

# Syllabus for MD (General Medicine) Programme



## Atal Medical & Research University

A state University established by the Govt of H.P

# Atal Medical & Research University, H.P.

(A State Govt. University)

(SLBS Govt. Medical College & Hospital Campus, Ner Chowk, Mandi, H.P.)

## Minutes of meeting of PG Board of Studies (General Medicine) held on

11<sup>th</sup> May, 2023 in Conference Hall, AMRU at 11:00 AM

A meeting of PG Board of Studies (General Medicine) was held on 6<sup>th</sup> May, 2023 at 11:00 AM at Conference Hall, AMRU under the Chairmanship of Dr. Dhiraj Kapoor, Professor & HOD General Medicine, Dr. RPGMC, Tanda.

Following members attended the meeting:


1. Dr. Dhiraj Kapoor, Professor & HOD General Medicine, Dr. RPGMC, Tanda -cum-Chairperson.
2. Dr. Balbir Verma, Professor & HOD General Medicine, IGMC, Shimla -cum-Member.
3. Dr. Laxmi Nand, Associate Professor (Regular) and Professor (Designation), Dept. of General Medicine, IGMC, Shimla-cum-Member.
4. Dr. Vivek Sood, Associate Professor, Dept. of General Medicine, Dr. RPGMC, Tanda, -cum-Member.

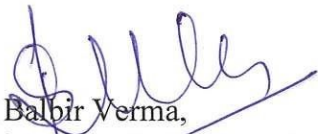
The meeting started with the Chairperson welcoming the members.


The following decisions were taken:


1. The syllabus for degree of General Medicine as per NMC document was discussed among the members and required changes were done with consensus.
2. The teaching schedule to be followed by the PG department has been reviewed.
3. The examination pattern for theory & clinical prescribed by NMC was discussed and accepted with few additions.
4. Logbook was discussed & finalised.

**The meeting ended with a vote of thanks to the chair.**

  
Dr. Dhiraj Kapoor,  
Professor & HOD General Medicine,  
Dr. RPGMC, Tanda.

  
Dr. Balbir Verma,  
Professor & HOD General Medicine,  
IGMC, Shimla.

  
Dr. Laxmi Nand,  
Associate Professor (Regular) &  
Professor (Designation), General Medicine  
IGMC, Shimla.

  
Dr. Vivek Sood,  
Associate Professor, Deptt. of General Medicine,  
Dr. RPGMC, Tanda.

# MD MEDICINE CURRICULUM AS PER NMC (AMRU)

## Preamble:

The purpose of PG education is to create specialists who would provide high quality health care and advance the cause of science through research & training.

The competency based training programme aims to produce a post-graduate student who after undergoing the required training should be able to deal effectively with the needs of the community and should be competent to handle all problems related to his/her specialty including recent advances. The student should also acquire skill in teaching of medical/para-medical students in the subject that he/she has received his/her training. The student is also expected to know the principles of research methodology and modes of accessing literature.

## ***SUBJECT SPECIFIC OBJECTIVES***

The postgraduate training should enable the student to:

1. Practice efficiently internal medicine specialty, backed by scientific knowledge including basic sciences and skills
2. Diagnose and manage majority of conditions in his specialty (clinically and with the help of relevant investigations)
3. Exercise empathy and a caring attitude and maintain professional integrity, honesty and high ethical standards
4. Plan and deliver comprehensive treatment using the principles of rational drug therapy
5. Plan and advise measures for the prevention and rehabilitation of patients belonging to his specialty;
6. Manage emergencies efficiently by providing Basic Life Support (BLS) and Advanced Life Support (ALS) in emergency situations
7. Recognize conditions that may be outside the area of the specialty/competence and refer them to an appropriate specialist



8. Demonstrate skills in documentation of case details including epidemiological data
9. Play the assigned role in the implementation of National Health Programs
10. Demonstrate competence in basic concepts of research methodology and clinical epidemiology; and preventive aspects of various disease states
11. Be a motivated 'teacher' - defined as one keen to share knowledge and skills with a colleague or a junior or any learner
12. Continue to evince keen interest in continuing education irrespective of whether he/she is in a teaching institution or is practicing and use appropriate learning resources
13. Be well versed with his medico-legal responsibilities
14. Undertake audit, use information technology tools and carry out research - both basic and clinical, with the aim of publishing the work and presenting the work at scientific forums.
15. The student should be able to recognize the mental condition characterized by self absorption and reduced ability to respond to the outside world (e.g. Autism), abnormal functioning in social interaction with or without repetitive behaviour and/or poor communications, etc.

