title papers in conferences and improve on it and submit them for publication in reputed medical journals. Motivation by the heads of departments is essential in this area to sharpen the research skills of the post graduate candidates.
(v) The head of the department shall scrutinize the Log Book every three months.
(vi) At the end of the course, the candidate should summarise the contents and get the Log Book certified by the Head of the Department.
vii) The log book should be submitted at the time of practical examination for the scrutiny of the Board of Examiners.

(c) Research work to be assessed and reviewed once in four months by the Chief-Guide and the Head of the Department.

(i) Choice of article/topic (unless specifically allotted).
(ii) Completeness of presentation.
(iii) Clarity and cogency of presentation.
(iv) Understanding of the subject and ability to convey the same
(v) Whether relevant references have been consulted

(vii) Use of audio-visual aids
(viii) Ability to answer questions
(ix) Time scheduling
(x) Overall performance.

Changes: ***-Nil-***

13. Panel of examiners

(a) There shall be a panel of eight external examiners as advised by the Head of the department. The Controller of Examinations shall have the powers to appoint two examiners from among the panel of examiners recommended by the HOD.

(b) Theory paper setting to be done by the examiners from outside the state of Andhra Pradesh who may or may not be involved in the Clinical/Practical examination. The Controller of Examinations shall have the powers to appoint question paper setters and to get the question papers from the outside of A.P.

(c) Total number of examiners required	-	Four
Internal Examiners	-	Two
External Examiners	-	Two

All the external examiners should be from outside the state of Andhra Pradesh. Internal examiners may be from within the institute or within the state. However, If the examiner who evaluated the dissertation but not in a position to attend the practical/viva examination, the institute can nominate another examiner from among the panel recommended by the concerned HOD.

Changes: ***-Nil-***

14. Examination:

The examinations shall be organized on the basis of marking system to evaluate and certify candidates level of knowledge, skill and competence at the end of the training and obtaining a minimum of 50% marks in each theory paper, practical and viva examinations shall be mandatory for passing the examination. The examination shall be held before the end of 3 academic years.

(a) Examiners

(i) All the Post Graduate Examiners shall be recognised Post Graduate Teachers holding recognised Post Graduate qualifications in the subject concerned.

(ii) For all Post Graduate Examinations, the minimum number of Examiners shall be four, out of which at least two (50%) shall be External Examiners, who shall be invited from other recognised universities/institutions from outside the State. Two sets of internal examiners will be appointed within the institution. If the internal examiners not available within the institution, the institute can appoint any eligible internal examiners as recommended by the HOD within the state or outside the state.

(b) Number of candidates

The maximum number of candidates to be examined in Clinical / practical and Oral on any day shall not exceed three for DM/M/Ch examinations.

(c) The examination for the degree shall consist of written (theory) examination, Practicals/Clinicals and Viva Voce.

(d) Number of examinations

The university shall conduct not more than two examinations in a year, for any subject, with an interval of 6 months between the two examinations.

A candidate shall secure not less than 50% marks in each theory paper, Practical/clinical and viva voce examinations as eligibility for award of DM/MCh Degree.

e) Theory

There shall be the following four theory papers:

1) Basic sciences
2) Clinical subject I
3) Clinical subject II
4) Recent advances

The theory examination will be held at least one week before the start of the Practical/Clinical and Oral examination.

(f) Practical/Clinical and Oral

Practical/Clinical examination shall consist of carrying out special investigative techniques for Diagnosis and Therapy. M.Ch candidates shall also be examined in surgical procedures. Oral examination shall be comprehensive to test the candidate's overall knowledge of the subject.

(i) Distribution of Marks

	Duration	Marks
Basic sciences	3 Hrs.	100
Clinical subject I	3 Hrs.	100
Clinical subject II	3 Hrs.	100
Recent advances	3 Hrs.	100
Practicals/Clinicals		200
Viva Voce		100
Total Marks		700

(ii) Examination Pattern

Theory examination duration : 3 Hrs.

Model paper:

Total marks for each paper: 100

Choices: nil

i) One long essay question for 20 marks
ii) 5 brief short essay question for 50 marks, allotting 10 marks to each question
iii) 6 short notes for 30 marks, allotting 5 marks to each question

(iii) Practical/Clinical examination:

a) Long case - 100 marks
b) Short cases - 100 marks
c) Viva Voce - 100 marks

(g) Eligibility for award of degrees:

A candidate shall be declared to have become eligible for the award of DM/MCh degree provided, he/she, in the final University examination obtains 50% marks in each theory paper, Practical/Clinical examination and Viva-Voce.

Changes: ***-Nil-***

(h) Award of Class:

Hither to no university/institution is awarding class for MD/MS and DM/MCh courses. However, we propose the following guidelines for award of class.

i) Second class: 50 to 64% of the aggregate marks
ii) First class: 65% to 74% of the aggregate marks
iii) Distinction: 75% and above of the aggregate marks.

Changes:

To award

a) Pass class: 50 to 74% of the aggregate marks
b) Passed with Distinction: 75% and above of the aggregate marks

15. Syllabus, training schedule and study material for each specialty

The Director informed all the HoDs to prepare the syllabus, training schedule and study material for their speciality on or before 20.12.2011and approved guidelines may be sent to the Academic office.

Appendix 1: Log book

Changes: ***-Nil-***

5/12/11

Controller of Exams. **Registrar** **Dean** **Director**

SRI VENKATESWRA INSTITUTE OF MEDICAL SCIENCES, TIRUPATI

30th Academic Senate Meeting – 03-04-2012

Agenda No.6

Sub: SVIMS – Tirupati – 2nd Board of Studies meeting of DM/M.Ch. courses – minutes of the meeting submitted for ratification – Reg.

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The common board of studies meeting for DM/M.Ch., courses was held on 03-12-2011. The regulations governing the admission, training and evaluation applicable to DM/MCh courses were approved. Regarding syllabus part, the HoDs concerned furnished the syllabus, training schedule and study material for their speciality.

1. DM Cardiology
2. DM Neurology
3. DM Endocrinology
4. DM Medical Oncology
5. DM Nephrology
6. MCh Urology
7. MCh Surgical Oncology
8. MCh Surgical Gastroentrology
9. MCh C.T.Surgery
10. MCh Neuro surgery

The common Board of Studies minutes for DM/MCh., courses and speciality wise syllabus are enclosed for ratification.

Resolution NO.6, dt: 03.04.2012

a) The rules and regulations from page No.19 to 27 of the agenda as approved in the common Board of studies meeting, shall be applicable uniformly to all DM/MCh courses.

b) The syllabus, training schedule and study material for each speciality submitted by the HOD concerned are ratified.

c) Regarding theory model question paper, the following change is proposed:

Total 10 questions allotting 10 marks to each question with no choice duration: 3 hours

This new question model shall be applicable to all theory papers of the DM/MCh courses with effect from July,2013

The syllabus shall be adopted till such time it is prescribed by the MCI.

Sd/- Chairman
Academic Senate

// forwarded//

Deputy Registrar

CARDIOLOGY

Objectives

The super specialty post-doctoral course is being conducted at SVIMS, Tirupati under SVIMS University from academic year 2003 - 2004.

The course has been commenced after due permission from the medical Council of India and the Ministry of Health Government of India. The Course duration is for 3 years.

Training Objectives:

General objectives:

At the end of the Postgraduate training in the discipline concerned the student shall be able to:

1. Recognize the importance of Cardiology in the context of the health needs of the community and national priorities in the. health sector.
2. Practice Cardiology ethically and in step with the principles of primary health care.
3. Demonstrate sufficient understanding of the basic sciences relevant to Cardiology
4. Identify social, economic, environmental, biological and emotional determinants of health in a given case, and take them into account while planning therapeutic, rehabilitative, preventive, and promotive measures/strategies
5. Diagnose and manage majority of conditions in the specialty of Cardiology on the basis of clinical assessment, and appropriately selected and conducted investigations.
6. Plan and advise measures for the prevention and rehabilitation of patients suffering from disease and disability related to the specialty of Cardiology.
7. Demonstrate skills in documentation of individual case details as well as morbidity and mortality data relevant to the assigned situation.
8. Demonstrate empathy and humane approach towards patients and their families and exhibit interpersonal behavior in accordance with the societal norms and expectation.
9. Play the assigned role in the implementation of National Health Programmes, effectively and responsibly.
10. Organize and supervise the Cardiological Health Care services demonstrating adequate managerial skills in the clinic/hospital in the field situation.
11. Develop skills as a self-directed learner, recognize continuing educational needs : select and use appropriate learning resources.

12. Demonstrate competence in basic concepts of research methodology and epidemiology and be able to critically analyse relevant published research literature.

13. Develop skills in using educational methods and techniques as applicable to the teaching of medical /nursing students, general physicians and paramedical health workers.

14. Function as an effective leader of a health team engaged in health care, research of training.

Training Objectives:

Knowledge:

At the end of the course upon successful completion of training and passing the examination the candidate is expected to acquire comprehensive knowledge of the basics of Cardiology Including all allied specialities related to Cardiology like Cardiac Anatomy, Physiology, Biochemistry, Pharmacology, Pathology, Microbiology, preventive Cardiology, Cardiac Epidemiology, Paediatric Cardiology and Cardiac Surgery.

Skills:

1. Possess complete Clinical Diagnostic Skills for the recognition of common heart disease.

2. Possess a complete knowledge of ail the commonly used Non-Invasive Cardiac Diagnostic Tests like Electrocardiography, Cardiac Roentgenology, Exercise Stress Testing, Dynamic Cardiography, Echocardiography etc.

3. Acquire skills in the performance and interpretation of commonly used invasive Cardiac procedures like diagnostic Cardiac Catheterization and Angiography and Cardiac Interventions.

4. Able to apply sound clinical judgment and rational cost effective Investigation for the diagnosis and management of Cardiac Cases in the OPD, Wards, Emergency Room and Intensive Care unit.

5. possess some understanding of the recent advances in the subject of Cardiology and all its allied specialities and working knowledge of the sophisticated and routine equipments, consumables used in Cardiology.

6. Possess knowledge of research work in the field of Cardiology in both Clinical and experimental field with the ability to useful analyse data.

7. Be able to teach the undergraduate students i.e.MBBS as well as Post graduate Students i.e. MD Medicine or Pediatrics Clinical as well as investigative Cardiology.

8. Be able to perform Clinical and Investigative studies and to Present in Seminars etc.

9. Have the ability to organize specific teaching and training programmes for para medical staff, associated professionals and patient education programmes. Should be able to develop good communication skills and give consultations to ail other departments of the hospital.

National Objectives:

a. Should be able to work in any hospital in India with minimum of Facilities and should be able to diagnose and treat cardiac disease swiftly and efficiently both on an elective and emergency basis.

b. Should be able to start a Cardiac Unit with effective functioning With minimum inputs.

c. should be able to work effectively in National Programmes for the Prevention or Eradication of Heart Disease.

International Objectives:

Should be able to participate in international Conferences, Workshops etc to bring honor and fame to our

Training:

The period of training for obtaining the degree of D.M in cardiology shall be three completed years (including the examination period) after obtaining M.D. degree, or equivalent recognized qualification in the required subject.

Training Program as per MCI Guidelines

1. The training given with due care to the post graduate students in the recognized institutions for the aware of D.M Cardiology, shall determine the expertise of the specialist and/or medical teachers produced as a result of the educational program during the period of stay in the institution.

2. All the candidates joining the D.M Cardiology training program shall work as full time residents during the period of training, attending not less than 80% (Eighty percent) of the training during the calendar year, and given full time responsibility, assignments and participation in all facets of the educational process.

3. D.M Cardiology students shall maintain a record (log book) of the work carried out by them and the training program undergone including details of the Non-Invasive, Invasive Cardiac Diagnostic and Interventional Work assisted or done independently by the D.M. Candidates.

4. During training for the D.M Cardiology there shall be proper training in basic medical sciences related to cardiology. Emphasis to be laid on preventive and social aspects and emergency care services.

5. The D.M Cardiology student shall be required to participate in the teaching and training program of undergraduate and post graduate students in the departments of medicine, pediatrics etc.

6. Training in Medical Audit, management, health economics, health information system, basics of statistics, exposure to human behavior studies, knowledge of pharmaco economics and introduction to non linear mathematics shall be imparted.

7. In service training with the students being given graded responsibility in the management and treatment of patients entrusted to their care: participation in seminars, journal Clubs, Group Discussions, Clinical Meetings, Grand Rounds and Clnico-pathological conferences, advanced Diagnostic, Therapeutic, and Laboratory techniques in cardiology.

DETAILS OF POSTINGS OVER 3 YEARS

1st YEAR

Month	Area of posting	Department / unit	No.of night duties
August	ICCU	CARDIOLOGY	5
September	ICCU	,,	5
October	ICCU	,,	5
November	WARDS	,,	5
December	WARDS	,,	5
January	WARDS	,,	5
February	OPD	,,	5
March	OPD	,,	5
April	OPD	,,	5
May	ECHO	,,	5
June	ECHO	,,	5
July	ECHO	,,	5

Signature of Faculty

2nd YEAR

Month	Area of posting	Department / unit	No.of night duties
August	ICCU	CARDIOLOGY	5
September	ICCU	,,	5
October	ICCU	,,	5
November	ECHO	,,	5
December	ECHO	,,	5
January	ECHO	,,	5
February	CATHLAB	,,	5
March	CATHLAB	,,	5
April	CATHLAB	,,	5
May	CATHLAB	,,	5
June	CATHLAB	,,	5
July	CATHLAB	,,	5

Signature of Faculty

3rd YEAR

Month	Area of posting	Department / unit	No.of night duties
August	OPD	CARDIOLOGY	5
September	OPD	,,	5
October	OPD	,,	5
November	WARD	,,	5
December	WARD	,,	5
January	WARD	,,	5
February	ECHO	,,	5
March	ECHO	,,	5
April	CTS	Cardiothorasic Surgery	5
May	TMT	Cardiology	5
June	HOLTER	,,	5
July	EXAMS	,,	-

Signature of Faculty

WARD / OPD

The candidate would first familiarize himself/herself with the general working of the hospital, the Wards, admission norms, sending of investigations, geography of the hospital, location of the various services, posting of cases for Catheterization /intervention, consent forms, blood availability, discharge protocol, medical records section etc. In addition the candidate would examine all the cardiac cases in the wards and give consultation to all other departments of the hospital with the help of the consultant.

If there are Post Graduate MD students from Medicine, Pediatrics or other specialities posted then he would impart relevant clinical examination and diagnostic skills to them.

The candidate would also be working in the OPD and assessing the suitability of the patients for admission, making an OPD diagnosis, planning the relevant investigations etc. In addition the candidate would manage the special clinics like Post Intervention Clinic and the Pacemaker Clinic of the Department.

