**NOTIFICATION**

Ref. :

(1) *Medical Council of India Regulation on Graduate Medical Education, 1997.*
(2) Amendment of the regulations on graduate medical education notified by Government of India from time to time :
   a. Gazette Notification dated 29.05.1999.

In exercise of the powers, conferred under section 26 of Krishna Institute of Medical Sciences Deemed University, the Board of Management in its meeting held on 27th June, 2006, has been pleased to approve the Bye-law pertaining to Post Graduate Medical courses as given in schedule here to Annexed.

The Bye-law as above shall be effective for the students admitted to Post Graduate Medical courses from the academic year 2006-07 onwards.

**By Order**

Registrar

1. This byelaw shall be called Syllabus and Examination pattern for Post-Graduate Medical Course.

**MD (General Medicine)**

**Goal** -

A postgraduate in a general medicine 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 able to manage medical emergencies and carry out research and undergraduate medical teaching.

**Objectives:**

To achieve the goal following objectives must be fulfilled:

**A. Cognitive Domain:**
   1. Proper history, examination and diagnosis.
   2. Relevant investigations, their interpretation with reasonable accuracy.
   3. Appropriate treatment and early disposal.
   4. Prompt diagnosis and management of emergencies.
   5. Update knowledge.
   6. Teach and guide undergraduate (MBBS) students.
   7. Carry out research and publication.

**B. Psychomotor Domain:**
   1. To perform diagnostic/ therapeutic procedures like central venous line insertion, lumbar puncture, pleural/ pericardial/ ascites tapping, bone marrow aspiration, liver/ kidney/ pleural biopsy, and interventions such as mechanical ventilation, tube thoracostomy, cardiopulmonary resuscitation, temporary pacing etc.
   2. To be familiar with complication of procedures and be equipped in their management.
C. Affective Domain:
1. Ethical principles during work.
2. Seek and give consultation when required.
3. Sympathetic behavior with patients and their relatives.
4. Respects patients’ rights and privileges.
5. Supplement information about their illness.
6. Consider seeking second opinion when requested by patients.
7. Develop communication skills to interact with colleagues, senior and paramedical staff.
8. To realize that patient management is teamwork.

Course Description
Duration: 3 years Residency program.

Scope Of Training
Diseases related to general medicine, relevant radiology techniques, emergency and intensive care management, maintaining records, use of computers and basic research. Patient care in the settings of outdoor, day care, indoor, emergency and intensive/critical care.

Course Contents
1. Knowledge
   a. Applied basic science knowledge.
   b. Diseases with reference to General Medicine (appendix -1).
   c. Recent advances.
   d. Biostatistics and clinical epidemiology

2. Skills
   a. Decision-making.
   b. Diagnostic investigation and procedures.
   c. Monitoring seriously ill patients.
   d. Counseling patients and relatives.
   e. Ability to teach undergraduate students.
   f. Ability to carry out research

Teaching & Learning Activities
a. Ward/OPD patient management.
b. Long and short topic presentations.
c. Ward rounds, case presentations and discussions.
d. Clinico-radiological and clinico-pathological conferences.
e. Journal conferences.
f. PG Case presentation clinics.
g. Research review.
h. In-house and guest lectures.
i. Conferences, symposia, seminars and CMEs.
j. Participations in workshops, updates, conferences.
k. Teaching undergraduates.
l. Use and maintenance of biomedical equipments.
Structured Training Programme  
(Broadly conceived):  

1. First Year Residency:  
   a. Outpatients/inpatients care.  
   b. Managing medical emergencies.  
   c. Learning diagnostic/ therapeutic procedures and interventions.  
   d. Interpreting Reports.  
   e. Starting Dissertation.  
   f. Use of computers in medicine.  

2. Second Year Residency:  
   a. Outpatients/inpatients care.  
   b. Rotation (six months/one year) in existing allied specialities such as -  
      • Psychiatry  
      • Skin VD  
      • TB Chest  
      • Pathology  
      • Radiology  
   c. Conducting medical procedures independently.  
   d. Continuation of dissertation work.  