The intended outcome of a competency based program is a consultant specialist who can practice medicine at a defined level of competency in different practice settings . i.e. ambulatory (outpatient), inpatient, intensive care and emergency medicine.

The student is expected to know his subject in depth; however, emphasis should be on the diseases/health problems most prevalent in that area. Knowledge of recent advances and basic sciences as applicable to his/her specialty should get high priority. Competence in skills commensurate with the specialty (actual hands-on training) must be ensured.

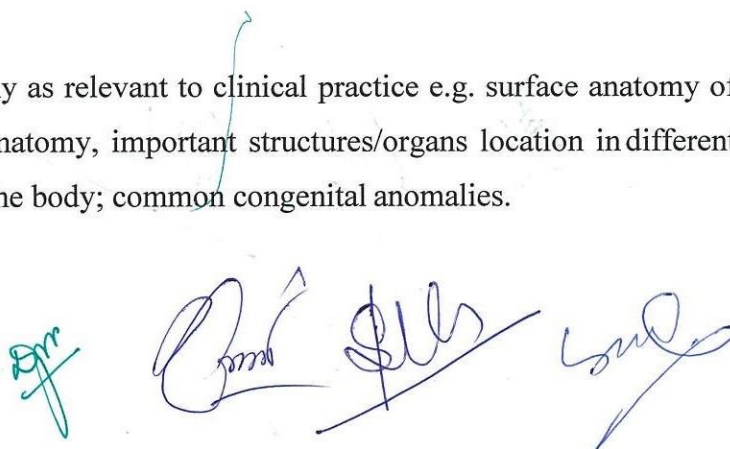
## ***SUBJECT SPECIFIC COMPETENCIES***

### **A. Cognitive domain**

**By the end of the course, the student should have acquired knowledge, professionalism and skills.**

#### **Basic Sciences**


1. Basics of human anatomy as relevant to clinical practice e.g. surface anatomy of various viscera, neuro-anatomy, important structures/organs location in different anatomical locations in the body; common congenital anomalies.



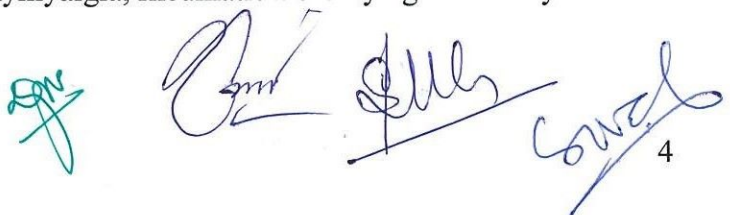
2. Basic functioning of various organ-system, control of vital functions, patho-physiological alteration in diseased states, interpretation of symptoms and signs in relation to patho-physiology.
3. Common pathological changes in various organs associated with diseases and their correlation with clinical signs; understanding various pathogenic processes and possible therapeutic interventions possible at various levels to reverse or arrest the progress of diseases.
4. Knowledge about various microorganisms, their special characteristics important for their pathogenetic potential or of diagnostic help; important organisms associated with tropical diseases, their growth pattern/life-cycles, levels of therapeutic interventions possible in preventing and/or eradicating the organisms.
5. Knowledge about pharmacokinetics and pharmaco-dynamics of the drugs used for the management of common problems in a normal person and in patients with diseases kidneys/liver etc. which may need alteration in metabolism/excretion of the drugs; rational use of available drugs.
6. Knowledge about various poisons with specific reference to different geographical and clinical settings, diagnosis and management.
7. Research Methodology and Studies, epidemiology and basic Biostatistics.
8. National Health Programmes.
9. Biochemical basis of various diseases including fluid and electrolyte disorders; Acid base disorders etc.
10. Recent advances in relevant basic science subjects.