The DM candidate would be put on regular 24 hours duties and would take the call from the Casualty and other department of the hospital. He/she would relieve the ICU person for Lunch etc.

Intensive Care Unit:

This posting is essential for the candidate to learn all the aspects of Cardiac Intensive Care like thrombolytic Therapy in Acute Myocardial Infarction, Hemodynamic Monitoring in Acute Myocardial Infarction, management of Bradyarrhythmias with Temporary Cardiac pacing, management of Tachyarrhythmias with DC Cardioversion / DC shock, Overdrive suppression, management of Acute Coronary Syndromes, all cardiac sick patients with shock states and hemodynamic compromise, post cath and intervention patients who are unstable, insertion of Intra Aortic Balloon Pump, Emergency Non invasive diagnosis like ECHO etc, Pericardiocentesis, ventilator therapy, all emergency cardiac consultations etc. The candidate should familiarize himself/herself with all the monitoring gadgets in the ICU like Monitors, Cardiac Output recorders, Defibrillators, IABP Machine, Ventilators, ABG machines etc.

The candidate would be on duty in the Intensive Care Unit from 9 a.m to 6 p.m and 24 hrs by rotation. He/She would also attend the teaching programmes of the department when free from patient care. The candidate would also be taking calls from the casualty and giving consultations to all department of the hospital.

Non-Invasive Laboratory Posting:

The candidate would be posted in the Non-Invasive Laboratory wherein he/she would receive training and independently perform Computerised ECG Recording and Evaluation, Colour Doppler Echocardiographic Examination, Transesophageal Ecdhocardiographic Examination, Dobutamine Stress Echocardiographic Examination, Holter Pressure Monitoring. The candidate would learn all aspects of Cardiac Instrumentation like ECG manchines, Tradmill, Echocardiography machines, holter, event recorders etc. The candidate would also be attending the OPD. During this period the candidate would also be attending all teaching programms of the department and would be doing emergency duties also in the ICU /taking casualty calls and giving consultations to all departments of the hospital.

CATH- Lab posting

The candidate would be posted in the cath-lab only after he/she familiar with all aspects of cardiac care like wards, OPD,ICU and all non invasive cardiac diagnosis.

In the Cath-Lab posting the candidate would assist in all the diagnostic procedures like right heart catheterization, left heart catheterization, coronary angiography, peripheral angiography. etectrophysiological studies etc. After a certain period, he/she would start assisting in Interventional Procedures like PTCA/Stent implantations, Balloon Valvulopiasties, Peripheral Interventions, PDA coil occlusions, Radio-Frequency ablations, Permanent Pacemaker Implantations.lCD Implantations, CRT etc. He/She would familiarize himself/herself with all the cardiac instruments in the cath-lab like X-Ray l/l system, Hemodynamic Cath Lab recorder, EP Recorder, Oximeter etc. The candidate is responsible for all the precath instructions, explaining and counseling to the patients and relatives, preparing the cath list, consent, checking all the investigations, getting anesthetic check up done in case of necessary and posting the patients. He/she would give the necessary post cath care, secure hemostasis after the procedure, prepare the complete cath report and ensure thai all records %re maintained correctly and given to the patient etc. He/She should be available for emergency Cath Procedures like Acute Primary PICA etc even when not on duty. In routine conditions the candidate need not attend OPDs but it is necessary that he/she attends the rounds and does the emergency duties on rotation. The candidate would attend ail the teaching programmes of the department and would present the data in the post hemodynamic conference.

The candidate should also learn all the consumables and the hardware used in diagnostic and interventional cardiac catheterization. He/she should be familiar with interpretation and diagnosing all the hemodynamic and angiographic data. The candidate must learn all the ethical, legal considerations of the invasive work and learn to use'them with wisdom and discretion.

Academic Programme

Every day between 4.30 pm to 6.00 pm

Monday :	Journal club - analysis of original research articles in Indian and International journals.
Tuesday :	Seminar - Complete updated review of literature with analysis of Major topics.
Wednesday:	Short reviews - Short review of the literature on a simple specified Topic
Thurs day :	Cath meet - discussion of Coronary Angio & Cath studies.
Friday :	ECG & Echo – discussion
Saturday :	Bed side clinics

Inter Departmental Programmes

Cardio-Thoracic conference : weekly interdepartmental discussion between Cardiology & CTVS departments.

Central Academic Programmes

Every week on Thursdays (3.0 pm to 4.0 pm) & on Saturdays (8.0 am to 9.0 am)

1. Research presentation
2. Spotters presentation
3. Case presentation
4. Clinico-pathological Correlation
5. Clinico-radiological Correlation
6. CME

COURSE CONTENT

SYLLABUS

1. GOAL:

A postgraduate in DM (Cardiology) is expected to diagnose and treat common medical illnesses and have a sufficient knowledge of rare diseases, advances and technologies in medicine. He should be above to manage medical emergencies and carry out research and undergraduate medical teaching. The postgraduate education is intended to produce a well informed, well trained doctor in medicine who is able to take care of patients, understand the essence of modern medicine, scrutinize the published literature while maintaining acceptable standards in discipline, It is expected that during to tenure of the course he develops optimum communication skills. The postgraduate education exposes the student to not only to Internal DM Cardiology, but also to other well established departments and sub-specialties and allied subjects. The staff of all these department will be involved in the PG programme. A well motivated and monitored student is the key to the success of this programme.

The clinical rotation is intended to provide opportunity to post graduate student (PG) to the patient care and hands on experience. He/She is expected to acquire skills to be competent clinician in DM (Cardiology). Most importantly, learn to formulate diagnosis, plan diagnostic procedures / investigations and plan rational therapy. Meticulous documentation of patients medical record by PG is encouraged. During this time PG is encouraged to learn the art of lengthy as well as brief presentations.

The PG is rotated through the sub-speciality departments during second year of the three years course. The medical post graduate after completion of DM (Cardiology) should be able to manage patient independently as a specialist. HE should be able to plan and carry out research activity in the field of DM (Cardiology). HE should be able to teach under graduate medical student subject of DM (Cardiology).

Basic Sciences Related to Cardiology

1. Cardiac anatomy
2. Cardiac physiology
3. Cardiac molecular biology
4. Cardiac biochemistry
5. Cardiac pharmacology
6. Cardiac pathology
7. Cardiac microbiology

Clinical Cardiology Including Paediatric Cardiology

Fundamentals of Cardiovascular Disease

1. Global Burden of Cardiovascular Disease
2. Heart Disease in Varied Populations
3. Ethics in Cardiovascular Medicine
4. Clinical Decision Making in Cardiology
5. Measurement and Improvement of Quality of Cardiovascular Care
6. Design and Conduct of Clinical Trials
7. Principles of Cardiovascular Molecular Biology and Genetics

Molecular Biology and Genetics

1. Principles of Cardiovascular Molecular Biology and Genetics
2. Inherited Causes of Cardiovascular Disease
3. Genetics of Cardiac Arrhythmias
4. Principles of Drug Therapy
5. Cardiovascular Regeneration and Tissue Engineering

Evaluation of the Patient

1. The History and Physical Examination
2. Electrocardiography
3. Exercise Stress Testing
4. Echocardiography
5. The Chest Radiograph in Cardiovascular Disease
6. Nuclear Cardiology
7. Cardiovascular Magnetic Resonance Imaging
8. Cardiac Computed Tomography
9. Cardiac Catheterization
10. Coronary Arteriography
11. Intravascular Ultrasound Imaging
12. Molecular imaging in Cardiovascular Disease

Heart Failure

1. Mechanisms of Cardiac Contraction and Relaxation
2. Patho physiology of Heart Failure
3. Clinical Assessment of Heart Failure
4. Diagnosis and Management of Acute Heart Failure Syndromes
5. Management of Heart Failure Patients with Reduced Ejection Fraction
6. Devices for Monitoring and Managing Heart Failure
7. Heart Failure with Normal Ejection Fraction
8. Surgical Management of Heart Failure
9. Assisted Circulation in the Treatment of Heart Failure
10. Emerging Therapies and Strategies in the Treatment of Heart Failure
11. Care of Patients with End-Stage Heart Disease

Arrhythmias, Sudden Death and Syncope

1. Genesis of Cardiac Arrhythmias: Electrophysiologic Considerations
2. Diagnosis of Cardiac Arrhythmias
3. Therapy for Cardiac Arrhythmias
4. Pacemakers and Implantable Cardioverter-Defibrillators
5. Specific Arrhythmias: Diagnosis and Treatment
6. Atrial Fibrillation: Clinical Features, Mechanisms, and Management
7. Cardiac Arrest and Sudden Cardiac Death
8. Hypotension and Syncope

Preventive Cardiology

1. The Vascular Biology of Atherosclerosis
2. Risk Markers for Atherothrombotic Disease
3. Systemic Hypertension: Mechanisms and Diagnosis
4. Systemic Hypertension: Therapy
5. Lipoprotein Disorders and Cardiovascular Disease
6. Nutrition and Cardiovascular Disease ,
7. Primary and Secondary Prevention of Coronary Heart Disease
8. Exercise-Based, Comprehensive Cardiac Rehabilitation

Atherosclerotic Cardiovascular Disease

1. Coronary Blood Flow and Myocardial Ischemia
2. Approach to the Patient with Chest Pain 1
3. ST-Segrnent Elevation Myocardial Infarction: Pathology, Pathophysiology, and Clinical Features
4. ST-Segment Elevation Myocardial Infarction: Management
5. Unstable Angina and Non-ST Elevation Myocardial Infarction
6. Stable Ischemic Heart Disease
7. Percutaneous Coronary Intervention
8. Percutaneous Therapies for Structural Heart Disease in Adults
9. Diseases of the Aorta
10. Peripheral Artery Diseases
11. Prevention and Management of Stroke
12. Endovascular Treatment of Noncoronary Obstructive Vascular Disease
13. Diabetes and the Cardiovascular System

Diseases of the Heart, Pericardium, And Pulmonary Vasculature Bed

1. Congenital Heart Disease
2. Valvular Heart Disease
3. Infective Endocarditis
4. The Dilated, Restrictive, and Infiltrative Cardiomyopathies
5. Hypertrophic Cardiomyopathy
6. Myocarditis
7. Chagas' Disease
8. Cardiovascular Abnormalities in HiV-lnfected Individuals
9. Toxins and the Heart
10. Primary Tumors of the Heart
11. Pericardial Diseases
12. Traumatic Heart Disease
13. Pulmonary Embolism
14. Pulmonary Hypertension Sleep Apnea and Cardiovascular Disease

Cardiovascular Disease in Special Populations

1. Cardiovascular Disease in the Elderly
2. Cardiovascular Disease in Women
3. Pregnancy and Heart Disease
4. Exercise and Sports Cardiology
5. Medical Management of the Patient Undergoing Cardiac Surgery
6. Anesthesia and Noncardiac Surgery in Patients with Heart Disease

Cardiovascular Disease and Disorders of Other Organs

1. Endocrine Disorders and Cardiovascular Disease
2. TL Hemostasis, Thrombosis, Fibrinolysis, and Cardiovascular Disease
3- Rheumatic Fever
4. Rheumatic Diseases and the Cardiovascular System
5. The Cancer Patient and Cardiovascular Disease
6. Psychiatric and Behavioral Aspects of Cardiovascular Disease
7. Neurologic Disorders and Cardiovascular Disease
8. Interface Between Renal Disease and Cardiovascular Illness
9. Cardiovascular Manifestations of autonomic disorders

Reading Materials

The following is only a partial recommended list of the prevailing text books and journals at the time of the compilation of the syllabus. As and when New text books or Journals become available, the candidates would be appraised accordingly.

2. Text Books

A .Standard Text books.

1. Braunwald E. Zipes D,.Libby P.: Heart Diseases: A text book of Cardiovascular Medicine: 9th edition : 2011

2. Perloff J: The Clinical Recognition of Congenital Heart Disease : 5th edition: 2003
3. Feignbaum H. Echocardiography : W F Armstrong 7th edition LWW 2010
4. Donald S. Baim: Grossman W: Grossman's Cardiac Catheterization, angiography and Intervention : 7th edition: 2006

B. Additional Text books.

1. Eric J.Topol. Text book of Cardiovascular Medicine: 3rd edition : 2007
2. Fuster V.: Hurst's The Heart: 13th edition : 2011
3. Catherine M. Otto: Text book of Clinical echocardiography : 4th edition :2009
4. Moss and Adams: Heart Disease in Infants, Children and Adolescents: 7th edition : 2008.
5. Opie L.H. Durgs for the Heart:
6. Topol E. Text Book of Interventional Cardiology:
7. Douglous P. Zipes : Cardiac electro physiology - from cell to bedside : 5th edition: 2009

3. Journals

A Standard Journals:

1. Heart
2. New England Journal of Medicine
3. Journal of the American College of Cardiology
4. JACC - Imaging
5. JACC - Intervention
6. Circulation
7. Indian Heart Journal

B Additional Journals

8. American Journal of Cardiology
9. Catheterization and cardiovascular interventions
10. Circulation – Intervention
11. Arteriosclerosis thrombus and vascular biology
12. Coronary artery disease
13. The Lancet
14. British Medical Journal.
15. American Heart Journal

ENDOCRINOLOGY

The DM course of the Department was started in 2007. The current intake is tow per year. The course is a three year course and is recognized by the Medical Council of India.

Objectives:

1) To provide structured training in clinical and basic Endocrinology under the guidance of qualified mentors.

2) To develop skills required for the independent management of common as well as rare disorders in Endocrinology at the level of a Consultant

3) To develop orientation towards laboratory work as appropriate for Endocrinology and instill ability for recognition of problems and pitfalls in laboratory testing so as to enable a proper interpretation of laboratory tests

4) To train students in ethical research practices; both basic and clinical

5) Provide opportunities to make public presentations and lectures, so as to contribute towards a pool of potential future faculty in Endocrinology

6) To include good generic skills in trainees such as communication skills, medical audit etc.

Syllabus:

1) Basic Sciences as related to clinical Endocrinology Classification of Hormones,
Hormone receptors and singnaling pathways, Genetics in Endocrinology,
Hormone assays.