3. Third Year Residency:  
   a. Outpatients and in-patients care.  
   b. Independent management of emergencies.  
   c. Teaching junior Residents / under-graduate students enrolled in the subject.  
   d. Finalisation and submission of dissertation.  

Dissertation  
   • The topic should be assigned to the student by the end of 6th month of enrollment.  
   • The topic should be communicated to the MUHS through Head of Department and Head of Institution by 7th month of enrollment.  
   • The duration of the study shall be upto 17 months.  
   • The last date of submission of the completed dissertation to the MUHS should be six months prior to the date of commencement of the degree examination.  

Evaluations  
Regular evaluation of the postgraduate will be carried out by assessment of postgraduate activity like case presentation, seminars etc. (appendix-2) and evaluation at the end of each clinical posting including superspeciality postings. (Appendix-3). The overall performance has to be to the satisfaction of the HOD for recommendation of candidature for MD examinations.  

Recommended Reading  
Books -  
   • Harrison’s Principles of Medicine.  
   • Oxford Textbook of Medicine.  
   • Cecil Textbook of Medicine.  

Reference Books -  
   • Infechrus diseases - Christie  
   • Antiniotics - Kucers  
   • Critical care medicine - Cretta
• Krofton - Chest
• Diabetes - Joslin Clinic Manual
• Neurology - De Jong
• MMT - Washington University
• Goodman - Gillman - Pharmacology.
• API Text Book of Medicine.
• Wintrobe’s Hematology.
• Kelly’s Textbook of Rheumatology.
• Patten’s Neurology.
• Brain’s Neurology.
• Crofton and Douglas Respiratory Medicine.
• Hepatology by Sheila Sherlock.
• Electrocardiography by Shamroth.
• Braunwald’s Cardiology.

Journals -
• Lancet.
• British Medical Journal.
• Chest.
• ICMR Bulletin.
• WHO Bulletin.
• New England Journal of Medicine.
• Journal of Association of Physicians of India.
• Journal of Postgraduate Medicine.
• Annals of Internal Medicine.
• APICON Medicine Update.
• Medical Clinics of North America.
• Indian Practitioner.
• Journal of Applied Medicine.
• Journal of General Medicine.

University Examinations
After successful completion 3 Years’ residency.

Theory Examination:
Each paper 100 marks - 3 hrs duration.

Paper I  
4 Sections, each having two questions: ‘A’ (13 marks), and ‘B’ (12 marks)
Total = 100 marks

Sections with marks Syllabus to be included
Basic Sciences in General Medicine, Genetics, Nutrition.

Paper II  
4 Sections, each having two questions: ‘A’ (13 marks), and ‘B’ (12 marks)
Total = 100 marks
Cardio-vascular system, Respiratory system, Nephrology, Rheumatology, Immunology, Infectious diseases, Dermatology.

Paper III  
4 Sections, each having two questions: ‘A’ (13 marks), and ‘B’ (12 marks)
Gastroenterology, Nervous system, Psychiatry,
Total = 100 marks

Paper IV 5 Questions of 25 marks each, out of which 4 questions have to be attempted.
Total = 100 marks

Total Theory = 400
50 % in total or in each paper.

Practical Examination:
- Maximum 8 candidates to be examined per day at a center
- Maximum 32 candidates per center (4 days of examination)

<table>
<thead>
<tr>
<th>Description</th>
<th>Marks</th>
<th>Preparation Time</th>
<th>Assessment Time</th>
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<tbody>
<tr>
<td>Long Cases (Two)</td>
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<tr>
<td>1 Neurologic case</td>
<td>100 each = 100</td>
<td>45 min each</td>
<td>20 min</td>
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<td>1 non-neurologic case</td>
<td>200</td>
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<tr>
<td>Short Cases (Two)</td>
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<td>Of systems other than the systems of long cases.</td>
<td>50 each = 100</td>
<td>15 min each</td>
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<td>Viva (Four Tables)</td>
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<tr>
<td>Radiology (X-Rays, CT, MR)</td>
<td>25</td>
<td>5 min</td>
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<tr>
<td>ECG / Lab investigations Therapeutics /Emergencies</td>
<td>25</td>
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<tr>
<td>Dissertation</td>
<td>25</td>
<td>5 min</td>
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Total Practical 400
Minimum passing marks: 50%.