#### **Systemic Medicine**

1. Preventive and environmental issues, including principles of preventive health care, immunization and occupational, environmental medicine and bio-terrorism.
2. Aging and Geriatric Medicine including Biology, epidemiology and neuro-psychiatric aspects of aging.
3. Clinical Pharmacology - principles of drug therapy, biology of addiction and complementary and alternative medicine.
4. Genetics - overview of the paradigm of genetic contribution to health and disease, principles of Human Genetics, single gene and chromosomal disorders and gene therapy.
5. Immunology - The innate and adaptive immune systems, mechanisms of immune mediated cell injury and transplantation immunology.



6. Cardio-vascular diseases - Approach to the patient with possible cardio-vascular diseases, heart failure, arrhythmias, hypertension, coronary artery disease, valvular heart disease, infective endocarditis, diseases of the myocardium and pericardium and diseases of the aorta and peripheral vascular system.
7. Respiratory system - approach to the patient with respiratory disease, disorders of ventilation, asthma, Congenital Obstructive Pulmonary Disease (COPD), Pneumonia, pulmonary embolism, cystic fibrosis, obstructive sleep apnoea syndrome and diseases of the chest wall, pleura and mediastinum.
8. Nephrology - approach to the patient with renal diseases, acid-base disorders, acute kidney injury, chronic kidney disease, tubulo-interstitial diseases, nephrolithiasis, Diabetes and the kidney, obstructive uropathy and treatment of irreversible renal failure.
9. Gastro-intestinal diseases - approach to the patient with gastrointestinal diseases, gastrointestinal endoscopy, motility disorders, diseases of the oesophagus, acid peptic disease, functional gastrointestinal disorders, diarrhea, irritable bowel syndrome, pancreatitis and diseases of the rectum and anus.
10. Diseases of the liver and gall bladder - approach to the patient with liver disease, acute viral hepatitis, chronic hepatitis, alcoholic and non-alcoholic steatohepatitis, cirrhosis and its sequelae, hepatic failure and liver transplantation and diseases of the gall bladder and bile ducts.
11. Haematologic diseases - haematopoiesis, anaemias, leucopenia and leucocytosis, myelo-proliferative disorders, disorders of haemostasis and haemopoietic stem cell transplantation.
12. Oncology - epidemiology, biology and genetics of cancer, paraneoplastic syndromes and endocrine manifestations of tumours, leukemias and lymphomas, cancers of various organ systems and cancer chemotherapy.
13. Metabolic diseases - inborn errors of metabolism and disorders of metabolism.
14. Nutritional diseases - nutritional assessment, enteral and parenteral nutrition, obesity and eating disorders.
15. Endocrine - principles of endocrinology, diseases of various endocrine organs including diabetes mellitus.
16. Rheumatic diseases - approach to the patient with rheumatic diseases, osteoarthritis, rheumatoid arthritis, spondyloarthropathies, systemic lupus erythematosus (SLE), polymyalgia, rheumatic fibromyalgia and amyloidosis.

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17. Infectious diseases - Basic consideration in Infectious Diseases, clinical syndromes, community acquired clinical syndromes. Nosocomial infections, Bacterial diseases - General consideration, diseases caused by gram - positive bacteria, diseases caused by gram - negative bacteria, miscellaneous bacterial infections, Mycobacterial diseases, Spirochetal diseases, Rickettsia, Mycoplasma and Chlamydia, viral diseases, DNA viruses, DNA and RNA respiratory viruses, RNA viruses, fungal infections, protozoal and helminthic infections .
18. Neurology - approach to the patient with neurologic disease, headache, seizure disorders and epilepsy, coma, disorders of sleep, cerebrovascular diseases, Parkinson's disease and other movement disorders, motor neuron disease, meningitis and encephalitis, peripheral neuropathies, muscle diseases, diseases of neuromuscular transmission and autonomic disorders and their management.
19. The mental condition characterized by complete self absorption with reduced ability to communicate with the outside world (Autism), abnormal functioning in social interaction with or without repetitive behaviour and/or poor communication etc.
20. Dermatology - Structure and functions of skin, infections of skin, papulo-squamous and inflammatory skin rashes, photo-dermatology, erythroderma, cutaneous manifestations of systematic diseases, bullous diseases, drug induced rashes, disorders of hair and nails, principles of topical therapy.