2) Hypothalamus and Neuroendocrinology:
Neural Control of Endocrine System, Hormone Feed back Loops, Circadian and other Temporal Variations, Circum Ventricular Organs and Pineal Gland Neurogenic and "Functional" Endocrine Disorders

3) Pituitary:
Pituitary tumors and Other Infiltrative and Inflammatory Lesions, Pituitary Imaging , Pituitary Surgery, Hypopituitarism, Acromegaly and Gigantism Hyperprolactinemia, Cushing's Disease, Gonadotropin and Thyrotropin Biology and related disorders, Posterior pituitary and disorders of water handling

4) Thyroid:
Thyroid function tests and laboratory Evaluation, Hyperthyroidism, Hyperthyroidism, Diffuse Euthyroid Goitre, Thyroid Nodule and its management, Thyroid Cancer, Iodine deficiency disorders

5) Adrenal Disorders
Glucocorticoid and Minerolocorticoid biosynthesis and biology, Adrenal Insufficiency, Cushing's Syndrome, Congenital adrenal Hyperplasia and other congenital adrenal disorders , Adrenal Adenoma and Carcinoma,
Endocrine Hypertention: Pheochromocytoma and Mineralocorticoidism

6) Reproductive Endocrinology
Female Hypogonadism, Female Hyperandrogenism and Polycysitic Ovary Synrome, Menstrual Irregularities, Menopause and its management, Male Hypogonadism, Gynaecomastia, Hormonal Contraception, Sexual Dysfunction, Fertility disorders

7) Disorders of Bone and Mineral Metabolism:
Parathyroid and vitamin D biology, Hyperparathyroidism and other hypercalcemic states, Hypocalcemia, Metabolic Bone Disease: Rickets, Osteomalacia and Osteoporosis, Paget's disease and other Osteosclerotic states

8) Metabolic disorders:
Obesity, Diabetes Mellitus: Classification, criteria and Management guidelines, Complications of Diabetes Mellitus, Hypoglycemia, Lipid Disorders

9) Growth and Development:
Fetal Endocrinology, Disorders of Sexual Development, Growth Disorders: Short and Tall Stature,
Puberty: Delayed and Precocious

10) Disorders affecting multiple Endocrine Organs:
Multiple Endocrine Neoplasia, Polyglandular Autoimmune Syndromes

11) Endocrinology and Cancer:
Endocrine Paraneoplastic Syndromes, Neuroendocrine tumours and Carcinoids, Endocrine control of Tumour biology and its therapeutic manipulation

Academic Program

The Department participates in the academic activities of the institute including Case presentations and Investigation Capsules on thursday evenings from 3-4 pm and Research presentations and Spotter on saturday mornings at 8-9 am as also the Clinical grand tounds/ Clinico – Pathological Correlations (CPCs) on the last Saturday of every month.

Apart from that the departmental teaching activity consists of:

1) Seminars on Monday and Friday afternoon at 3pm
2) Journal Clun on Wednesday afternoon 3 pm
3) Joint meetings with other relevant department (radiology, pathology, nuclear medicine)

They are also encouraged to undergo training in Radio-immuno assay as conducted by the BARC, Mumbai. An externship for a month in an endocrinology department of a reputed institution is also being arranged during their training program. The trainees are also required to take classes of MD (Medicine) students posted in endocrinology.

As part of training, students are required to conduct a small research project for their thesis / dissertation under the guidance of one of the faculty. The project proposal has to be submitted to the Institute Ethics committee and to the Thesis approval committee within 6 months of joining the course. The research has to be completed and final report submitted 6 months prior to the completion of the course.

At the end of the 3 years of training and submission of thesis / dissertation, candidate shall be permitted to appear for an examination, leading to the award of degree of DM (Endocrinology).

The theory / written examination shall consist of 4 papers dealing with following aspects:

Paper I: Basic sciences, as applicable to Endocrinology

Paper II: Clinical Endocrinology

Paper III: Clinical Endocrinology

Paper IV: Recent advances in Endocrinology

Practical examination shall be conducted as per existing university regulations.

MEDICAL ONCOLOGY

Syllabus / Curriculum:

1) Basic Scientific Principles:-

As foundations for treating malignant disease, the trainee should understand the biology of cancer, principles of therapy and proper conduct and interpretation of clinical research.

Cancer Biology:- Trainees should know the biology of normal cells and the basic processes of carcinogenesis. They should have an understanding the gene structure, organization, expression and regulation. A fundamental understanding of the cell cycle, its control by oncogenes and its interaction with chemotherapy is important. They should understand tumour cell kinetics, proliferation and programme cell death and the balance between cell death and cell proliferation.

Syllabus reading to include:

a. Essentials of Molecular Biology – Basic Principles. Genomics and Cancer, signal transduction, Immunology, Cytogenetics, Cell Cycle, Apoptosis, invesion and metestases, angiogenesis and carcinogenesis, - Genetics, viral physical and Chemical.
b. Epidemiology – epidemiologic methods, descriptive and analytical epidemiology.
c. Principles of cancer management surgical Oncology, Medical Oncology, Radiation Oncology and Biologic therapy.
d. Cancer Chemotherapy
e. Pharmacology of Cancer Biotherapeutics – interferons interleukins, hormonal therapy, differentiating agents, monoclonal antibodies, antiagiogenic factors.
f. Clinical Trials
g. Cancer Prevention – tobacco related cancers, diet chemoprevention.
h. Cancer Screening
i. Cancer Diagnosis – Molecular pathology and Cytology, Imaging, Endoscopy, Laparoscopy.
j. Specialised techniques – minimal access surgery, Vascular access, isolated perfusion, intensity modulated radiation therapy.
k. Systemic Oncology: Head and Neck Cance, Long Cancer, Mediastinal neoplasms, Gastrointerstinal tract cancer,Cancers of the Genitourinary stystem, Gynaecologic cancer, Breast cancer, Endocrine Malignancies, Musculoskeletal turnouts, Mesothelioma,Cancer of the skin, Malignant Melanoma, Central nervous system – malignancies, Paediatric malignancies, Lymphomas and leukemia
l. Pereneoplastic syndromes
m. Cancer of the unknown primary site
n. Peritoneal carcinomatosis
o. Cancer in immunosuppressed host
p. Oncologic emergencies – SVC syndrome, spinal cord compression, metabolic emergencies, urologic emergencies

q. Treatment of metastatic cancer – brain, lung, bone, liver, malignant affusions and ascitis.
r. Haemopoetic therapy – transfusion, grown factors, autologous and allogenic stem cell transplantation
s. Infection in the cancer patient
t. Supportive care and quality of life – pain management, nutritional support, sexual problems, genetic counseling, psychological issues, community resources, care of the terminally ill patient.
u. Adverse effects of treatment – neuses and vomiting. Oral complications, pulmonary toxicity, cardiac toxicity, hair loss, genital dysfunction, second cancers, miscellaneous toxicity.
v. Rehabilitation of the cancer patient.
w. Oncology nursing including venous access
x. Ethical issues in oncology
y. Information systems in Oncology
z. Alternative methods of cancer treatment.

- Newer approaches in cancer treatment – Gene therapy, molecular therapy, cancer vaccines, image guided surgery, heavy particles in radiation therapy.

- Reconstructive surgery

PATTERN OF EXAMINATION

Theory – 4 papers, 100 Marks each Duration: Three hours each

Paper – I	Applied Basic Sciences (Radiation Physics, Tumour Biology Biochemistry, Bio-metry, Immunology and Pharmacology).	100
Paper –II	General Oncology including Tumor Pathology, Radiology and Nuclear Medicine	100
Paper – III	Medical Oncology including therapy, Epidemiology and Rehabilitation.	100
Paper – IV	Recent Advances in Medical Oncology	100

Practical examination shall be conducted as per existing university regulations

NEUROLOGY

Introduction

DM Neurology course is designed to train the candidates in the principles and practice of advanced Neurology to equip them to function as faculty/ consultants in Neurology.

Method of training:

The training of postgraduate for degree shall be in the residency pattern with graded responsibilities in the management and treatment of patients entrusted to his / her care. The participation of the students in all facets of educational process is essential. Every candidate should take part in seminars, groups discussions, grand rounds, case demonstration, clinics, journal review meetings, CPC and clinical meetings. The candidate should participate in the teaching and training programme of undergraduate students. Training should include involvement relevant laboratory and experimental work, and research studies. The students should be posted to the department of Neurology and allied specialty departments of institutions.

Teaching Programme:

The following teaching schedule is prescribed for the course:

Out Patient Service (OPD)	-	Thrice a week
Major Ward Rounds	-	Thrice a week
Subject Seminars	-	Four times a month
Clinical Case Presentation	-	Once a week
Journal Club	-	Twice a week
Neuroradiology	-	Four times a month
Clinical Neurophysiology	-	Once a month
Inter departmental meeting	-	Once a month
Mortality Meeting	-	Once a month
Clinic Pathological conference	-	Once a month

Teaching skills:

Teaching by the DM students include MBBS, BPT, MPT. Medicine, Psychiatry, Pediatrics postgraduate students as part of the training. The student will actively take part in teaching the theoretical aspect of Neurology to the students. In addition, he/she will take active part in imparting and teaching the clinical skills to these students who are posted to the department.

C. Period of Postings in Various Units & Departments:

During the training period of three years, the student will be posted to various departments/sections as follows:

Clinical Neurology	- 2 ½ years
Clinical Neurophysiology	- 2 months
Neuropathology	- 15 days (minimum)
Neuro-radiology	-1 month
Neurosurgery	- 1 month
Neuropsychiatry	- 1 month

Clinical Neurology:

The clinical Neurology postings of 2 ½ (two and half) years shall be structured so that the student shall have direct training in out-patient department, ward work, consultations, EEG, ENMG, EP reporting. All the patients seen in out-patient department or on consultations in ward are supervised by the faculty in order to plan the appropriate management.

The student may be posted to a different institute/ facility of repute outside the parent institute for learning the allied specialties. This study period will be considered as on duty and the stipend paid to the student for this period.

Clinical Neurophysiology:

The student is imparted training in the basic and applied Clinical Neurophysiology. During the training period, he / she be posted to the Clinical Neurophysiology laboratory. During the training period, he / she shall learn the technique of electrode application for electroencephalography, nerve conductions, electromyography and evoked potentials. He / she shall learn to detect various facts and artifacts in clinical neurophysiology and shall learn to handle the EEG, ENMG, EP machines under the guidance of faculty and trained technicians. Training shall be imparted in the interpretation and reporting of EEG, nerve conductions, electro-myography and evoked potentials. He / she shall perform these investigations independently after the initial training. He / she shall report these investigations under supervision initially and independently subsequently.

Neuropathology:

The trainee shall be posted to Neuropathology, NIMHANS, Bangalore for learning the gross and microscopic pathology of the nervous system. He/she shall get exposed to the neuro-pathological techniques and interpretation of histopathology of common migraine neurological disorder.

Neuro-radiolgy:

The trainee is made conversant with the technique and interpretation of angiography, myelography, CT Scan and Magnetic Resonance imaging. All these investigations are taught under the guidance of a Radiologist Neuroradiologist for a period of one month. The student may be posted to a specialized Neuroradiology facility if needed for this purpose.

Neurosurgery:

During the Neurosurgery posting which shall be for one month, the candidate is required to attend the Neurosurgery outpatient department and attend the surgical procedures. He/ She witness the surgical and get acquainted with preoperative and post operative care, complications and selection of the patients for the surgical procedures.

Neuropsychiatry:

The candidate shall be posted to the department of Psychiatry for a period of one month during which period he/ she get acquainted with common psychiatric disorders. In additions, he / she would need exposure to child psychiatry. He/she shall work and get trained under the supervision of a full fledged psychiatry department for this purpose.

7. Attendance, Progress and Conduct:

a. A candidate pursuing degree course should work in the concerned department of the institution during the study period as a fulltime student. No candidate is permitted to run a clinic / laboratory/ nursing home while studying postgraduate course.

b. Each year shall be taken as a unit for the purpose of calculating attendance.

c. Every student shall attend symposia, seminars, conferences, journal review meetings, grand rounds CPC, case presentation, clinics and lectures during each year as prescribed by the department and not absent himself/ herself from work without valid reasons.

d. Every candidate is required to attend a minimum of 80% of the training during each academic year of the postgraduate course.

e. Any student who fails to complete the course in the manner stated above shall not be permitted to appear for the University Examinations.

f. Attitude and aptitude.

- Caring attitude
- Reliability, intiative and Organizational abilities
- Ability to cope with stress and responsibilities
- Professional relationship and team work.

8. Monitoring Progress of Studies:

a. Work diary/ Log book:

Every candidate shall maintain a log book and record of 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. The log book shall be scrutinized and certified by the Head of the Department and Head of the institution and presented in the University practical / clinical examination.

b. Periodic tests:

Incase of degree courses of three year duration, the concerned departments may be conduct three tests, two of them be annual tests, one at the end of first and the other in the second year. The third test may be held three months before the final examinations. The tests may include written papers, practical and marks obtained in such tests will be maintained by the Head of the Department and sent to the University, when called for.

c. Records:

Records and marks obtained in tests will be maintained by the Head of the Department and will be made available to the University of Medical Council India.

9. Neurology:

Neurology shall include the areas of general Neurology, Epileptology, Cerebrovascular, Disorders, Cognitive Neurology, Behavioral Neurology, Neuro Endocrinology, Movement Disorders, Pediatric Neurology, Geriatric Neurology, Neuro-Opthalmology, Neuro-Otology, Neurogenetic Disorders, Neurodegenerative disorders, Neurochemistry, Neurophysiology, Neuropathology, Neurogenetics, Electrophysiology, Neuroradiology, Neuropathology, Neurogenetics, Elctrophysiology, Neuroradilogy and any other related fields that form the speciality of Neurology.

- Disorders of consciousness
- Disorders due to localized dysfunction of cerebral cortex
- Language disorders
- Cerebrovascular disorders
- Epilepsies
- Primary and secondary Headaches
- Movement disorders
- Ataxias & disorders of cerebellum
- Gait disorders
- Cranial Neuropathies
- Demyelinating diseases of the central nervous system
- Demyelinating disorders
- Infections of peripheral nervous system
- Neuromuscular junction disorders
- Disease of muscles
- Metabolic disorders of nervous system
- Degenerative disorders of central nervous system
- Degenerative disorders of peripheral nervous system
- Diseases due to toxins, chemicals. & drugs
- Congenital and development disorders of Nervous system
- Neoplasia of nervous system
- Cranio – spinal trauma
- Cerebrospinal fluid disorders
- Hydrocephalus
- Mental retardation
- Cerebral palsy
- Neuropsychology and Neuropsychiatry

10. Detailed Neuroanotomy and Neurophysiology

- Neuroanatomy of central, peripheral and autonomic nervous system
- Neuromuscular junction & muscles
- Histology of central and peripheral nervous system
- Functional Neuroanatomy
- Cerebrospinal fluid & blood brain barrier
- Development for Nervous system
- Cerebral circulation
- Neuronal signaling and synaptic transmission
- Somatosensory physiology
- Visual perception
- Auditory perception
- Motor programme & movement generation
- Higher cerebral functions
- Sleep
- Neuro-endocrinology
- Neuro-endocrinology
- -Autonomic nervous system

Neuro – Genetics

Neuroradiology

- Plain radiology of skill & spine
- Myelography
- Angiography
- Computerized Tomography (CT)scan
- Magnetic resonance imaging (MRI)
- Doppler study of cerebral circulation
- Functional cerebral imaging (PET, SPECT)

Neuropathology

- Interpretation of gross specimens of cerebral pathology
- Histopathology of common disorders of nerve and muscle
- Principles and application of Histochemistry and immune- histochemistry

Clinical Neurophysiology

- Electroencephalography (EEG)
- Neurophysiological basis for EEG
- Normal EEG including maturation of EEG
- Abnormal EEG
- Video EEG and long term EEG
- Brain death

Magnetoencephalography (MEG)

Nerve Conductions

- Principles and clinical application of nerve conductions in neurological disorders
- Later responses including reflex studies
- Repetitive nerve stimulation

Electromyography (EEG)

- Principles of needle EMG
- Clinical application of EMG
- Qualitative & Quantitative EMG
- Single Fibre EMG

Evoked Potentials

- Visual evoked potentials
- Somatosensory evoked potentials
- Brainstem auditory evoked potentials
- Event related potentials
- Transcranial magnetic stimulation

ESSENTIAL SKILLS

B. Emergency Neurology

- The student should be able to take independent valid and rational decision in the evaluation and management of neurological emergencies.
- The student should be able to interpret emergency laboratory data including Neuroradiological investigations.
- The student should be proficient in the evaluation and management of all neurological emergencies including strokes, neuromuscular paralysis, disorders of consciousness, epilepsies, neuro infections, etc.