Appendix-1
Diseases in General Medicine.

Hematology:

1. Red cell disorders:
   Approach to a patient with anemia, nutritional, iron deficiency, aplastic, megaloblastic, haemolytic anemia, (special emphasis on thalassemia & sickle cell anemia), hereditary spherocytosis, and anaemia of chronic disease, autoimmune hemolytic anemia, paroxysmal nocturnal hemoglobinuria, myelodysplastic syndromes, iron overload, and sideroblastic anaemias.
II. White cell disorders:
Eosinophilia, febrile neutropenia, approach to a patient with splenomegaly & lymphadenopathy, lymphomas, multiple myeloma & related plasma cell disorders, leukemias, hairy cell leukemia.

III. Bleeding & coagulation disorders:
Approach and investigations in patients with bleeding disorders, hemophilia, von willebrand’s disease, immune thrombocytopenic purpura, vascular purpuras, henochschonlein purpura, thrombotic thrombocytopenic purpura, disseminated intravascular coagulation, anticoagulant and anti-platelet therapy.

IV. Miscellaneous:
Approach to a patient with thrombosis, blood groups, transfusion related diseases, blood transfusion reactions, blood component therapy, hematological manifestations of systemic diseases, drug induced hematological disorders, hypersplenism, chemotherapy, bone narrow transplantation, thrombophiliias, platelet function disorders, estimation of hemoglobin/ total and differential white cell count/ erythrocyte sedimentation rate, preparation and staining of blood smears.

Endocrine:

I. Disorders of glucose metabolism:
Glucose metabolism, physiology of insulin & glucagon secretion, glucose tolerance test, diabetes mellitus, insulin preparations, hypoglycemia, glycosuria of causes other than diabetes mellitus, glucagon secreting tumors.

II. Thyroid gland & its disorders:
Iodine metabolism, anatomy & physiology of thyroid gland, thyroid function tests, goiter, hypothyroidism and hyperthyroidism, myxedema, cretinism, thyroid carcinoma, other rare syndromes of thyroid dysfunction.

III. Disorders of anterior pituitary:
Anatomy & physiology of various hormones & their regulation, acromegaly, gigantism, sheehan’s syndrome.

IV. Disorders of posterior pituitary:
Anatomy and physiology, diabetes insipidus, syndrome of inappropriate anti-diuretic hormone (SIADH) secretion, obesity.

V. Disorders of adrenal cortex
Regulation of secretion of glucocorticoids, mineralocorticoids & adrenal sex hormones, adrenal insufficiency, Cushing’s syndrome, pheochromocytoma.

VI. Miscellaneous
Dwarfism, Frohlich’s syndrome, Lawrence Moon Biedel syndrome, anorexia nervosa & bulimia, hypothalmus in health & disease, Conn’s disease, gynaecomastia, non-puerperal galactorrhoea, multiple
endocrine neoplasia syndromes, hirsutism, adreno-genital syndromes, disorders of sexual differentiation.

Cardio-Vascular System
ECG & its interpretation, diagnosis of arrhythmias & their management, ischaemic heart disease, hypertension, rheumatic fever & rheumatic heart disease, congenital heart diseases, heart failure, pericardial diseases, peripheral vascular diseases, deep vein thrombosis, cardiomyopathies, principles of echocardiography & abnormalities in common disorders, pacemakers, nuclear medicine in cardio-vascular disorders, tumors of the heart, aneurysm & dissection of the aorta, thoracic outlet syndrome, cardiac catheterisation, cardiac interventions.