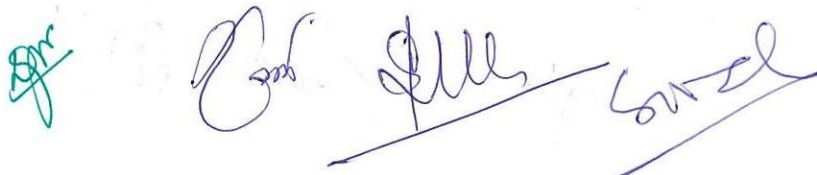
### **Professionalism**

1. Should be able to be as a part of a team, develop an attitude of cooperation with colleagues, and interact with the patient and the clinician or other colleagues to provide the best possible diagnosis or opinion.
2. Always adopt ethical principles and maintain proper etiquette in dealings with patients, relatives and other health personnel and to respect the rights of the patient including the right to information and second opinion.
3. Develop communication skills to word reports and professional opinion as well as to interact with patients, relatives, peers and paramedical staff, and for effective teaching.

### **Skills**

#### **Clinical Assessment Skills**

- └ Elicit a detailed clinical history
- └ Perform a thorough physical examination of all the systems



## ***Procedural skills***

Test dose administration

- └ Mantoux test
- └ Sampling of fluid for culture
- └ IV- Infusions
- └ Intravenous injections
- └ Intravenous canulation
- └ ECG recording
- └ Pleural tap
- └ Lumbar puncture
- └ Cardiac

TMT

Holter Monitoring

Echocardiogram

Doppler studies

Cardio pulmonary  
resuscitation

Central venous  
line insertion

Blood and blood  
components  
matching and  
transfusion

Arterial puncture  
(ABG)

Fine needle  
aspiration

cytology

Bone marrow  
aspiration and  
biopsy

Abdominal  
paracentesis

Aspiration of liver  
abscess

Pericardiocentesis

Joint fluid  
aspiration

Liver biopsy

Needle

muscle/skin/kidne  
y/pleural biopsy

Ultrasound  
abd/echocardiogra  
phy

Upper GI

Endoscopy

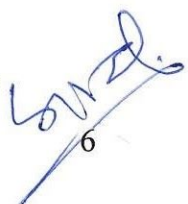
Nebulisation

- └ Inhaler therapy

- └ Oxygen delivery

## ***Critically ill person***

- └ Monitoring a sick person

  
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- └ Endotracheal intubation
- └ CPR
- └ Using a defibrillator
- └ Pulse oximetry
- └ Feeding tube/Ryle's tube, stomach wash
- Naso-gastric intubation
- └ Urinary catheterization – male and female
- └ Prognostication
- └ Haemodialysis

#### **Neurology- interpret**

- Nerve Conduction studies
- EEG
- Evoked Potential interpretation
- Certification of Brain death
- └ Intercostal tube placement with underwater seal Thoracocentesis
- └ Sedation
- └ Analgesia

#### ***Laboratory-Diagnostic Abilities***

- └ Urine protein, sugar, microscopy
- Peripheral blood smear
- Malarial smear
- ZN Smear sputum
- Gram stain smear
- Stool PH
- KOH Smear
- Cell count-CSF, Pleural, Peritoneal
- Observes
- Subdural, ventricular tap
- Joint aspiration-injection
- ERCP
- Peritoneal dialysis
- Intrepretation

Using principles of clinical decision making, plan investigative work-up, keeping in mind the cost-effective approach i.e. problem solving and clinical decision- making.