C. Procedures of be performed independently (with supervision as need)

- Lumbar puncture - 25
- Nerve biopsy - 3
- Muscle biopsy - 3
- Nerve conduction studies - 25
- Needle electromyography - 10
- Evoked –potential studied - 10

D. Interpretation and reporting of Clinical Neurophysiological investigations.

- Electroencephalography - 50
- Nerve conductions - 25
- Electromyography - 10
- Evoked potentials - 10

Recommended books and Journals

1. Essential Books (Latest Editions)

S.No	Title	Author
1	Neurology in clinical Practice (Vol.1 &2)	Bradley SG, Daroff RB
2	Merritt's Textbook of Neurology	Rowlang L.P
3.	Pediatric Neurology Principles & Practice	Swaiman, Ashwal, Rerriero
4.	Adams and Victor's Principles of Neurology	Rooper AH, Brown RH
5.	Loclization in clinical Neurology	Brazia PW, Masdeu JC
6.	Dr Jong's Neurological Examinations	William W, Campbell
7.	Carpenter's Human Neuroanatomy	Andre Parent
8.	Greenfiels's Neuropathology(Vol. 1&2)	Graham DL, Lanton P
9.	Brain's Diseases of the Nervous system	Donaghy M

2. References (Latest Editions)

S.No	Title	Author
1.	Current Therapy in Neurology Disease	Johnson RT, Griffn JW
2	Text Book of clinical Neurology	Goetz CG
3	Current practice of Clinical Electroencephalography	Ebersole JS, Pedley TA
4.	Atlas and Classification of Electroencephalography	Luders H O, Hoachtar S
5	Epilepsy-A Comprehensive Textbook	Engel J, Pedley T A
6	Electrodiagnosis in Clinical Neurology	Aminof MA
7	Peripheral Neuropathy Vol I & II	Dyck PJ, Thomas PK
8	Diabetic Neuropathy	Dyck PJ, Thomas PK
9	Dementlas	Mendez MF, Cummings JL
10	Stoke Pathophysiology, Diagnosis and Management	Barnett H J M
11	Caplan's Stroke : A Clinical Approach	Caplan LR
12	Disorders of Voluntary Muscles	Waston
13	Neurological Surgery	Youmans/PN Tandon & Ravi Ramamurthy/Sett Ran- Gachasy
14	Mechanism and Management of Headache	Lance J W, Goadsby PJ
15	Neurology Practice in Indian perspective	N H Wadia
16	Neuro Radiology	OSBORN

Indexed Journals	References Series
Neurology	Handbook of Clinical Neurology – Vinken PT, BRuyn GW
Journal of Neurological Sciences	Advances in Neurology
Journal of Neurology, Neurosurgery and Psychiatry	Annual Review of Neurosciences
Brain	Neurology Clinics
Annals of Neurology	Year Book Neurology and Neurosurgery
Stroke	Butterworth's International Medical Reviews in Neurology
Epilepsia	
Muscle and Nerve	
Clinical Neurophysiolo	
Acta NEurologica Scandinavica	
Neurology Indai	
Annals of Indian Academy of Neurology	
American Academy Neurology	

NEPHROLOGY

Aims and Objectives

The programme aims at training a physician in the specialty of Nephrology encompassing the related knowledge, skills, research methodology and attitudes which will enable him/her to function as an independent clinician/consultant, a teacher or a research scientist.

During the period of training the candidate is expected

1. To acquaint himself/herself with the past and current literature on relevant aspects of basic, investigative and clinical nephrology.
2. To acquire performance skills for diagnostic and therapeutic procedures and interventions.
3. To diagnose, plan and interpret investigations and treat various acute and chronic kidney ailments by relevant therapeutic methods.
4. To identify, frame and carry out research proposals in the specialty.
5. To acquire thorough knowledge of internal medicine and allied general and clinical disciplines to ensure appropriate and timely referrals.
6. To acquaint with relevant education delivery system to be able to function as a health educator.

Curriculum

1. Training will be exclusively on whole time in-service basis on the residency pattern.

2. The programme will impart a sound training in the diagnosis and management of patients with renal disorders. During the training period, the candidate shall take part in all the activities of the department including inpatient and outpatient nephrology care, laboratory and investigative work up, lectures, seminars, conferences, group discussions and various other clinical and teaching assignments. The candidate will work as a member of the renal team and will be given the responsibility of investigation and therapeutic care of all patients under the direct guidance of the consultants in Nephrology. He will be first on call for routine and emergency renal consultants.

Each candidate will go through the following rotations in various areas/subspecialties of nephrology during 3 years of training in Nephrology.

(1) Indoor services/Out patient Clinics/Consultations	1 year
(2) Dialysis	6 months
(3) Renal transplantation	6 months

The candidate would be involved in the pre-transplant, immediate post-transplant and late post-transplant medical management of renal transplant recipients and the donors including immunosuppressive therapy, immunological monitoring, diagnostic and therapeutic interventions in patients with allograft dysfunction including renal allograft biopsy and ultrasound evaluation of the allograft.

(4) Critical Care Nephrology	3 months

Intensive care nephrology including management of electrolyte and acid base problems, CRRT and dialysis of critically ill patients with multiorgan failure.

(5) Interventional Nephrology 3 months

Various procedures in nephrology including renal ultrasonography, renal biopsy, insertion of peritoneal dialysis catheter and hemodialysis, vascular access and monitoring.

(6) Research Posting 6 months

During this period, the candidate will complete his on-going research projects and would also familiarize himself/herself with research methodologies with laboratory techniques being carried out in HLA lab, immunofluorescence and EM laboratories and also with routine laboratory investigations being done in the Renal Lab.

Clinical training schedule will include the following:

- Bedside rounds - daily
- Mortality meeting - once a week
- Seminar - once in two weeks
- Grand rounds - once a week
- Journal club - once in two weeks
- Renal histology conference - once in two weeks
- Clinical case discussion - once a week
- Transplant meeting - once a week
- Nephro-urology conference - once a week
- Nephro-radiology conference - once a week
- Out patient nephrology care including renal transplant clinic

Didactic Lectures

A minimum of 15-20 lectures/year covering the recent advances in all aspects of renal diseases would be delivered by consultant faculty. In addition, candidates will be required to attend the complete, short term basic and clinical courses on

1. Bio-statistics
2. Research methodology and experimental lab medicine relevant to Nephrology
3. Use of computers in medicine
4. Bio ethics, ethical issues in transplantation including "Human Organ Transplant Act".

Interventional Procedures

A candidate will be required to have achieved proficiency in performing and supervising hemodialysis, peritoneal dialysis and renal biopsies. He would be expected to have performed a minimum of 50 renal biopsies, 300 hemodialysis including CVVHD, CRRT and 50 peritoneal dialysis. The candidate would be expected to involve and be trained in all aspects of CAPD programme. The candidate would also be expected to have inserted at least 50 internal jugular, 50 femoral and 50 subclavian vascular access catheters. The candidate would maintain record of all the procedures/interventions in a log book, which would be certified by the Head of the department. A proficiency certificate from the head of the department regarding the clinical competence and skillful performance of procedures by the candidate will be necessary before he would be allowed to appear in the examination. Six monthly internal assessment would be done to monitor and evaluate the training in various areas/subspecialties of Nephrology.

Investigative work-up

The candidate is expected to perform routine urine examination and ultrasonography. In addition he/she must familiarize himself/herself with the following investigations:

Laboratory:

- Electrolyte and acid base analysis
- Renal function tests
- Auto analyzer functioning
- Renal pathology interpretation including immune-fluorescence and electron microscopy.

Radiological:

- Intravenous urography
- Micturating cystourethrography
- Digital subtraction angiography
- Selective renal angiography and interventional angioplasty and stenting
- Selective renal venography
- Doppler studies
- Antegrade and retrograde pyelography
- CT imaging
- Magnetic resonance imaging

Nuclear Medicine:

- Various renal isotope imaging and functional techniques
- Urodynamic studies

Microbiology:

- Viral, bacterial and funal cultures, seriological and PCR techniques

Immunological test:

- ANCA, ANATOMY anti DsDNA, complement, anti GBM ab, cryoglobin, immunoelectrophoresis

Tissue typing:

- Cross match, serological typing, molecular HLA typing, PRA

Renal function testing:

- Renal plasma flow, GRF
- Renal concentrating, diluting capacity
- Micro albuminuria
- Proteinuria measurement
- Urinary acidification
- Renal sodium and potassium handling

Research

Each candidate will be required to undertake research under the guidance of the consultants. They will be required to submit a research plan within 6 months after joining the course and submit a dissertation not later than 2 years after joining the course. In addition the candidate will participate in all the departmental research activities.

Syllabus

Applied basic sciences knowledge relevant to the field of nephrology including electrolyte and acid base disorders.

Investigative techniques, selection and interpretation of results

Pathogenesis of renal diseases and renal histopathology

Diseases of the urinary react (glomerular diseases urinary tract infection, tubulointerstitial diseases, inherited diseases, toxic nephropathies, systemic diseases with renal involvement, renal stone disease, urinary tract obstruction, vascular diseases of kidney, hypertension, neolasia etc).

Renal failure (diagnosis and medical management)

Principles and practice of dialysis
Renal transplantation
Recent advances in nephrology
Biostatistics and clinical epidemiology

Ethics, psychosocial, economics of management of renal diseases, human organ transplant act and medicolegal aspects of transplantation.

Recommended books and journals

Books (Latest edition)

	Title	*Editor*
1.	The Kidney	Brenner and Rector
2.	Diseases of kidney and urinary tract	Schrier and Gottschalk
3.	Heptinstall's pathology of the kidney	J Charles Jennets
4.	Hand book of dialysis	Daugirdas
5.	Kidney transplantation	Peter Morris
6.	Oxford text book of nephrology	Alex davision, Stewart Camerol et a
7.	Massry and Glassock's text book of Nephrology	Saul G Massry and RJ Glassock
8.	The kidney: Physiology and Pathophysiology	DW Seldin and G Giebisch
9.	Essential atlas of nephrology	RW Schier
10.	Immunological renal diseases	EG Neilson and WG Couser

Journals

1. American Journal of Nephrology
2. Kidney international
3. Americal journal of kidney diseases
4. Nephrology dialysis and transplantation
5. Journal of American society of Nephrology
6. Seminars' in Nephrology
7. Indian Journal of Nephrology
8. Electronic edition of Uptodate in Nephrology and Hypertension
9. Current opinion in Nephrology and Hypertension
10. New England J of Medicine
11. New England J of Medine
12. Lancet

CARDIO THORACIC SURGERY

CARDIOVASCULAR AND THORACIC SURGERY RESIDENCY PROGRAM

This is a three years program. Medical students who have finished their masters degree in General Surgery are eligible candidates. The MCh Residents are selected as per the merit in a written entrance test for the 3 year program.

The three years program the postings are done in various areas with the aim of progressive increase in responsibility and operative experience and there are opportunities for clinical Research. Broadly the postings are as follows: Year 1 Cardiac (adult/ congenital), Vascular and Thoracic (Postings as per the duty roster)

- Patient care
- Out patient: Follow up of patients, learn to investigate new cases, surgical decision making.
- Operative experience (Cardiac (adult/congential), Vascular and Thoracic)
- In-house call
- Preoperative decision making
- Postings in the post operative area to get accustomed to monitoring of the hemodynamcis and learn to manage postoperative surgical emergencies.
- Consultative experience, including calls from the casualty

Year 2 Cardiac (adult / congenital), Vascular and Thoracic (Postings as per the duty roster).

- Patient care
- Operative experience (Cardiac (adult / congenital), Vascular and Thoracic)
- Attend to in-house call
- Preoperative decision making
- Management of postoperative patients
- Attend to calls from the casualty

Year 3 Cardiac (adult / congenital) / Thoracic

- Overall charge of service
- Substantial operative experience
- Management of postoperative patients
- Attend to in-house call
- Attend to calls from the casualty
- Responsibility extended in terms of patient care

In addition they shall be continuing their work on the research topics allocated for their final thesis presentation.

Maintaining a Log book is mandatory which is as per the proforma of the University. The Log book shall be submitted prior to the written final examination to the Department.

The residents have to submit 2 articles in indexed journal and have a platform or a poster presentation at the conferences.

