

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. He/She should be aware of his/her limitations. The student is also expected to know the principles of research methodology and modes of accessing literature.

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 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 advice measures for the prevention and rehabilitation of patients when indicated.
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.

SUBJECT SPECIFIC COMPETENCIES

A. Cognitive domain

By the end of the course, the student should have acquired knowledge (cognitive domain), professionalism (affective domain) and skills (psychomotor domain) as given below:

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, pathophysiological alteration in diseased states, interpretation of symptoms and signs in relation to pathophysiology.
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 bioterrorism.
2. Aging and Geriatric Medicine including Biology, epidemiology and neuropsychiatric 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 cardiovascular 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.
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, papulosquamous and inflammatory skin rashes, photodermatology, erythroderma, cutaneous manifestations of systematic diseases, bullous diseases, drug induced rashes, disorders of hair and nails, principles of topical therapy.

B. Affective Domain:

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

C. Psychomotor domain

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 cannulation
- ECG recording
- Pleural tap
- Lumbar puncture
- Cardiac

TMT

Holter Monitoring

Echocardiogram

- Cardio Pulmonary Resuscitation (CPR)
- Central venous line insertion, CVP monitoring
- Blood and blood components matching and transfusions
- Arterial puncture for ABG
- Bone marrow aspiration and biopsy
- Abdominal paracentesis - diagnostic
- Pericardiocentesis
- Liver biopsy
- kidney biopsy

Respiratory management

- Nebulization
- Inhaler therapy
- Oxygen delivery

Critically ill person

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

Neurology- interpret

- **Nerve Conduction studies**
 - **EEG**
 - Certification of Brain death
- Intercostal tube placement with underwater seal Thoracocentesis
 - Sedation
 - Analgesia

Interpretation Skills

Clinical data (history and examination findings), formulating a differential diagnosis in order of priority, 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
- Treadmill testing
- ABG analysis
- Ultrasonography
- CT scan chest and abdomen
- CT scan head and spine
- MRI
- Barium studies
- Pulmonary function tests
- Immunological investigations
- Echocardiographic studies

Communication skills

- While eliciting clinical history and performing physical examination
- Communicating health, and disease
- Communicating about a seriously ill or mentally abnormal
- Communicating death
- Informed consent
- Empathy with patient and family members

- Referral letters, and replies
- Discharge summaries
- Death certificates
- Pre-test counseling for HIV
- Post-test counseling for HIV
- 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-up cases
- Co-coordinating care - team work (with house staff, nurses, faculty etc.)
- Linking patients with community resources
- Providing referral
- Genetic counselling

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

Self-directed learning

- identifying key information sources

- literature searches

- information management

Therapeutic decision-making

- managing multiple problems simultaneously

- assessing risks, benefits and costs of treatment options

- involving patients in decision-making

- selecting specific drugs within classes

- Rational use of drugs

Syllabus

Course contents:

Basic Sciences

1. Basics of human anatomy as relevant to clinical practice

- 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, pathophysiological 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.
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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

11. Preventive and environmental issues, including principles of preventive health care, immunization and occupational, environmental medicine and bio-terrorism.
12. Aging and Geriatric Medicine:
 - Biology
 - epidemiology
 - neuro-psychiatric aspects of aging
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 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

18. 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

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
- pancreatitis and diseases of the rectum and anus

20. 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
- leucopenia and leucocytosis
- myelo-proliferative disorders
- disorders of haemostasis and haemopoietic stem cell transplantation

22. 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

23. Metabolic diseases - inborn errors of metabolism and disorders of metabolism.

24. Nutritional diseases - nutritional assessment, enteral and parenteral nutrition,
obesity and eating disorders.

25. 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 .

28. 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.

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 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 Schedule

MEDICINE DEPARTMENT, SMIMER

PG TEACHING SCHEDULE (Revised w.e.f 01.02.16)

	12.00 - 1.00 pm	3.45 - 5.00 pm	Remarks
Monday	Grand round / Research work presentn Co-ordinator : Dr Ashok Chaudhary	Long Case - R3 (Neurology) Co-ordinators : Dr Naimesh S / Dr Shaila C	
Tuesday	Assignments, seminars, grp discussions Co-ordinator : Dr Bhavin P/Dr.Neetu	P G Assessment Co-ordinators: Dr Deepak S / Dr Kosha P	
Wednesday	Short Case - R2 Coordinators : Dr Kamal N/Dr.Rutvi G	Guest Lecture / CME Co-ordinator : Dr Vipul S / Dr. Kosha P	
Thursday	PG Lecture-AP (1,2,3)/ AssocP(4) Coordinators: Dr Ankur P/Dr Shaila (AP) Dr Nilesh D / Dr Neetu (For AssocP)	Recent adv(1,3)/Jr Club(2,5)/Int case(4) - R2s Co-ordinators : Dr Prafful (RA)/Dr Hemant(JC-IC) / Dr Seema B	Recent advances-1st & 3rd Thu; Jr Club-2nd & 5th; Int case-4th.
Friday	Drug Reviews-R1s Coordinators : Dr Vinod D / Dr Rutvi	Death Rev(1,2,3)/CPC(2) -R2 Co-ord : Dr Vandana (DR)/ Dr Dipika (CPC)	Death Review on 1st, 3rd & 5th Fridays; Journal Club on 2nd & 4th
Saturday			

ASSESSMENT

SUMMATIVE ASSESSMENT, namely, assessment at the end of training

The summative examination would be carried out as per the Rules given in

POSTGRADUATE MEDICAL EDUCATION REGULATIONS, 2000.

The Post graduate 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 recognised 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:

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

There will be four theory papers, as below:

Paper I: Basic Medical Sciences (at the end of first year of training)

Paper II: Medicine and allied specialties including pediatrics, dermatology & psychiatry

Paper III: Tropical Medicine and Infectious Diseases

Paper IV: Recent Advances in Medicine

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

The final clinical examination should include:

- cases pertaining to major systems
- stations for clinical, procedural and communication skills
- Log Book Records and day-to-day observation during the training
- Oral/viva voce examination shall be comprehensive enough to test the post graduate student’s overall knowledge of the subject

Recommended Reading

Text Books (latest edition)

- API Text book of Medicine
- Davidson's Principles and Practice of Medicine
- Harrison's Principles & Practice of Medicine
- Oxford Text book of Medicine
- Kumar & Clark : Book of Clinical Medicine
- Cecil : Text Book of Medicine

Reference books

- Hurst : The Heart
- Braunwald - Heart Disease: A Textbook of Cardiovascular Medicine
- Marriot's Practical Electrocardiography
- Crofton and Douglas : Respiratory Diseases
- Brain's Diseases of the Nervous system
- Adam's Principles of Neurology
- William's Text Book of Endocrinology
- De Gruchi's Clinical Hematology in Medical Practice
- Kelly's Text Book of Rheumatology
- Slesenger&Fordtran : Gastrointestinal and Liver disease
- Manson's Tropical Diseases

Clinical Methods

- Hutchinson's Clinical Methods
- Macleod's Clinical examination
- John Patten : Neurological Differential Diagnosis
- Neurological examination in Clinical Practice by Bickerstaff