- └ Blood, urine, CSF and fluid investigations - hematology, biochemistry
- └ X-ray chest, abdomen, bone and joints
- └ ECG

- └ CT scan head and spine
- └ MRI
- └ Barium studies
- └ IVP, VUR studies
- └ Pulmonary function tests
- └ Immunological investigations
- └ Echocardiographic studies

### ***Interpretation under supervision***

Hemodynamic monitoring

- └ Nuclear isotope scanning  
SPECT

Ultrasound guided biopsies

- └ Pedagogy -teaching students, other health functionaries-lectures, bedside clinics, discussions
- └ Health education - prevention of common medical problems, promoting healthy life-style, immunization, periodic health screening, counseling skills in risk factors for common malignancies, cardiovascular disease, AIDS
- └ Dietary counseling in health and disease
- └ Case presentation skills including recording case history/examination, preparing follow-up notes, preparing referral notes, oral presentation of new cases/follow-upcases
- └ Co-coordinating care - team work (with house staff, nurses, faculty etc.)
- └ Linking patients with community resources
- └ Providing referral
- └ Genetic counseling

### ***Others***

- └ *Demonstrating*
  - professionalism
  - ethical behavior (humane and professional care to patients)
- └ *Utilization of information technology*

- Medline search, Internet access, computer usage

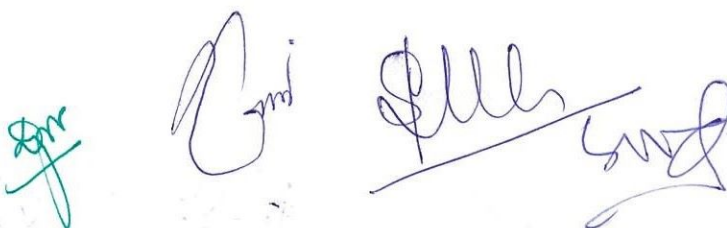
└ *Research methodology*

- designing a study
- Interpretation and presentation of scientific data
- Involving patients in decision making
- Rational use of drugs


Surface anatomy of viscera

- neuro-anatomy
- important structures/organs location in different anatomical locations in the body
- common congenital anomalies

2. Basic functioning of various organ-system, control of vital functions, patho-physiological alteration in diseased states, interpretation of symptoms and signs in relation to patho-physiology.
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8. National health programs
9. Biochemical basis of various diseases including fluid and electrolyte imbalance
10. Recent advances in basic sciences subjects
11. Preventive and environmental issues including immunization and bioterrorism
12. Aging and geriatric medicine
13. Clinical pharmacology
- Principles of drug therapy
  - Biology of addiction
  - Complementary and alternative medicine
14. Genetics:
- overview of the paradigm of genetic contribution to health and disease
  - principles of Human Genetics
  - single gene and chromosomal disorders
  - gene therapy
15. Immunology:
- innate and adaptive immune systems
  - mechanisms of immune mediated cell injury
  - transplantation immunology
16. Cardio-vascular diseases:
- Approach to the patient with possible cardio-vascular diseases
  - heart failure
  - arrhythmias
  - hypertension
  - coronary artery disease
  - valvular heart disease
  - infective endocarditis
  - diseases of the myocardium and pericardium
  - diseases of the aorta and peripheral vascular system
17. Respiratory system:
- Approach to a patient with respiratory disease
  - Disorders of ventilation



Asthma

COPD

Pneumonia

Pulmonary embolism

Cystic fibrosis

Obstructive sleep apnea, disorders of chest wall, pleura and mediastinum

## NEPHROLOGY

Approach to a patient with renal diseases

Acid base balance

Acute kidney injury

Chronic kidney disease

Tubulointerstitial diseases

Nephrolithiasis

- Diabetes and the kidney
- obstructive uropathy and treatment of irreversible renal failure