CVT Surgery Residency Program Schedule

Monday:	8.00 am to 9.00 am	Seminar Presentation by a resident under the Guidance of a Faculty
Tuesday:	8.00 am to 9.00 am	Rounds
Wednesday:	8.00 am to 9.00 am	Journal club which includes presentations of articles related to Cardiovascular Thoracic: Surgical techniques, results and follow-up.
Thursday:	3.00 pm to 4.00 pm	Presentations as per the schedule of the University
Friday:	8.00 am to 9.00 am	Case Presentation
Saturday:	8.00 am to 9.00 am	Presentation as per the schedule of the University

Time to Time

Research: Basic laboratory research review of the MCh residents work

Attendance at the national meeting

MCh residents are permitted to attend:

National and the state Conferences
Surgical Live workshops
Hands on workhshops
Continuing Medical educational Programs

Syllabus for the MCh in Cardiovascular and Thoracic Surgery

Week	Curriculam Topic	Basic Level	Advance level
1.	Cardiac surgery General management 1	Cardiac Anatomy	Advanced Anatomy
		Anatomy of the right atrium and right ventricle	Surgical importance
		Anatomy of the left atrium and left ventricle Mitral valve apparatus	Surgical importance
		Structure of Cardiac membrane Cardiac Physiology Cardiac Cycle	Advanced Physiology
		Conduction system of the heart	Clinical application
2.	Cardiac surgery General management 2	Cardiovascular pharmacology, Microbiology	Pathology
3.	Cardiac Surgery General management 3	Diagnosis, evaluation and treatment	Risk assessment guidelines
		Role of nuclear imaging in the assessment of acquired heart disease	
		Magnetic resonance imaging I the assessment of the acquired heart diseases	PET imaging in the assessment of cardiac diseases
		Risk assessment	Cardiac Rehablitation
		Cardiopulmonary resuscitation	Molecular biology: Tissue engineering in cardiac surgery
4.	Cardiac surgery General management 4	Management of complications of cardiac surgery	Wound infection / sterna disruption
		Cardiac tamponade	
		Postoperative management	Postoperative low cardiac output syndrome
5.	Cardiopulmonary bypass Myocardial Protection Circulatory support 1	Introduction to CPB	Pathophysiology of CPB
6.	Cardiopulmonary bypass Myocardial Protection Circulatory support 2	Myocardial protection	Management of Coagulopathy / HIT
		Myocardial protection in children	
		IABP	
		ECMO	
7.	Ischaemic Heart disease 1	Surgical anatomy of coronary artery	
		Coronary artery disease: Etipathogenesis, Risk factors, Diagnosis, investigation of IHD	Management guidelines
		Cardiac imaging	Interventional techniques: PTCA and thrombolytic therapy

8.	Ischaemic Heart disease 2	Role of PCI, hybrid approaches and non-operative	Combined coronary/ carotid disease
9.	Ischaemic Heart disease 3	Surgical revascularization	Role of TMR
		Choice of conduit	
		Role and result of coronary endarterectomy	
		On/ off pump approaches	Repeat revascularization
10.	Ischaemic Heart disease 4	Complications of IHD / MI Presentation / Diagnosis / Treatment	Treatment optins of IHD / MI
		Cardiogenic shock secondary to MI	Etiopathogenesis and management
		Post infarct ventricular septal rupture	Etiopathogenesis and management
		Surgical treatment of left ventricular aneurysm	
11.	Heart Valve Disease 1	Aortic valve anatomy and physiology	Results of surgery (AS)
		As pathophysiology	Guidelines (AS)
		Diagnosis / assessment	Valve selection
		Left ventricle outflow tract obstruction	Etiology and Surgery
12.	Heart Value Disease 2	Al pathophysiology	Results of surgery (Al)
		Diagnosis/assessment	Guidelines (Al)
		Indications for operative management (Al)	
13.	Heart Value Disease 3	Mitral value anatomy and physiology	Guidelines (MR)
		MR pathophysiology/natural history	Treatment of degenerative MR
		Diagnosis and assessment	Results of Surgery (MR)
		Indications for operative management (MR)	
		Ischemic MR	Operative treatment ischemic MR
			Results of surgery ischemic MR
14.	Heart Value Disease 4	MS pathophysiology/ natural history	Results of surgery (MS)
		Diagnosis and assessment	Guidelines (MS)
		Indications for operative management (MR)	
15.	Heart Value Disease 5	Tricuspid value anatomy and physiology	Results of surgery (TV)
		Pulmonary value	Guidelines (TV)
		Diagnosis and assessment	Indications for operative management (TV)

16.	Heart Value Disease 6	Endocarditis general indications: etiopathogenesis, Clinical presentation, Diagnosis	Operative timing, Prosthetic Value
		Endocarditis of mitral value	Operative techniques
		Endocarditis of Aortic value	Operative techniques
		Antiboitics / prophylaxis	Endorcarditis
		Prosthetic heart values: Mechanical and Biological	
17	Heart Value Disease 7	TAVR	TAVR
18	Heart Value Disease 8	General overview	Imaging interpretation
19	Great vessel disease 1	Vascular pathology	Natural history
20	Great vessel disease 2	Management of ascending aneurysms with and without aortic value disease	Operative techniques: Aortic value sparing procedures Aortic dissection
		Management of ascending aneurysms arch	Debranching and Hybrid procedures
		Aneurysms: Diagnosis role of CT angiogram and reconstruction and how it differs from: conventional cine angiogram, Digital substraction angiography	Surgical application and operative technique
		Indications for surgery/risk assessment	Neurologic injury
21	Great vessel disease 3	Management of descending and thoracoabdominal aneurysms	Endovascular treatment
22	Great vessel disease 4	Acute thromboembolic disease	Chronic thromboembolic disease
23	Cardiac Conduction system disorder 1	Anatomy of conduction pathways	Surgical treatment of artial fibrillation
		Arrythmia complications after cardiac surgery	Management Guidelines
		Atrial conduction disorders	
		Ventricular conduction disorders	
		Electrophysiological evaluation for the surgical management of arrhythmias	
24.	Cardiac Conduction system disorder 2	Pacemakers and AICD	Complications of pacemakers and AICD
25.	Diseases of the pericardium and Myocardium I	Pathophysiology (tamponade, constrictive, restrictive)	Benign Pericardial disease Pericardial tumors patient management
26.	Diseases of the Pericardium and Myocardium II	Cardiac tumor knowledge	Cardiac tumor management / technical skills

27.	Disease of the Pericardium and Myocardium III	HOCM Knowledge	HOMC Management / Technical skills
28.	Heart Failure and Cardiac Transplant I	Diagnosis and management of heart failure	Guidelines, operative techniques
		Nontransplant surgical options	
29.	Heart Failure and Cardiac Transplant II	General information (devices)	General information (outcomes)
		IABP, Ventricular assist devices	
		Total artificial heart	
30.	Heart Failure and Cardiac Transplant III	LVAD management / clinical skills	
		Adult ECMO	
31.	Heart Failure and Cardiac Transplant IV	Cardiac transplant history, Transplant knowledge: recipient selection, Cardiac donors and donar operation, Recipient operation	Transplant knowledge: Immunosuppression, Diagnosis of rejection, Complications, Results and future directions
32.	Cardiothoracic Trauma I	General management of Cardiothoracic Trauma	Aortic injury patient management
		Aortic and Cardiac injury knowledge	Cardiac injury patient management
33.	Cardiothoracic Trauma II	Chest wall and pulmonary injury knowledge	Chest wall and pulmonary injury Management
		Diaphragm injury knowledge	Diaphragm injury management
34.	Cardiothoracic Trauma III	Esophageal injury knowledge	Esophageal injury management
		Tracheobronchial knowledge	Tracheobronchial injry management
35.	Thoracic Surgery General Management I	General Knowledge including lung anatomy	Management
36.	Thoracic Surgery General Management II	Physiology	Imaging
37.	Thoracic Surgery General Management III	Risk assessment lung	Postop complications lung
38.	Thoracic Surgery General Management IV	Risk assessment esophageal	Postop complications esophageal
39.	Neoplasm of the Ling I	Benign and malignant tumors	Epidemiology and genetic signatures presentation
40.	Neoplasm of the Lung II	Stage 1 Staging including all staging tools	Stage I treatment and multimodality
		Stage 1 Survival and recurrence patterns	Non-resectional techniques
41.	Neoplasm of the Lung III	Stage II Staging including all staging tools	Stage II treatment and multimodality
		Stage II Survival and recurrence patterns	Non-resectional techniques

42.	Neoplasm of the Lung IV	Stage III Staging including all staging tools	Stage III treatment and multimodality
		Stage III Survival and recurrence patterns	Non-resectional techniques
43.	Neoplasm of the Lung V	Stage IV Staging including all staging tools	Stage III treatment and multimodality
		Stage IV Survival and recurrence patterns	Non-resectional techniques
		Surgical palliation	
44.	Neoplasm of the Lung VI	Secondary and metastatic neoplasm of the lung	Secondary and metastatic neoplasms: outcomes, treatments
45.	Benign Lung Conditions I	Bronchiectasis (knowledge)	Bronchiectasis (patient care)
		Bacterial infection (general overview)	Bacterial infection (nosocomial infection, community acquired)
46.	Benign Lung Conditions II	Tuberculosis and atypical mycobacteria	Tuberculosis and atypical mycobacteria (patient care)
		Mycotic infection (knowledge)	Mycotic infection (patient care)
47.	Benign Lung Conditions III	Parasitic Disease (knowledge)	Parasitic Disease (patient care)
		Hemoptysis	
		Interstitial Lung Diseases (knowledge)	Interstitial Lund Disease (patent care)
48.	Benign Lung Conditions IV	Emphysema and Bullae (etiology and pathophysiology, indications for bullectomy)	Emphysema and Bullae (Nett trial part 1 and 2, pulmonary rehab)
49.	Disorders of the Pleura I	Anatomy and pathophysiology of the pleura	Hyperhidrosis
50.	Disorders of the Pleura II	Mesothelioma and fibrous tumors	Mesothelioma and fibrous tumors
51.	Disorders of the Pleura III	Lung abscess and empyema (knowledge)	Lung abscess and empyema (patient care)
52.	Disorders of the Pleura IV	Pleural effusions (general information and benign)	Pleural effusions (malignant)
53.	Disorders of the Chest Wall I	Anatomy (basic)	Anatomy (advanced)
		Diagnosis and imaging of the chest wall (basic)	Diagnosis and imaging of the chest wall: PET CT (advanced)
54.	Disorders of the Chest Wall II	Chest wall tumor (knowledge, patient care)	Chest wall resection and reconstruction and outcomes
		Inflammatory and infectious conditions	
55.	Disorders of the Chest Wall III	Thoracic Outlet Syndrome	Congenital and Pectus deformity

56.	Disorders of the Diaphragm	Anatomy and pathophysiology	Patient management
		Maging techniquest; physioloigic consequences of herniations / paresis	Surgical techniquest; required replacement and reconstructive materials
57.	Disorders of the Mediastinum I	Mediastinal general knowledge	Mediastinal infections
58.	Disorders of the Mediastinum II	Diagnosis /assessment Lymphoma	Germ cell tumors
59.	Disorders of the Mediastinum III	Mediastinal cysts Neurogenic tumors	Miscellaneous mediastinal tumor
60.	Disorders of the Mediastinum IV	Thymic knowledge	Thymic tumors patient management / clinical skills
61.	Endoscopy I	Endoscopic anatomy (airway and esophagus)	Bronchial and esophageal stents
		Roles of rigid vs. flexible	Nonsurgical ablative techniques (airway and esophagus)
62.	Endoscopy II	Mediastinoscopy, Chamberlain, EBUS, EUS	Anesthetic management / ventilation during endoscopy
63.	Disorders of the Airway I	Anatomy of the larynk, trachea and bronchus	Techniques for surgical resection
		Signs / symptoms and presentation of airway disease	Bronchoplastic Procedures
64.	Disorders of the Airway II	Pathology of tracheal tumors	Medical and oncologic airway disease treatments
65.	Disorders of the Airway III	Sign and symptoms of anastomotic Complications and tracheoesophageal fistula	Management of anastomotic complications and treatment of tracheoesophageal fistula
66.	Management of Benign Esophageal Disorders I	Esophageal and gastric anatomy	Anatomy of small bowel and colon as it relates to reconstruction
67.	Management of Benign Esophageal Disorders II	Diagnostic tests and tools and their interpretations	Nonsurgical therapies for motility disorders, reflux and achalasia
68.	Management of Benign Esophageal Disorders III	Pathophysiology of motility disorders, diverticula	Surgical options for motility disorders, diverticula
69.	Management of Benign Esophageal Disorders IV	Pathophysiology of refulux, infections, strictures, trauma and TE fistulas	Surgical options for reflux, infections,strictures, trauma and TE fistulas
70.	Management of Esophageal Neoplasia I	Anatomy of esophagus and stomach	Screeening and prevention
		Anatomy of colon	Risk assessment

71.	Management of Esophageal Neoplasia II	Etiology / epidemiology of esophageal cancer	Esophageal resection options; complications of resection
72.	Management of Esophageal Neoplasia III	Diagnosis and staging for esophageal cancer	Barrett's Esophagus, diagnosis and treatment
73.	Management of Esophageal Neoplasia IV	Benign esophageal neoplsams	Stage I and II: treatment,multimadolity and non-surgical options
		Stage I and II: staging, survival and	Recurrence patterns
74.	Management of Esophageal Neoplasia V	Stage III and IV: staging, survival and recurrence patterns	Stage III and IV: treatment, multimodality and non-surgical options
75.	Lung Transplant I	Patient and donor selection	Donor / implantation surgical procedures
76.	Lung Transplant II	Basic pharmacology of immunosuppression	Management of complications: reperfusion injury, rejection acute and chronic, anastomotic
77.	Congenital Heart Disease General Management I	Embryology / Anatomy/ Physiology	
		Structural and functional diagnosis of congenital heart disease	
78.	Congenital Heart Disease General Management II	Imaging & Diagnosis	
79.	Pediatric circulatory support & perioperative care	Myocardial protection / CPB Depp Hypothermic circulatory arrest	Circulatory Arrest/ Cerebral Protection / ECMO
		Anaesthesia for congenital heart disease	
		Perioperative Care	
80.	Congenital heart disease Management	Pulmonary vascular disease	
		Palliative procedures in congenital heart disease	
		Pulmonary artery banding	
81.	Anomalous of venous connection	Anomalous venous connection: systemic and pulmonary	
82.	Left to Right Shunts	ASD / VSD/ PAPVR/PDA	AVCD/ Aorto pulmonary window or septal defects
		Cor-triatriatum	Double inlet ventricle
83.	Cyanotic Heart Disease	TOF / Basic Transposition	Advanced Transposition/ TAPVR/DORV/Truncus Arteriosus/DOLV

84.	Single Ventricle Lesions	Congenitally corrected transposition	
		Tricuspid Atresia Ebstein's Anomaly	Straddling and overriding of atrioventricular valves
		Mustard Procedure	
		Sennings Procedure	
		Rastelli Procedure	
		Arterial Switch operation	
		Single Ventricle Physiology / Management /	Single Left Ventricle / Single Right Ventricle / Complex
		Palliative Operations	Single Ventricle
85.	Congenital anomalies of mitral valve	Congenital anomalies of mitral valve	Mitral valve repair techniques
86.	Coronory artery anamolies	Coronary artery anomalies	Surgical consideration and techniques adopted
87.	Left Ventricular Outflow Tract Obstruction	AS / Subaortic Membrane / Supravalvar AS/	IAA / Shones Complex
		Coarctation of aorta	
		Hypoplastic left heart syndrome HLHS	
88.	Right Ventricular Outflow Tract Obstruction	Pulmonic Stenosis / DCRV	PA VSD/ PA IVS/ Supravalvar PS
		Single pulmonary artery	Pulmonary atresia with VSD
		Pulmonary artery aneurysm	
89.	Vascular Rings and Sings / Coronary Anomalies	Vascular Ring : Vascular anomalies causing trachea-oesophageal compression	Vascular sling / LACAPA
90.	Pediatric Heart and Lung Tansplant	Basic Heart and Lung Transplant	Advanced Heart and Lung Tx / Devices
91.	Adult Congenital Heart Disease	Guidelines / Management / Common Diseases	AAOCA / Sinus Valsalva Aneurysm / LV Aortic Tunnel
92.	Congenital Thoracic Disease	Congenital Thoracic Disease	Role of CT scanning, PET scanning.