Respiratory System
Approach to a patient of respiratory system involvement, pulmonary function tests, arterial blood gases, bronchoscopy, imaging studies, pulmonary angiography, therapeutic interventions: pulmonary artery embolisation/ video assisted thoracic surgery/ thoracotomy/ mediastinoscopy, diseases of the upper airway including avian influenza, bronchial asthma, occupational lung diseases, pneumoconioses, organic dusts & environmental carcinogens, pneumonia, bronchiectasis, obstructive Airways diseases, interstitial lung diseases, diseases of the pleura: effusion/ pneumothorax/ empyema/ haemothorax, air pollution, respiratory failure, adult respiratory distress syndrome, severe acute respiratory syndrome (SARS), mechanical ventilation, mediastinal diseases, infections including tuberculosis, tumors, primary and metastatic carcinomas, hypersensitivity pneumonitis, eosinophilic pneumonias, pulmonary hypertension, sleep apnea, pulmonary thromboembolism, lung transplant.

Nervous System
Investigations: lumbar puncture/ cerebrospinal fluid examination/ electroencephalography/ evoked potentials/ nerve conduction studies/ electromyography/ imaging studies/ angiography, migraine, seizures/ epilepsy, cerebrovascular diseases, sub-arachnoid haemorrhage, dementia, extra pyramidal disorders, Parkinson’s disease, motor neuron disease, disorders of cranial nerves, meniers syndrome, benign positional vertigo, diseases of the spinal cord, cranio-vertebral anomalies, tumors of the nervous system, demyelinating diseases, meningitis, infections of nervous system, nutritional and metabolic disorders, central pontine myelinolysis, Wernicke’s encephalopathy, alcoholic cerebral degeneration, pellagra, subacute combined degeneration, polyneuropathies, acute and chronic inflammatory demyelinating polyneuropathies, diabetic neuropathies, mononeuritis multiplex, mononeuropathy, leprosy, neuromuscular junction disorders including myasthenia gravis, myopathies (hereditary/ endocrine/ metabolic/ thyroid diseases/ parathyroid diseases/ diabetes mellitis), periodic paralysis, approach to a patient paralysis, dizziness & vertigo, diplopia, syncope and transient loss of consciousness, involuntary movements, delerium, ataxia, parasthesias & sensory loss, unconsciousness, bowel & bladder abnormalities, progressive supranuclear palsy, dystonia, spinocerebeller ataxia, drug induced movement disorders, inherited ataxia, traumatic injuries, subdural & epidural hematoma, radiation & chemotherapy in treatment of nervous system tumours, subdural empyema, progressive multifocal leucoencephalopathy, subacute sclerosing pan
encephalitis, progressive rubella, panencephalitis, kuru, molecular treatment of neurological disorders, disorders of the autonomic nervous system, details of traumatic injuries to skull & spine, hereditary & metabolic disorders of late onset, mitochondrial myopathies, lipid storage disorders.

**Infectious Diseases**


**Hepato-Biliary System**

Liver function tests, jaundice, hepatitis, cirrhosis of liver, portal hypertension, hepatic encephalopathy, hematemesis, amoebic hepatitis, granulomatous hepatitis, hydatid cyst, primary and metastic carcinomas, liver transplant, gall bladder diseases: cholelithiasis/ cholecystitis/ diseases of bile-duct/ cholangiocarcinoma.

**Gastrointestinal Tract**

Peptic ulcer disease, gastrointestinal bleeding, gastritis, endoscopy, radiological procedures, infections, inflammatory bowel disease, functional gut disorders, motility disorders, malabsorption syndromes, pancreatitis, cystic fibrosis, malignancy.

