

# **SYLLABUS**

**For Courses affiliated to the**

**Kerala University of Health Sciences**

**Thrissur 680596**



**SUPER SPECIALITY COURSE IN MEDICINE**

**DM Cardiology**

**Course Code 227**

**(2016-17 Academic year onwards)**

**2016**

## 2. COURSE CONTENT

### 2.1 Title of course:

DM Cardiology

### 2.2 Objectives of course

#### Goal

The goal of postgraduate medical education shall be to produce competent specialists and/or Medical teachers.

- i. Who shall recognize the health needs of the community, and carry out professional obligations ethically and in keeping with the objectives of the national health policy
- ii. Who shall have mastered most of the competencies, pertaining to the speciality, that are required to be practiced at the secondary and the tertiary levels of the health care delivery system;
- iii. Who shall be aware of the contemporary advances and developments in the discipline concerned.
- iv. Who shall have acquired a spirit of scientific inquiry and is oriented to the principles of research methodology and epidemiology
- v. Who shall have acquired the basic skills in teaching of the medical and paramedical professionals.

#### General objectives of Super Speciality training

At the end of the super speciality training in the discipline concerned, the student shall be able to:

- i. Recognize the importance to the concerned speciality in the context of the health needs of the community and the national priorities in the health section.
- ii. Practice the speciality concerned ethically and in step with the principles of primary health care.

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- iii. Demonstrate sufficient understanding of the basic sciences relevant to the concerned speciality.
  - iv. 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 measure/strategies.
  - v. Diagnose and manage majority of the conditions in the speciality concerned on the basis of clinical assessment, and appropriately selected and conducted investigations.
  - vi. Plan and advice measures for the prevention and rehabilitation of patients suffering from disease and disability related to the speciality.
  - vii. Demonstrate skills in documentation of individual case details as well as morbidity and mortality rate relevant to the assigned situation.
  - viii. Demonstrate empathy and humane approach towards patients and their families and exhibit interpersonal behaviour in accordance with the societal norms and expectations.
  - ix. Play the assigned role in the implementation of national health programme, effectively and responsibly.
  - x. Organize and supervise the chosen/assigned health care services demonstrating adequate managerial skills in the clinic/hospital or the field situation.
  - xi. Develop skills as a self-directed learner, recognize continuing education needs; select and use appropriate learning resources.
  - xii. Demonstrate competence in basic concepts of research methodology and epidemiology, and be able to critically analyze relevant published research literature.
  - xiii. Develop skills in using educational methods and techniques as applicable to the teaching of medical/nursing students, general physicians and paramedical health workers.
  - xiv. Function as an effective leader of a health team engaged in health care, research or training.

The goal of post graduate medical education in cardiology — DM (Doctor of Medicine) CARDIOLOGY — is to provide competent cardiologists who shall recognize the health needs of the community and carry out professional obligations ethically and in keeping with the objectives of national health policy. They shall have mastered most of the competencies in cardiology that are required for the cardiology practice at the tertiary levels of health care

system. They shall also have acquired the basic skills in teaching of the medical and paramedical professionals. The major components of the curriculum shall be theoretical knowledge, practical and clinical skills, thesis skills, attitude skills and training in research methodology.

### **2.3 Medium of instruction:**

The medium of instruction for the course shall be English.

### **2.4 Course outline**

As per clause 2.10 of the curriculum.

### **2.5 Duration**

Every candidate seeking admission to the training programme to qualify for the degree of D.M in the subjects shall pursue a regular course as a full time student, in the concerned Department under the guidance of a recognized super speciality teacher for a period of three years. The course commences from 1<sup>st</sup> August in each year.

### **2.6 Syllabus**

As per clause “content of each subject in each year “ of the curriculum.

### **2.7 Total number of hours**

Present in clause “content of each subject in each year “ of the curriculum.