NEUROSURGERY

I. M Ch NEUROSURGERY 3 YEAR COURSE FOR POST *M S*

II. DIRECT M Ch NEUROSURGERY 6 YEAR COURSE

(The committee strongly feels that there should be two streamy of programmes}

A. AIM OF TRAINING

The end product should have acquired knowledge, skills, aptitude and attitudes to be able to function as an independent clinician/consultant and a teacher acquainted with research methodology.

OBJECTIVES

The End Product:

1. Should be well acquainted with the current literature on relevant aspects of the basic, investigative, clinical and operative neurosciences.
2. Should have learned indications and performance skills-of common neurosurgical operations.
3. Should have acquired performance skills and ability to interpret relevant clinical investigations.
4. Should be able to diagnose, plan investigations and treat common conditions in the speciality by relevant current therapeutic methods.
5. Should be acquainted with allied and general clinical disciplines to ensure appropriate and timely referral.
6. Should be capable of imparting basic neurosurgical training,
7. Should be able to identify, frame and carry out research proposals in the relevant speciality.

B. TRAINING SYSTEM

Exclusively on whole time in service basis, on residency pattern.

C. ELIGIBILITY

Essential

For Direct 6 year course

1. M.B.B.S. degree of an Indian University recognized by the Medical Council of India or any other equivalent degree recognized by MCI.
2. We recommended that during the MBBS course the candidate should have atleast 2 weeks rotation in Neurosurgery and the Neurosurgery related Teaching should be taught by qualified Neurosurgeon wherever available.

For Post MS

M S (Gen. Surgery only) degree of an Indian University recognized by the Medical Council of India or any other examination recognized for the purpose by the MCI, During MS Gen. Surgery – candidate should have worked in Neurosurgery for 3 months.

Mode of Selection

Twice a year on All India basis based entirely on merit (by a written test followed by departmental assessment). For written test (MCA type) 75% of questions should be of level of MS (Gen. Surgery) only those acquiring more than 50% marks in the theory would be eligible for departmental assessment. 3 times of the no. of post available should be called for departmental assessment strictly on the basis of merit 70% marks should be for written test 30% of should be for department assessment.

D. TRAINING METHODS

1. Clinical teaching in the OPD, Emergency and Operation theatres. Clinical teaching rounds in Neurosurgery Ward and bed side presentations.
2. Special teaching sessions like Neuroradiology rounds, Neuro-ophthalmalogy round combined Neurology-Neurosurgery case discussions.
3. Seminars, journal clubs, mortality, morbdility conferences.
4. Treatment planning sessions.
5. Assisting and performing neurosurgical operations.
6. Paper presentations at conferences.
7. Preparation of manuscript for publication.
8. Training in an experimental microsurgical laboratory.

E. COURSE CONTENTS

1. Clinical Nem osurgery including history taking, physical examination, diagnosis, selection and planning of relevant investigations, appropriate treatment and rehabilitation of patients with neurosurgical disorders including those presenting as emergencies.
2. Essentials of clinical Neurology especially with reference to disorders common in India and those likely to present to the Neurosurgeons.
3. Basic medical sciences relevant to the practice of Neurosurgery.

4. Surgical Neuropathology and the essentials of the Pathology of Neurological disorders likely to present to the Neurosurgeon.

5. Performance and interpretation of Neuroradiological procedures, such as carotid arteriography and myelography. Familiarity with the technique of selective arteriography and its interpretation.

6. Principles and interpretation of common Neurophysiological, Neuro-ophthalmological, Neurootological and Neuroendocrinological tests especially with reference to Neurosurgical disorders.

7. Principles and interpretation of computerized axial tomography, MR.I and othermodern investigations.

8. Performance of common neurosurgical operations in the supra and infra-tentorial compartments in the spinal canal and on the peripheral nerves - initially under supervision and later independently. Ability to use the operating microscope is mandatory.

9. Familiarity with various types of anaesthesia used in neurosurgery their indications and contraindications, the use of ventilators and techniques of monitoring and resuscitation.

10. Pharmacology of various drugs used in Neurosurgeiy.

11. Knowledge of the history of neurological surgery and its allied disciplines with special reference to India.

12. Knowledge of recent advances in the field of neurological surgery.

13. Preparation of papers for presentation at scientific conferences and for publication.

14. Introduction to the techniques involved in the organisation and development of a department, its subsections and newer facilities.

15. It is desirable to have microsurgical laboratory training where candidates learn dissection/suturing of fine arteries/nerves under microscope and skull base dissections.

16. Development of proper attitudes towards patients, subordinates, colleagues and seniors.

17. Should have basic knowledge about application of computers.

F. TRANING ON SUB-SPECIALITY OF NEUROSCIENCES

Neuro-Anaesthesiology

There should be a didactic lectures which may be a common programme for the Neurology and Neurosurgery postgraduates. The major thrust in these would be the resuscitation management of coma, life-support systems and monitoring of patients. The Neurosurgery trainees would have additional requirements in which they should

know the interaction of anaesthetic drugs with systemic diseases and neurosurgical disease conditions and for this few more didactic lecture would be required. The major thrust would be on continuing training for the Neurosurgery trainees in the operation theatre as a result of the informal discussions which would be taking place during the training period.

Neuroradiology

Combined Neuroradiology rounds or meetings twice or thrice a week.

Clinical Neurology Neurophysiology

Candidiates should have 2 months (I month in the beginning and 1 month in the middle of course) training under Neurology department to familiarize themselves regarding common neurological disorders. During this period candidate should also familiarize themselves with the technique and interpretation of EEG/EMG/NCV and evoked potentials.

Neuropathology

It is suggested that there should be a 4 week capsuled training for Neurosurgery trainees or regular once a week Neuropath conference in which they should be familiarized with the techniques of grassing , staining procedures, brain cutting, autopsy methods and tissue processing including frozen sections and should be able to identify histological features of the common neurosurgical disorders.

In regard to weightage in the examination it is felt that it should be five present of the theory and the practical examination.

Neuro-Biochemistry, Neuroimmunology

In regard to both above it is felt that there should be a capsuled course of didactic lectures which should run every alternate year or so to familiarize the trainees with the elements and techniques of neurochemistry and neuro-immunology.

In these subjects it was felt that a total weightage of 1-2% questions of theory and practical should be there.

G. VISIT TO OTHER INSTITUTIONS

Candidate in 3rd year (Post MS) and in 5th year (Post MBBS) should visit other neurosurgical centers recognized by MCI for about 4 weeks to be able to observe difference in approaches to various neurosurgical problems.

It is desirable to have training in certain special areas to be arranged outside the institute, when necessary like micro surgical lab training if not available within the deptt.

For 6 yrs. candidate should spent about 1 yr. in Gen, Surgery including plastic surgery/ortho/pediatrics surgery to learn the basic principles of Gen. Surgery and to have exposure to the common problems in the above fields.

H. ESSENTIAL PRE-REQUISITE FOR APPEARING FOR M Ch (NEUROSURGERY) EXAMINATION

1. Logbook of work done (surgical procedures performed/assisted case presentation and other academic activities): rotations, internal assessment report.
2. Publications (a) paper on review of available clinical material from the department.
3. One laboratory oriented project/prospective research related to Neurosurgery/thesis completed in all respects for publication preferably published.
4. Attendance, as per laid down rules of the Institute.

I. EVALUATION OF M Ch (NEUROSURGERY)

1. Internal assessment - 20% weightage

To be done by all teachers concerned in the training of the candidate both inside and outside the parent department independently and entered into log book on a standard marking system (see infra). The course director will average out and put the final evaluation.

2. Theory Papers - 30% weightage

(equally distributed for each paper)

Minimum pass marks 50% in each paper.

Timing of Examinations

a) Part I - at the end of 2 yrs. for 6 yrs. course on General Principles of General Surgery and basic neurosciences.

b) Part II - at the end of 36 months of training (for post MS) and at the end of 6 yrs. for direct M Ch course. Three papers - Basic Neurosciences (applied), Clinical Neurology and Neurosurgery, advances and operative Neurosurgery.

2. Practical Examinations

Total weightage 50%

Distributed as follows:

a) Clinical	-	20%
b) Operative demonstration for M Ch	-	20%
c) Radiology, Pathology and general viva	-	10%

Minimum pass marks 50%

J. MINIMAL REQUIREMENTS OF TRAINING UNIT FOR M Ch NEUROSURGERY

1. Separate 30 bedded department with an OPD and casualty attendance of at least 1000/year attached with or having access to a well equipped general hospital with casualty services and investigative facilities, with well equipped departments of biochemistry, pathology, microbiology, ophthalmology, otorhi no laryngology, general medicine, paediatrics, behavioural sciences, forensic medicine and neurology.

2. The radiology department would provide required support and should be equipped with skull table, myelography table, image intensifiers and facilities for selective angiography. Facilities for intervention radiology, DSA, CT scan, MRI and Ultrasonography are desirable. The availability of 2 trained neuroradiologists is desirable.

3. The department of anaesthesiology would provide the required support. The availability of at least 2 trained neuroanaesthesiologists is desirable.

4. There should be access to a separate operation theatre(s) and intensive care area of atleast 3 beds. In addition to the usual neurosurgical equipment it should have operating microscope, biopolar cautery, microsurgery instruments, image intensifies and monitors, etc.

5. Department of Pathology would provide the required support including autopsy facilities, the availability of 2 fully trained Neuropathologists is desirable.

6. There should be a faculty of 3 persons with one of them atleast 10 years teaching experience.

7. For every recognized teacher two candidates may be taken for training per year, subject to a maximum of 1 trainee per 4 beds at any given time.

SURGICAL ONCOLOGY

1. Molecular Biology of cancer

Basic Principles, Genomics and cancer transduction ,Epigenetics of cancer, Telomeres, Cell Cycle and mechanisms of cell death, Angiogenesis ,Invasion and Metastases, Cancer metabolism, Cancer Stem cells, Biology of Personalized cancer medicine.

2. Carcinogenesis

Genetics, viral, physical, chemical, dietary and obesity, cancer susceptibility syndromes.

3. Epidemiology

Epidemiologic methods, descriptive and analytical epidemiology, Global cancer incidence , trends and mortality.

4. Principles of Cancer treatment

Surgical oncology including laparoscopic surgery, Medical Oncology, Radiation Oncology and Biologic Therapy.

5. Pharmacology of Cancer therapeutics

Drug Development, Pharmacokinetics and Pharmacodynamics, Pharmacogenomics, Alkylating Agents, Platinum Analogs,Antimetabolites, Topemerase-Interacting agents, Antimicrotubule agents, Targeted therapy with small molecule kinase inhibitors, Histone Deacetylase Inhibitors and Demethylating Agents, Proteasome Inhibitors, Miscellaneous Chemotherapeutic Agents.

6. Pharmacology of Cancer Biotherapeutics

Interforns, Interlukin therapy, Antisense agents,Antiangiogenesis agents, Monoclonal antibodies, Endocrine manipulation.

7. Cancer Prevention

Preventive cancer vaccines, Tobacco dependence & its treatment, Role of surgery in cancer prevention, Principles of Cancer Risk Reduction Intervention, Retinoids, Carotenoids and Other Micronutrients in cancer Prevention, Drugs and Nutritional extracts for cancer risk reduction (chemoprevention).

8. Cancer Screening

Principles, Early detection using Proteomics, Screening by specific sites/systems, Genetic counseling.

10. Specialized Techniques in Cancer Management

Vascular access and Specialized techniques, Interventional radiology, Functional imaging, Molecular Imaging, Photodynamic Therapy, Biomarkers.

11.Design and Analysis of Clinical Trials

12. Practice of Systemic Oncology -

(i) Cancer of the Head & Neck.

(ii) Cancer of the Thoracic Cavity including Mediastinal Neoplasms.

(iii) Cancers of the Gastrointestinal Tract

(iv) Cancers of Genitourinary System

(v) Gynecologic Cancers

(vi) Cancer of the Breast

(vii) Cancer of the Endocrine System.

(viii) Sarcomas of Soft Tissue and Bone.

(ix) Cancers of the Skin

(x) Neoplasms of the Central Nervous System

(xi) Cancers of Childhood

(xii) Other Cancers – Cancer of Unknown Primary Site, Mesothelioma, Peritoneal Surface Malignancy, Intraocular melanoma.

13.Immunosuppression-Related Malignancies – AIDS&Transplantation related.

14. Oncologic Emergencies

SVC syndrome, Spinal cord compression, Metabolic, Emergencies, Increased intracranial pressure.

15. Treatment of Metastatic Cancer

Brain, Lung, Bone, Liver, Malignant Effusions of Pleura and Pericardium, Ascitis, Paraneoplastic Syndromes.

16.Stem Cell Transplantation.

17.Management of Adverse Effects of Treatment

Infections in the cancer patient, Leucopenia, Thrombocytopenia, Nausea and Vomiting. Diarrhea and Constipation, Oral complications, Pulmonary toxicity, Cardiac toxicity, Hair loss, Gonadal dysfunction, Fatigue, Second primary cancers, Neurocognitive effects, Cancer survivorship.

18. Supportive care and Quality of Life

Management of Cancer Pain, Nutritional support, Sexual problems, Psychological issues in Cancer, Communicating new to the cancer patient, Specialized care of the terminally ill patient, Community resources, Rehabilitation of the cancer patient.

19. Social Issues in Oncology

Regulatory issues, Health disparities in cancer, Cancer information on the Internet.

20. Complementary, Alternative, and Integrative Therapies in Cancer Care.

External Posting during II year:

1. Medical Oncology - 15 days
2. Radiation Oncology - 15 days
3. Radiology & Nuclear Medicine - 07 days
4. Pathology - 03 days

External Posting during III year:

Tata Memorial Centre (Mumbai) / Adayar Cancer Centre (Chennai) / Kidwai Memorial Centre (Bangalore) – one month

PATTERN OF EXAMINATION

Theory : 4 papers

Paper-I: Applied basic sciences

Paper-II: Systemic-I

Head-Neck Oncology, Thoracic Oncology, Breast Oncology, Endocrine Oncology, Soft tissue + Bone Oncology, Cutaneous Malignancy.