**Kidney**

Renal failure, renal replacement therapies, hematuria, proteinuria, polyuria, oliguria, anuria, contrast nephropathy, urinary tract infections, glomerulonephritis, nephritic syndromes, tubulo-interstitial diseases, kidney in systemic diseases, tumours of the urinary tract, renal calculous disease, barter’s syndrome, fabry’s disease, malignancy.
Geriatric Medicine
Theories of ageing, demographic patterns (world / Asia / India) and their significance to health care system, physiological changes in the elderly, diseases in elderly, pharmacotherapy in the elderly, rehabilitation, physiotherapy, occupational therapy, psychotherapy, legal aspects (elderly abuse), psychiatric illnesses in elderly population, geriatric assessment, geriatric emergencies.

Granulomatous Diseases
Tuberculosis, leprosy, syphilis, sarcoidosis, Wegener’s granulomatosis, histoplasmosis, coccidiodomycosis, mucocutaneous leishmeniasis, midline granuloma, lymphomatous granuloma, pseudotumor of the orbit.

Ethical & Legal Issues In Medicine
Importance and procedures of informed consent, emergency & life saving intervention & treatment, information to be given to patient & relatives, rights of patients including confidentiality, withdrawing life support systems, organ transplant from cadaver, euthanasia, consumers protection act, clinical decisions for a patient who lacks decision of signing of will, ethics committee & its role in medical research, procedures (medico legal) followed in cases of poisoning, suspected rape, adverse reaction to drugs and interventions, absconded patients, in-hospital injuries and suicide, treatment of pregnant patients with drug and interventions likely to cause fetal harm, cloning, stem cells usage and preservation, crimes performed by addicts.

Poisonings
Diagnosis and management of specific and unknown poisonings, universal & specific antidotes, acids and alkalis, kerosene, petroleum products, organophosphates and carbamates, household disinfectants, mosquito repellants, aluminium phosphide, zinc phosphide, yellow phosphorus, heavy metals, paracetamol, barbiturates, snake and scorpion bites, botulism, drug over-dosages, international classification of poisonous chemicals, environmental hazards and poisonings, industrial toxicology, toidromes, nuclear, biological, chemical warfare.

Pregnancy Medicine

Radiology
Roengenograms of chest/ abdomen/ spine/ skull/ paranasal sinuses/ bones and joints, computerized tomography (CT) and magnetic resonance (MR) imagings,
angiography, digital subtraction angiography, imaging techniques for hepatobiliary system, barium studies, intravenous urography, scintigraphy, radionuclide imaging of kidney/ bone/ heart/ liver/ lung/ gall bladder/ thyroid/ parathyroid/ whole body, echocardiography, ventriculography, positron emission tomography (PET) scan, lymphangiography, cardiac catheterization, ultrasound, color doppler, developing and newer imaging techniques.

Disorders Bone & Mineral Metabolism
Calcium and phosphorous homeostasis, parathyroid gland disorders, vitamin-D in health & disease, metabolic bone disease, osteoporosis, osteomalacia, endocrine hormonal influences on bone metabolism, phosphorus metabolism, hypophosphatemia, hyperphosphatemia, disorders of magnesium metabolism, Päget’s disease of bone, osteomyelitis, bone dysplasias, osteoarthritis, spondylosis, bone in systemic diseases.

Immunology
Normal immune system and its functions, hypersensitivity reactions, T-cell mediated diseases, mechanism of tissue damage, cytokine mediated injury, cytokine inhibitors, interaction of T and B cells, complement system, apoptosis, immunotherapy, immunomodulators, immunosuppressive agents, monoclonal antibodies, stem cell transplant in immune disorders, HLA system, primary immune deficiency diseases, amyloidosis, disorders of immediate type hypersensitivity, biological response modifiers, immunologically mediated skin disorders.