### **2.8 Branches if any with definition**

Not applicable

### **2.9 Teaching learning methods**

#### **TRAINING PROGRAM**

The training program will aim to give the candidate a sound training of cardiac diagnosis and management. During the period of training they shall take part in all the activities of the department including ward rounds, lectures, seminars, teaching assignments, laboratory studies, surgical session and other duties assigned to them by the Head of the Department.

All candidates shall work as full time residents during the period of training.

The training program shall be updated as and when required. The training shall include:-

- a) Active involvement in the diagnosis and management of patients both in the outpatient, coronary care unit and the wards.
- b) Participation in lectures, seminars, journal clubs, clinical group discussions etc.
- c) Participation in research work in cardiology.
- d) Exposure to basic and advanced diagnostic, therapeutic and laboratory techniques.
- e) Exposure to biomedical statistics as applicable to basic research methodology
- f) Post graduate students shall maintain log books of the work carried out by them. The log books shall be checked and assessed every 6 months by the faculty members, with a view to assure the progress the candidate has made and spot the inadequacies if any.

### **Out station training**

Outstation training may be given if required. It should not exceed 2 months, the duration, center etc: - will be at the discretion of the Head of the department.

### **Teaching**

All D.M students should take part in the teaching of the post graduate degree students of related subjects, undergraduate medical students and paramedical students and allied health science students posted in the department by rotation.

## **2.10 Content of each subject in each year**

Adequate knowledge should be obtained in the following fields of Cardiovascular Medicine:

- 1) **Applied anatomy** including embryology and development, functional anatomy of heart and great vessels, systemic and pulmonary circulations, histology of cardiovascular structures, biology of vessel wall.
- 2) **Applied Physiology:** Cardiac cycle, circulatory hemodynamics, cardiac contractility, pulmonary circulation, coronary circulation, blood pressure, biocontrol mechanisms, electrophysiology, cardiac failure, acid base balance, hemostasis & coagulation pathways, and sports physiology.
- 3) **Applied Pathology:** Congenital heart disease, classification and pathophysiology, rheumatic fever, valvular lesions, myocarditis, cardiomyopathies, pericarditis, constrictive pericarditis, bacterial and infective endocarditis, viral agents in heart disease, autoimmune mechanisms, coronary artery disease, myocardial infarction, hypertensive heart disease, pulmonary embolism, pulmonary hypertension, extrinsic heart diseases, cardiac tumors, electron microscopy in heart disease.

4) **Applied Pharmacology:** Principles of drug therapy, cardiac glycosides, antihypertensive, diuretics, antianginals, inotropic agents, antibiotics, antiarrhythmic agents, anticoagulants, anti-platelet drugs, fibrinolytic agents and other drugs used for cardiovascular drug therapy

5) **Microbiology** relevant to cardiovascular infections and related entities.

6) **Cardiovascular Molecular Biology and Genetics:** Genetics of various Cardiovascular Diseases & Tissue regeneration of cardiovascular system & stem cells.

7) **Cardiovascular Investigations:** The candidate shall obtain adequate knowledge on simple and advanced cardiovascular investigations: electrocardiography ( ECG), exercise stress testing, Holter recording, Signal averaged ECG echocardiography (including transesophageal), chest radiograph in cardiovascular disease, nuclear cardiology, cardiovascular magnetic resonance, computed tomography of the heart and blood vessels, C and blood vessels, cardiac catheterization: coronary angiography and coronary intravascular imaging, hemodynamic measurements, cardiac electrophysiology testing, pacemaker, ICD and CRT evaluation.