Paper-III: Systemic-II

GI Oncology, GU Oncology, Gynaec Oncology, Emergency Oncology

Paper-IV: Recent advances in Oncology

Practical examination shall be conducted as per existing university regulations

SURGICAL GASTROENTEROLOGY

G I SURGERY — M Ch

This curriculum is devised so that at the end *of 3* years of" training in the Department of G I Surgery, a resident would he conversant with all the complex gastrointestinal surgical problems and in addition would be able to manage complex abdominal, alimentary tract and hepatobiliary diseases independently with a high degree of competence. To achieve a high degree of surgical and clinical skill, a resident requires to be proficient with both the theoretical and practical aspects of gastrointestinal diseases. With (his aim the curriculum which is to be followed at **SVIMS,** is elucidated below.

The training prior consists of three years duration. Bach candidate undergoes a stepwise training programme as mentioned below:

1st Year

- Clinical exposure with bed responsibilities
- 1st on qall duties (house man) - in patients only.
- Exposure to intensive care and artificial respiratory support with ventilators.
-Academic work - Journal Club/Topic discussion
- Protocol submission for research projects
- Surgical work - mainly as an assistant in all surgical procedures-emergency + elective. In addition he is allowed few operations under supervision.

2nd Year

1. Ward responsibilities •+ out patients {supervision of 1st year residents).
2. Project work
3. Perform emergency and elective operations as specified below.
4. Academic presentation - topic discussion/journal clubs/grand rounds and case conferences.
5. Surgical work as outlined in the table I.

3rd Year (1st Half)

1. Ward responsibilities similar to 2nd year + out patients (supervision of 1st year).
2. Emphasis on completion of projects/data analysis.
3. Academic work -as before along with intra department clinical case presentations.
4. Expected to perform major abdominal operations independently (as outlined in the table).

3rd Year (2nd Half)

1. Ward **responsibilities** (lesser duties) + out patients.
2. Submission of research projects.
3. Clinical case presentation - 3 times/ week along with topic discussion.

The details **of curriculum** are further described in the **following headings:**

1. Theory syllabus
2. Clinical training

3. Surgical training
4. Academic activities.
5. Research and publication
6. Intra-departmental resident evaluation
7. Degree Qualifying Examination

1. THEORY SYLLABUS

Each resident is expected to acquire a through theoretical knowledge of the organs of the Gl tract as regards anatomy, physiology, pathology of various diseases congenital/acquired/traumatic vascular/neoplastic and their detailed principles of management both medical and surgical. For the management of malignant diseases, the candidates are supposed to be acquainted with general oncological principles, various investigative approaches and different modalities of adjuvant treatment employed (e.g.chcmotherapy, radiotherapy, immunothcrapy etc.).

a. Oesophagus

Anatomical detail, physiology of swallowing, esophageal manometry, pilmonitoring, endoscopic ultrasound and other diagnostic techniques, brush cytology, vital staining, contrast imaging and CT scan, congenital lesions (TOF), Zenker's diverliculum, epiphrenic diveiticulum, esophageal trauma, rupture-spontaneous or inlrogenic, corrosive burns- detection, .evaluation and management. esophageal motilitv disorders, Gaslro esophageal reflux disease, achalasia. Barrett's esophagus, esophageal cancer, various esophageal operations leimyoma. oesophagostomy, myotomy, fundoplication, oesophageal resection (IVOR. Lewis, Me Keovvn. Transhiatal). cervical exploration, oesophagogaslrostoiny, gastric pull-up, gastric and colonic bypass, complications of oesophagectomy, management of chylothorax.

b. Stomach and Duodenum

Anatomical details, physiology of gastric secretions, gastroduodenal motility, diaphrtagmatic hernia (congenital and acquired), volvulus, pyloric stenosis in children and adults. Foreign bodies (bezoars), stomach trauma. H,pylori in gastric diseases, peptic ulcer. Zollinger-Bllison syndrome. NUD. Gastric tumours, gastric surgery-vagotomy pyloric drainage, gastrqjejunostomy, bariatric gastric- tube creation, Roux-en-Y oesophagojcjunal anastomosis, postgaslreclomy syndromes and complications.

c. Biliary System

Detailed anatomy, bile physiology, enterohepatic circulation, acute cholecystitis, chronic cholecysititis, acalculus cholecystitis, gallstores-pathogenesis and presentation, CBD stones. CBD stricture, choiangitis, sphincter of Oddi (SOD) dysfunction and biliary dyskinesia, cholecystopathies, postchoecystectoniy syndromes, choledochal cyst, polyps of GB, carcinoma of gall bladder, choiangiocarcinoma, parasitic infestations of biliary tree, cholecystectomy-open and laparoscopic. CBD exploration and drainagc,biliary bypass radical cholccystectomy, choleduochal cyst excision, primary sclerosing choiangitis endoscopic biliary interventions and stenting hemobilia.

d. Liver

Segmental anatomy in detail, liver function and tests, liver regeneration, liver failure-diagnosis and management, liver abscess cysts, benign and malignant tumours (HOC, intrahepatic choiangiocarcinoma. henmngioma. FNH adenoma), cirrhosis, PBC, viral hepatitis, radiological imaging modalities (US, CECT. Lipiodol CT, Dynamic CT, MR imaging and radionuclide scanning). percutaneous transhcpatic biliary drainage and cholangiography. Liver biopsy, portal hypertension (cirrhotic and non-ciirholic causes), hepatic venous outflow onstruction, Shunt surgery (Proximal lienorenal shunt, cavoatrial, mesocaval. Portcaval-side to side), splenectomy and devascularisation, liver resecting-anatomic and non-anatomic, liver trauma, hepaticojejunostomy, seg III bypass, Oithotopic liver transplantation, liver related transplantation, Caroli's disease, hemobilia.

e. Pancreas

Anatomy, physiology; pancreatic cluctal anomalites, acute pancreatitis, chronic pancreatitis-calciflc, tropical and alcoholic; endocrine tumours, cxocrine tumours of pancreas, cystic neoplasms; pseudocysts of pancreas, haemosuccus pancreaticus; pancreatic operations : pancreatic nerosectomy. Pscudocystogastroslomy / jejunosloiny. pylorus preserving pancreatoduodenectomy, duodenum preserving pancreatic head resections (Prey's. Beger's), distal pancreatectomy, regional pancreatectomy, total pancreatectomy, lateral pancreaticojeunostomy, Whipple's, pancreatic transplantation.

f. Peritoneum, Omentum, Retroperitoneum

Recesses, reflections, subdiaphragamatic spaccs,pentonitis primary secondary and tertiary, tuberculosis, mesenteric cysl, pseudomyxoma periionei, ascites (diag. invest and management). retroperitoneal tumours, inguinal hernia, ventral hernias, peritoneoscopy.

g. Spleen

Anatomy, splenic function, haemolytic anaemias.spienomegaly hypersplenism, splenic trauma, cysts and granufomas, physiological effects of splenectomy, OPSl, splenic vein thrombosis, splenic artery aneurysms. splenectomy, splenic preservation.

h. Small Intestine

Mesenteric vascular anatomy, intestinal physiology, Ladd's band, malrotation, volvulus, hernia, intestinal obstruction, ifeocaecal TB. lymphoma.tumours of small intestine, Meckel's diverticulum, intussusception, small bowel gangrene, intestinal resections, lengthening and transplantation, mesenteric ischaemia. short gut syndrome, small bowel fistulae, Crohn's and other inflammatory bowel diseases enternal feeding, home/parenteral nutrition.

i. Colon, Rectum and Anal Canal

Anatomy, physiology.colonic motility, physiology of defaecation and anal continence; Hirschsprung's disease, anoreetal malformations, rectal prolapse. SRUS, pseudoobstruction (Ogilvia syndrome), descending perineum syndrome, anismus and

eonstipation.anal incontinence; haemorrhoids, fissue, fistulae and anal stricture: polyps and other benign tumours-hereditary and familial polyposis syndrome, ulcerative colitis and Crohn's ameobic colitis, ischaeniic colitis, diverticulitis. lower GI haemorrhage, carcinoma of the colon, rectum, anal canal; Operations-APR, anterior resections, segmental coletomies, pelvic exenterations, colostomy, ureterosiinoidostomy, hemicolectomies. urinary diversions, surgery for anal incontinence, rectal prolapse and complex fistulae, restorative proctocoleclomy and ileoanal pouch anastomosis.

J. General Topics

Tumourgenetics-oncogenes, tumor markers, systemic inflammatory. Response syndrome (SIRS), multiple organ dysfunction syndrome (MODS), immunology in relation to transplantation and rejection, intensive care and respiratory support, surgical nutrition- parenteral and enteral, iatrogenic complications of surgery like enterocutaneous fistulae, biliary strictures, intrabdominal sepsis/collections, AIDS, hepatitis and surgeons, renal failure, shock, disorders of coagulation, biostatistics, research methodology and surgical audit

2. CLINICAL TRAINING

The clinical work of a resident involves patient workup and evaluation both IP and OP, day to day patient care both pre and post-operative including intensive care whenever necessary. Once a week combined rounds are held in collaboration with the Department of Gastrocnetrology with the aim of clinical and teaching discussions. Besides this, the candidate is also required to undergo a rotation in the Department of Gastrocnterology (2 weeks) to learn about endoscopic procedures and with Department of Radiology (weeks) to learn about abdominal ultrasounds and other Gl radiological investigations.

3. SURGICAL TRAINING

- The candidate is required to maintain a log book which details his surgical experience during his tenure in the department as an assistant, surgeon and supervisor.

- The log book is to be updated on a daily basis and the Head of Department counter checks
And Course and Curriculum of M Ch G I Surgery 101 endorses it every 6 months to notice any shortcomings in the residents surgical training. The procedures that the candidate is expected to assist and perform depends upon the stage of his training tenure and is detailed in table I.

Liver Transplant Programme

Each resident is expected to be conversant with the Departmental protocols (viz.recipient selection and workup, pre-transplant evaluation. Indian brain death law, brain dead donor management – before and during retrieval, donor harvesting procedure, recipient management - operative and post transplant care and follow up).

Bariatric surgery

Each resident is expected to be conversant with the Departmental protocols,preoperative workup and dietary advice pre and post surgical protocols. The candidate is expected to assist and perform laparoscopic bariatric procedures.

4. ACADEMIC ACTIVITIES

- By rotation each resident is expected to present 3-4 Clubs and 3-4 topics a year and enter it in the log books.

- Additionally each resident (2nd year onwards) has to participate in one clinical Case Round and one Clinical Grand Round which are presented to the entire faculty.

- 3rd year residents are required to present cases one/week (5th semester) and thrice/week in the final semester.

- By rotation residents are allowed to participate in and attend National and Regional surgical (ASl/ IASG) conferences and symposia. ASl - Association of Surgeons of India. IASG - Indian Association of Surgical Gastroenterology.

5. RESEARCH AND PROJECT WORK

1.Course of Training:

a. Thesis/Dissertation: To follow AIIMS, New Delhi curriculum with minimal modifications
regarding thesis / dissertation. The thesis / dissertation should be evaluated by an external examiner. Thesis / dissertation should be submitted to the Controller of examinations 6 months before the final examination. Approval of the thesis by the external is mandatory to make him/her eligible to appear for the Theory examination.

Clarification to be obtained from MCI regarding guidelines to be followed for submission of didissertation / thesis for DM/M.Ch courses.

b. Log Book: Candidate has to maintain log book as per the curriculum and to be submitted before
examination.

c. Paper presentation & publication: A student should present two research papers in a conference of concerned specially or allied specially at national / slate / regional level during the course or preferable submit two research papers for publication in a journal.

d. Outside Training: One month training in a reputed institute as per the HOD/Professors choice.

This is considered on-duty and candidate is entitled for stipend. This training is preferred during first half of final year. This thirty days included in the eligible leave period of 90 days.

6. INTRA DEPARTMENTAL EVALUATION OF RESIDENTS

- Every 6 months the department conducts an internal examination of the residents designed to test their theoretical knowledge *as* well as clinical skills. For this purpose the residents take a written theory paper of 3 hrs. duration and also prevent cases.

- In addition to this, he is also graded and marked for his academic presentations within the department.

- The log books endorsed every 6 months by the HOD also give an idea of each resident's programm.

- In addition, the candidates are assessed on day to day basis on clinical ward rounds as well as
  routine and emergency clinical/operative management of the patients.

Surgical Procedures, each Candidate is Expected to Perform or Assist (Table -I)

Esophagus

Heller's Operation

Fimdoplication

THE + GPU

TTE + GPU

Colonic pull up

Stomach and Duodenum
TV + G.I./Poloroplasty
Billroth I & Ugastreclomy
Radical gastrectomy

Small Intestine
Resection and anastomosis
Ileostomy closure
Feeding jejunostomy

Large Intestine
Rt hemicolectomy
Lt hemicolectomy
APR
Ant.Resection
Restorative Proclocoledctomy
Ileal J Pouch and anastomosis

Pancreas
Pancreatic Necrosectomy
Cyto-gastrostomy/jejunostomy
Lateral pancreatico-jejunostomy

Whipple's procedure

Billiary surgery
Open cholecstectomy . .
Radical eholecystectomy
CBDExploration/CDD
Hepafico-jejunostomy R-en-y
Segment *III* **HJ**

Portal Hypertension
Spleneclomy+Devasscuiarisation
Proximal llenoremil shunt
Portocayal/Mesocaval shunt

Liver Surgery
Major hepatic resection
Wedge resections
Hydatid cyst excision

Bariatric Surgery
Laparoscopic sleeve gastrectomy
Laparoscopic Roux en y Gastric bypass.

7. DEGREE QUALIFYING EXAMINATION:

The Degree qualifying examination is held at the end of 3 years after successful submission of
research projects/papers. This is conducted in the Department in the presence of 2 **externalexaminers.**

a. Theory **examination** comprises of 4 papers (3 hrs. and 100) marks each), covering basic sciences, clinical and surgical principles and recent advances with regard to GI Surgery.

b. Practical examination comprises of:
- Case presentation 4-5 cases(Total rime - 90 minutes)
-Grand viva.

PATTERN OF EXAMINATION: The examination comprises of 4 papers of the following order:

a. Basic Sciences	-	100 marks
b. Recent Advances	-	100 marks
c. Clinical Surgical Gastroenterology I	-	100 marks
d. Clinical Surgical Gastroenterology II	-	100 marks
e. Practicals	-	200 marks
f. Viva Voce	-	100 marks

SRI VENKATESWARA INSTITUTE OF MEDICAL SCIENCES :: TIRUPATI
REGULATIONS GOVERNING THE DM/M.Ch. DEGREE PROGRAMME

1. COURSE & TRAINING :

a. Thesis / Dissertation : To follow AIIMS,New Delhi curriculum with minimal modifications regarding thesis / dissertation. The thesis /dissertation should be evaluated by an external examiner. Thesis /dissertation should be submitted to the Controller of examinations 6 months before the final examination. Approval of the thesis by the external is mandatory to make him/her eligible to appear for the Theory examination.