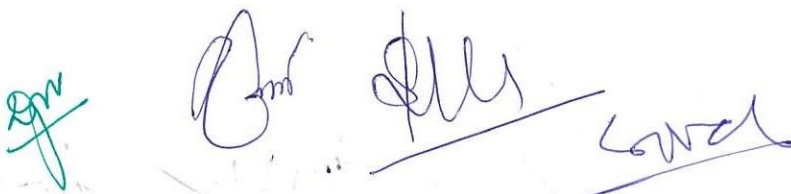
## 19. Gastro-intestinal diseases:

- approach to the patient with gastrointestinal diseases
- gastrointestinal endoscopy
- motility disorders
- diseases of the oesophagus
- acid peptic disease
- functional gastrointestinal disorders
- diarrhea
- irritable bowel syndrome

## 20. pancreatitis and diseases of the rectum and anus

Diseases of the liver and gall bladder:

- approach to the patient with liver disease
- acute viral hepatitis



- chronic hepatitis
- alcoholic and non-alcoholic steatohepatitis
- cirrhosis and its sequelae
- hepatic failure and liver transplantation
- diseases of the gall bladder and bile ducts

#### 21. Haematologic diseases:

- Haematopoiesis
- Anaemias
- Leukopenia and leukocytosis
- Myeloproliferative diseases
- Disorders of haemostasis and haemopoietic stem cell transplantation

#### 22. ONCOLOGY

Epidemiology

Biology and genetics of cancer

Paraneoplastic syndromes and endocrine manifestations of tumours

Leukemia and lymphomas

Cancers of various organ systems and cancer chemotherapy

#### METABOLIC DISEASES

Inborn errors of metabolism

Disorders of metabolism

#### NUTRITIONAL DISEASES

Nutritional assessment

Enteral and parenteral nutrition

Obesity and eating disorders

#### ENDOCRINE

Principles of endocrinology

Diseases of various endocrine organs including diabetes mellitus

#### 26. Rheumatic diseases:





- approach to the patient with rheumatic diseases
- osteoarthritis
- rheumatoid arthritis
- spondyloarthropathies
- systemic lupus erythematosus (SLE)
- polymyalgia
- rheumatic fibromyalgia and amyloidosis

27. Infectious diseases:

- Basic consideration in Infectious Diseases
- clinical syndromes
- community acquired clinical syndromes
- Nosocomial infections
- Bacterial diseases - General consideration, diseases caused by gram - positive bacteria, diseases caused by gram - negative bacteria
  - miscellaneous bacterial infections
  - Mycobacterial diseases
  - Spirochetal diseases
  - Rickettsia
  - Mycoplasma and Chlamydia
  - viral diseases
  - DNA viruses
  - DNA and RNA respiratory viruses
  - RNA viruses
- fungal infections, protozoal and helminthic infections .

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29. The mental condition characterized by complete self absorption with reduced ability to communicate with the outside world (Autism), abnormal functioning in social interaction with or without repetitive behaviour and/or poor

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communication etc.

### 30. Dermatology:

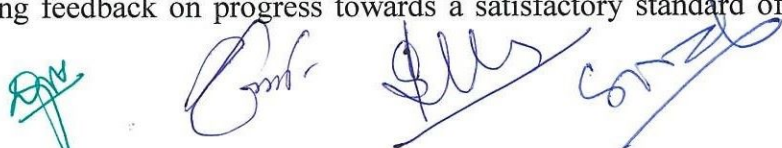
- Structure and functions of skin
- infections of skin
- papulo-squamous and inflammatory skin rashes
- photo-dermatology
- erythroderma
- cutaneous manifestations of systematic diseases
- bullous diseases
- drug induced rashes
- disorders of hair and nails
- principles of topical therapy

## ***TEACHING AND LEARNING METHODS***

Seminars, journal clubs, symposia, reviews, and guest lectures should get priority for acquiring theoretical knowledge. Bedside teaching, grand rounds, interactive group discussions and clinical demonstrations should be the hallmark of clinical/practical learning. Students should have hands-on training in performing various procedures and ability to interpret results of various tests/investigations. Exposure to newer specialized diagnostic/therapeutic procedures should be given.