Rheumatology
Pathophysiology of inflammation, autoantibody revelance in disease processes, rheumatoid arthritis including extra-articular manifestations, glucocorticoid therapy in connective tissue diseases, systemic lupus erythematosus (SLE), organ targeted therapy, vasculitides, ankylosing spondylitis, reactive arthritis, undifferentiated spondyloarthropathy, polyarteritis nodosa, Wegener’s granulomatosis, Churg Strauss disease, Takayasu’s arteritis, cutaneous vasculitis, imaging techniques in systemic vasculitis, approach to acute and chronic monoarthritis & polyarthritis, diagnostic imaging in joint disease, crystal arthropathies, gout, infectious arthritis, infections in patients with connective tissue diseases, anti-phospholipid antibody syndrome (APLA), drug induced rheumatic diseases, scleroderma, sarcoidosis, fibromyalgias, haemophilic arthropathy, dermatomyositis, polymyxositis, overlap syndromes, sjogrens syndrome, calcium oxalate deposition disease, psoriatic arthritis, neuropathic joint disease, osteoarthritis.

Fluid & Electrolyte
Choice of intravenous fluids, plasma expanders, potassium/ calcium/ sodium/ magnesium/ phosphate disorders, acid base balance and disorders.

Critical Care
Cardio-pulmonary resuscitation, non-invasive and invasive cardiovascular monitoring, circulatory failure, heart failure, acute myocardial infarction, pulmonary embolism, respiratory failure, pulmonary aspiration, nosocomial pneumonia, mechanical ventilation, toxicology, renal failure, status

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epilepticus, Guillain Barre syndrome, myaesthenia, use of blood products, intravenous immunoglobulins, plasmapheresis, hyperthermia, hypothermia, diabetic ketoacidosis, addisonian crisis, myxedema coma, endotrachial intubation, pacemakers, strokes, subarachnoid haemorrhage, near-drowning, circulatory and ventilatory support in adult respiratory distress syndrome (ARDS), asthma, obstructive airways disease, renal replacement therapy.

Emergency Medicine
Basic and advanced life support, disaster management, use and maintenance of equipment used in life support, acute sever asthma, status epilepticus, poisonings, heart failure, shock, acute myocardial infarction, angina, arrhythmias, hypertensive emergencies, medical emergencies in pregnancy, gastro-intestinal bleeding, hepatic encephalopathy, acute gastroenteritis, hemoptyses, obstructive airways disease, tension pneumothorax, adult respiratory distress syndrome (ARDS), respiratory failure, cor pulmonale, stroke, sub-arachnoid haemorrhage, oliguria/anuria, coma, pneumonia, meningitis, infections, sepsis syndromes, multi-organ failure, bleeding manifestations, endocrine emergencies, electric shock, poisonings, snakebite, scorpion stings, anaphylaxis, nuclear/biological/chemical exposures, toxidromes, rabies, burns, strangulation, interventions and procedures: mechanical ventilation/temporary cardiac pacing/invasive monitoring/needle and tube thoracostomy/cricothyrotomy.

Appendix -2
PG - Activity assessment sheet
Student’s Name…………………………………………………………………………………. Date……………………

PG - CLINIC (Case presentation)
a. History & Examination
b. Investigations
c. Diagnosis & Clinical co-relation
d. Management
e. Questions & Answers

Clinical Seminar (Case Discussion)
a. Case details
b. Discussion (content, update references, etc)
c. Presentation (Clarity, time, language, etc)
d. Audio-visual aides
e. Questions & Answers

Seminar (Problem/syndrome based discussion)
a. Content
b. Update with references
c. Presentation (Clarity, time, language, etc)
d. Audio-visual aides
e. Questions & Answers

Appendix 3
Clinical Work Evaluation Sheet
For posting under one Unit (including super-specialty postings)
Points for Assessment:
1. Punctuality and discipline
2. Quality of Ward-work
3. Maintenance of Case-Records
4. Presentation of cases in Rounds
5. Investigation Work-up
6. Bedside manners
7. Rapport with the patients
8. Rapport with Colleagues
9. Undergraduate Teaching (if applicable)
10. Counseling patient’s relatives

Name of the Unit head Signature
Date