Clarification to be obtained from MCI regarding guidelines to be followed for submission of dissertation/ thesis for DM/M,Ch courses.

b. Log Book : Candidate has to maintain log book as per the curriculum and to be submitted before examination.

c. Paper presentation & Publication: A student should present two research papers in a conference of concerned speciality or allied speciality at national / state / regional level during the course or preferably submit two research papers for publication in a journal.

d. Outside Training : One month training in a reputed institute as per the HOD/Professor's choice. This is considered on-duty and candidate is entitled for stipend. This training is preferred during first half of final year.- This thirty days included in the eligible leave period of 90 days.

2. PATTERN OF EXAMINATION: The; examination comprises of 3 papers of the following order:

a. Basic Sciences
b. Clinical sciences
c. Recent Advances

Model of the examination:

(i) Theory and short (100 marks x 3 papers)	- 300 marks (One essay type question for 20 marks Questions for remaining 80 marks)
(ii) Clinicals	- 200 marks
(iii) Viva-voce	- 100 marks (Oral viva-voce, spotters identification)
	600 marks

Pass percentage for theory examination is 50% and practical examination is 50% and the aggregate pass percentage is 50%. A candidate must pass separately in theory as well as in practical examination.

3. EXAMINERS : 2 Internal Faculty + 2 External faculty

> HOD shall be the 1st Internal examiner said the 2nd internal examiner is optional.
> Both external examiners should be from outside state / University
> They should be working as a full time professor in an institute where superspeciality courses training is conducted.
> Theory paper evaluation will be done within the institute by the examiners
> The clinicals & Viva-voce will last for a minimum of two days

4. ATTENDANCE : The percentage of attendance for examination is 80%
5. LEAVE ELIGIBILITY : A candidate is entitled to casual leave of 30 days in a year (as followed in NIMS, Hyderabad) .

6. ROLE OF HQDs IN GUIDING THE STUDENTS :

The candidate is to be posted under guidance of each and every professor in the department for a period of six months, on rotation.

Teaching schedule for the students has to be designed by the concerned HOD in consultation with the other faculty in the department.

The students must follow grand rounds, present case study/discussion and attend mortality meetings. Combined discussions with other departments should be performed periodically.

UROLOGY

PREAMBLE

The objective of M Ch (Urology) degree course is to produce highly competent medical manpower in Urology. The training ingredients should provide in-depth knowledge of the entire urology and relevant basic allied subjects. The course is expected to bring about a change in attitude towards better scientific approach with logic and analysis. More stress should be given to development of psychomotor skills. This should culminate in shaping of a shrewd clinician, confident surgeon and a knowledgeable teacher insured to basic research methodology. Basis of an ideal training programme will be a powerful urology service complete in every sense. Today, a urology-teaching department should include complete adult and pediatric urology services with fully developed subspecialities such as gynaecologic urology, urooncology, neuro-urology, andrology £ sexual dysfunction, newer modalities of stone management like endourological techniques and extracorporeal shock wave lithortripsy and renal transplantation.

ELIGIBILITY

M S in (General Surgery) from any recognized University or its equivalent qualifications recognized by the Medical Council of India.

SYLLABUS

It will cover wide spectrum of the diseases of urogenital system & retroperitorium. Apart from the clinical aspect of these subjects, candidate has to acquire indepth knowledge of the related basic subjects like applied; anatomy; embryology, physiology; biochemistry, pharmacology; pathology, microbiology epidemiology, immunology etc.

1. Anatomy and Embryology of GU tracts, adrenal & retroperitoneum.
2. Applied physiology and biochemistry pertaining to Urology, Nephrology, renal transplantation and renovascular hypertension.
3. Investigative urology & Genito-urinary radiology and imaging including nuclear medicine
4. Male Infertility, Andrology and Urological endocrinology
5. Sexual dysfunction- investigations and management.
6. Perioperative care, management of urological complications and care of the critically ill patients.
7. Urodynamics and Neurology.
8. Genito-urinary trauma.
9. Urolithiasis-Medical, Biochemical & Surgical aspects.
10. Uro-oncology-Adult & Paediatric
11. Reconstructive Urology.
12. Paediatric Urology-congenital malformations and acquired diseases.
13. Urinary tract infections and sexually transmitted diseases.
14. Obstructive Uropathy.
15. Renal transplantation (including transplant immunology medical & surgical aspects).
16. Renovascular Hypertension.
17. Gynaecological urology.
18. Newer developments in urology.
19. Operative Urology-open & endoscopic

20. Endourology
21. Behavioural and social aspects of urology.
22. Neonatal problems in Urology.
23. Electrocoagulation, lasers, fibre optics, instruments, catheters, endoscopes etc.
24. Retroperitoneal Diseases & Management.
25. Medical aspects of the kidney diseases,
26. Laparoscopic Urologic Surgery.

Apart from above mentioned subjects, each candidate should have basic knowledge of the following:

1. Biostatistics& Epidemiology.
2. Computer Sciences.
3. Experimental & Research methodology and Evidence Based Medicine.
4. Scientific presentation.
5. Cardio-pulmonary resuscitation,
6. Ethics in medicine.

TRAINING & TEACHING METHODOLOGY

Besides didactic lectures (delivered by the faculty members, national & international visiting teachers, seminar symposium and journal clubs is to be be organized. Problem oriented training to be given in the form of case discussions, ward rounds, inter-disciplinary meetings and department statistical meetings. Every candidate is supposed to discuss a minimum of 2 clinico-pathological conferences. Practical training is to be imparted by full time residency training programme, where a trainee will be given full responsibility of the patients. He will be encouraged to improve and develop his decision-making ability under supervision of teachers.

Research

Each candidate has to carry out two dissertation or studies for thesis, which should be acceptable for publication in a Indian Journal or any International Journal.

1. Experimental Research Project - One

May be a) Animal lab work or
b) Associated with a Basic science Dept.

2. Clinical Research Project - At least one

TRAINING IN OPERATIVE UROLOGY

Special attention to be paid to improve the operative skill of the candidate. He shall be trained to take independent operative decisions. In a time bound schedule an opportunity will be accorded to perform all the major open as well as endoscopic procedures so as to let him develop mastery in the essential procedures. Candidates will be required to maintain a logbook of operative procedures with details of complications, if any, and their management. This will be reviewed every three months. Completed logbook is to be submitted before the practical examination and will be reviewed by the external examiners.

First Two Years

Each Candidate should spent time for basic research specially related to animal laboratory or in collaboration with basic department i.e. biochemistry, biotechnology and ratholog.

0-6 Months

A candidate is supposed to master following procedures.

1. Cystourethroscopy, filiform, dilatation, retrograde pyelography. Interpretation of normal and abnormal finginds in relation to gross inflammations, obstructive and neoplastic changes in the lower urinary tract.
2. **Minor Urologkal Procedures:**
   Needle biopsy of the prostate, dilatation, trocar cystostomy, open cystostomy, orchiectorny, circumcision, rneatotomy/Meatoplasty Arterio-verous shunts, Excision of urethral caruncle.
3. **Uro-Radiological & Imaging Techniques:**
   During this period a candidate should perform various uroradiological & Imaging procedures like Retrograde Urethrograms & Micturating, Cystourethrogram, cystogram, triplecystogram, nepnrostogram, Whitaker test, sinogram, vasoseminography, antegrade pyelograpy, interpretation of Ultrasound & computerized tomography's scans and renography, renal angiography including. Digital Substration Angiography & venography.

06-09 Months

A candidate should learn, perform and interpret urodynamic studies like Cystometrogram, electro myography & Urethral pressure profile & Video urodynamics. He will also perform and interpret various tests of sexual dysfunction such as dynamic cavernosography, papavarin test, Penil-Brachial Index Noctornal penile tumescene, regiscan, sacral latency period and other evoked potential studies.

9-23 Months

He will assist and perform following procedures.

(a) **Endoscopic Surgery:**
Internal urothrotomy, Bladder neck Incesion, Litholopaxy, cystolithotripsy, insertion & retrieval of bladder & ureteral stent, ureteral meatotomy, endoscopic suspension of bladder neck, Transurethral resection of bladder tumour.

(b) **Surgical Procedures:**
Simple nephrectomy, radical nephrectomy, cystolithotomy ureterolithotomy, pyelolithotomy, nephrostomy, pyeloplasty, various urethroplasties. Retropubic & a transvesical prostatectomy, surgery for underscended testis, partial and total amputation of penis, extended pyelolithotomy, VVF repair.

24-36 Months

Open Surgery

Candidate should learn more complex surgical procedures like-transpubic urethroplasty, Hypospadias repair, Augmentation cystoplasty, Anatrophic Nephrolithotomy under hypothermia, Boari's flap procedure, exstrophy closure, urinary diversion, ureteroneocystostomy, partial and total cystectomy, nephroureterectomy, penile prosthesis, Artificial urinary sphincter, Microsurgical Vasoepididmostomv and vasovasostomy, Undiversion, Renal transplant surgery and AV fistulae, retroperitoneal lymphadenectomy.

Endoscopic Procedure

Trusurethral resection of prostate, percutaneous nephrolithotomy, Uretero-renoscopy, Laser Surgery, other endourolocial procedures etc.

Efforts will be made that candidate is able to perform the following minimum stipulated number of procedures within three years of his training.

1. Endoscopies	100
2. Urethroplasties	5
3. Internal urethrotomy	20
4. Internal tract reconstractions	10
5. Repair of vesicovaginal fistulae	5
6. Pyeloplasties	5
7. Hypospadias repair	5
8. Transurethral Resection of Prostate	25
9. Uretero-Renoscopy	25
10. Percutaneous NepJiroiithotomy & endopyelotomy	15
11 . Donor Nephrectomies	5
12. Recepient Surgery	2

In addition to above mentioned procedures candidates will perform/assist minimum of two or five of each of following procedures depending upon the availability of the case material

- Nephrectomy for pyonephrosis-Surgical treatment of stress urinary incontinence
- Radical Cysioprostatectomy
- Radical Nephrectomy
- Ureteroneocystostomy
- Retroperitoneal lymphnode dissection-Heal replacement
- Different type of Urinary diversion of orthotopic Neobaidder- Surgical mamagement of Renal and Urethral trauma
- Transpubic urethropiasty
- Augmentation cystoplasty
- Nephroureteractomy – Undiversion
- Anatrophic Nephrolithotomy
- Laparoscopic Urologic Surgery
- Paediatric surgical procedures.

In course Training

Since it will be a full time residency cum M Ch course, a candidate will be responsible for the total care of the patients. He will be encouraged to take independent decisions. Every day there will be atleast one hour academic activity to a maximum of 10 hours/week in which all the faculty members & residents will participate. Case discusser will take place weekly with 3rd year resident as a moterator.

Other academic activities like journal clubs, seminars, group discussions statistical meetings will be a fortnightly feature where deaths, complications, operations and consultations rendered will be discussed consultation to the other department and in emergency will only be attended by the II & III year Senior Residents. Consultations given to other departments should also be discussed every morning with the respective consultants. In OPD a candidate will see the cases independently and will make all the pertinent notes. In problematic cases and a special referral, it is mandatory to show the case to the respective consultant. A candidate will not be allowed to provide independent consultations for first six
months.

A candidate will have to attend ail postmortem examination done for the department.

Interdepartmental meetings like uroradiology, uronephrology, uroradiotherapy & medical oncology, uro pathology, uroimaging will provide an opportunity for open discussion on a common subject and it will also provide an opportunity to learn views of the specialists on these subjects.

Posting

A candidate will be sent to Nephroiogy department for one month to learn medical aspect of Kidney diseases (except the renal transplantation). This posting should be after one to 1.1/2 year after joining the course.

It is highly desirable to formulate a reasonable teaching curriculum for this posting and a candidate is to be evaluated by the Nephrologist at the end of the posting. An unsuccessful candidate has to repeat his posting.

Exchange Programme

In view of expanding field of urology, it is difficult to see, observe and have training in all newer subspeciaiities. Therefore, it is imperative to inclucate exchange programme and resident should be rotated to two or three centers as per advise by the department committee. It is also suggested that department weak in some subspeciality should invite visiting professor from other centers to strengthen the course.

BOOKS AND JOURNALS

The following books, journals and periodicals should be made available through Central/Departmental Library for perusal of residents so as to enable them to keep abreast with latest developments in the field of Urology. It is also important that department should have an Internet facility which would enable residents to browse and use medline search.

General Urology

Book	*Editor*
1. Campbell uroiogy-3 Volumes Edited by	Walgh, et al
2. Scientific Basis of Urology	Mundy
3. CurrentUroiogical Therapy	Kaufman
4. Obstructive Uropathy	O'Reilly
5. Urogenital trauma	Macaminch
6. Text book of Urology	Whitefield & Hendry
7. Adult & Paediatric Urology	Gillenwater et al

Paediatric Urology

1. Pediatric Urology	Kelalis & King - 2 vol.
2. Paediatric Urology	Whitakar

Uro-oncology

1. Genito-urinary cancer management	Backeman & Paulson
2. Genitourinary cancer	Dekerrion et al
3. Testicular cancer	Javadopor

Urodynamics

1. Urodynamics principle & practice	Mundy
2. Controversy in Neurouroiogy	Barret & wein
3. Neurouroiogy & urodynamics	Bradly & Hald

Stone Diseases

1. Stone disease	Diagnosis & management by Rous
2. Endouroiogy	Clayman et.al
3. Endourology	Carson
4. Extracorporeal shock want Lithotripsy	Gravernstein
5. Endourology	Arthur Smith

Infertility

1. Male Infertility
2. Reproductive infertility
3. Microsurgery in male and female

Reconstructive and Female Urology

1. Operative Gynaecology
2. Female urology
3. Urinary Incontinence
4. Urogynaecology & urodynamics
5. Reconstructive urologic surgery

Renal Transplantation

1. Kidney transplantation
2. Renal transplantation
3. Introduction to Dialysis
4. Vascular arress in Haemodialysis

Operative Urology

1. Glen's operative urology
2. Urologic Endoscopy
3. Transurethral surgery

Laparoscopy

1. Laparoscopic urology
2. Uroiogic Laparoscopy
3. Laparoscopic Urologic Surgery

Uroradiology- Emmett's -Witten-Clinical Uroradiology 3

Amelar

Silber

Te Linde

Blandy

Dat D.O.'Donnel

Obstargard & Bent

Libertino

Peter morris

Garovoy & Guttman

Logan

BelletAl

Bagley et al

Maurmayer

Ralph V. dayman, E.M. McDougall

Sakti Das

A.K.Hemai

volumes