Importance should be attached to ward rounds especially in conjunction with emergency admissions. Supervision of work in outpatient department should cover the whole range of work in the unit. It is particularly necessary to attend sub-specialty and symptom specific clinics. The development of independent skills is an important facet of postgraduate training. Joint meetings with physician colleagues, e.g. radiologists and pathologists play a valuable part in training.

The training techniques and approach should be based on principles of adult learning. It should provide opportunities initially for practicing skills in controlled or simulated situations. Repetitions would be necessary to become competent or proficient in a particular skill. The more realistic the learning situation, the more effective will be the learning. Clinical training should include measures for assessing competence in skills being taught and providing feedback on progress towards a satisfactory standard of



performance. Time must be available for academic work and audit.

The following is a rough guideline to various teaching/learning activities that may be employed:

- Intradepartmental and interdepartmental conferences related to case discussions.
- Ward rounds along with emergency admissions.
- Attendance at sub-specialty and symptom specific clinics
- external rotation postings in departments like cardiology, neurology and othersubspecialties
- Skills training
- Conferences, Seminars, Continuing Medical Education (CME) Programmes.
- Journal Club
- Research Presentation and review of research work.
- A postgraduate student of a postgraduate degree course in broad specialities/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.
- Participation in workshops, conferences and presentation of papers etc.
- Maintenance of records. **Log books** should be maintained to record the work done which shall be checked and assessed periodically by the faculty members imparting the training.
- Postgraduate students shall be required to participate in the teaching and training programme of undergraduate students and interns.
- Department should encourage e-learning activities.

#### TEACHING SCHEDULE (Minimum)

1. Case Presentation and discussion –twice a week
2. Seminar-Once a week
3. Journal club-once a week
4. Group discussion/Difficult case discussion-Once a week
5. Statistical meeting and mortality meeting-once a month
6. Clinical pathological meet-once a month
7. Clinical radiological meet-once a month



8. Faculty and senior resident lecture teaching-once a week

**The Post graduate examination shall be in three parts:**

**1. Thesis**

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

Thesis shall be submitted at least six months before the Theory and Clinical / Practical examination. The thesis shall be examined by a minimum of three examiners; one internal and two external examiners, who shall not be the examiners for Theory and Clinical examination. A post graduate student shall be allowed to appear for the Theory and Practical/Clinical examination only after the acceptance of the Thesis by the examiners.

**2. Theory:**

Obtaining a minimum of 50% marks in 'Theory' as well as 'Practical' separately shall be mandatory for passing examination as a whole. The examination for M.D./ MS shall be held at the end of 3<sup>rd</sup> academic year.

There will be four theory papers, as below (100 marks each)

Paper 1-Basic medical sciences

Paper 2- Medicine and allied specialities including paediatrics, dermatology and psychiatry

Paper 3- Tropical medicine and infectious diseases

Paper 4 – recent advances in medicine

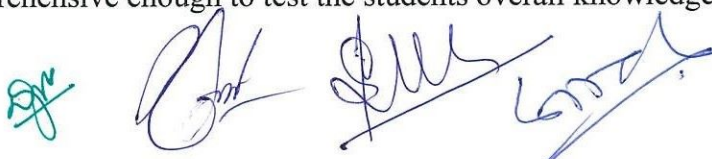
Pattern will be

Each paper will have 10 questions of 10 marks each

Clinical examinations

Cases pertaining to major systems-75 marks each (4 cases)

Viva voce- Should be comprehensive enough to test the students overall knowledge of subject -50 marks



**Internal assessment will be of 50 marks**

20 marks will be for all marks given in the log books of assessment of 3 years

20 marks should be for periodic tests held by the department

10 marks should be for send up professional examination

**Quarterly examination**

IN the course of 3 academic years

3 monthly quarterly assessments should be done

Theory (50 marks)/practical examination (50 marks) should be held