8) **Cardiovascular Diseases:** They should develop firm understanding of the following cardiovascular diseases : acute & chronic heart failure, end-stage heart disease, arrhythmias, sudden death, syncope, hypotension, shock, cardiac arrest and sudden cardiac death; atherosclerotic cardiovascular disease, ST-elevation myocardial infarction, unstable angina and non ST-elevation myocardial infarction, chronic coronary artery disease, rheumatic fever, valvular heart diseases, risk factor management for atherothrombotic disease, systemic hypertension, lipoprotein disorders, diseases of aorta, peripheral arterial diseases, prevention and management of stroke, heart disease associated with diabetes & metabolic syndrome, cardiomyopathies, myocarditis, cardiovascular abnormalities in HIV-infected individuals, toxins and the heart, tumors of heart, pericardial diseases, traumatic heart disease, pulmonary embolism, pulmonary hypertension, sleep disorders and cardiovascular disease; cardiovascular disease in women, pregnancy and other special populations; cardiovascular disease in endocrine disorders, rheumatic diseases, cancer, neurological disorders, renal disease, autonomic disorders, exercise related cardiovascular disorders and circulatory assist devices, catheter –based percutaneous cardiovascular interventions, fundamentals of cardiac surgery, anesthesia and non-cardiac surgery in patients with heart disease, preventive cardiology including nutrition management & exercise-based comprehensive cardiac rehabilitation & psychiatric behavioral aspects of cardiovascular disease.

They should develop concepts of economics and cost-effectiveness in cardiology and assessment and improvement of quality of cardiac care delivered.

### **2.11 No: of hours per subject**

Not applicable as the course is a Residency programme

### **2.12 Practical training**

The training pattern during the 3 year period shall be approximately as follows:

1. Ward and outpatient work : 6 months
2. ICCU training : 6 months
3. Invasive and non invasive lab training : 20 months
4. Cardiac surgery training : 2 months
5. Posting to an external center of excellence : 1 to 2 months

(The duration and choice of the center shall be decided by the Head of the Department).

During the period of practical training, the candidate should have acquired:

1. Adequate training in physical evaluation of the patients in the CCU, wards and outpatient settings by eliciting history and physical findings and synthesizing diagnosis and differential diagnosis, planning relevant investigations, prognostication and management
2. Adequate training in performing and/or interpreting various cardiovascular investigative modalities
3. Adequate exposure to catheter- based percutaneous interventions like angioplasty, stenting, valvuloplasty, congenital heart disease interventions, electrophysiologic studies and ablations and pacemaker implantations.
4. Exposure to cardiac surgery.
5. Teaching experience by taking class and demonstration for undergraduate, postgraduates and paramedical professionals

### **2.13 Records**

As given in clause "Logbook "

### **2.14 Dissertation: As per Dissertation Regulations of KUHS**

Thesis is an absolute requirement for D.Mcourse and the candidate has to register the thesis synopsis in the University through proper channel within 6 months of admission. Thesis has to be submitted to the University for Evaluation at least 6 months prior to the conduct of final examination. Modifications and resubmission should be done before

writing the examination. Even if the guide is transferred/ retired, the thesis has to be continued under his/her guidance or entrust to another guide in case the original person is not willing to continue. In extra ordinary situations change of guide and change of thesis topic is permissible with prior permission from the University. Only after accepting the thesis, the candidate will be eligible for writing the examination. In addition to this, the student has to present at least one paper/poster in a regional /national / international conference of the concerned speciality during his three year course or at least one publication in a peer reviewed journal. Research paper should be approved by the Institutional Review Board/ Institutional Ethical Committee.

### **Evaluation of Thesis**

The thesis shall be evaluated by a minimum of three experts; one internal and two external experts, who shall not be the examiners for the Theory and Clinical examination of the concerned candidates and it may be accepted/ accepted with modifications/rejected. Only on the acceptance of the thesis by two experts out of three, the candidate shall be permitted to appear for the University examination. If the thesis is not accepted on evaluation by at least two experts, it shall be resubmitted with suggested modifications along with prescribed fees within the prescribed time stipulated by the University from time to time and it shall be re-evaluated by the same experts. If thesis is rejected by two experts, the candidate will lose first chance for appearing in the University examination and has to redo a fresh thesis for further evaluation.

#### **2.15 Speciality training if any**

As per clause “content of each subject in each year “ of the curriculum.

#### **2.16 Project work to be done if any**

As stipulated by the Head of the Department.

#### **2.17 Any other requirements [CME, Paper Publishing etc.]**

- Should have attended minimum of two International/ National/ Zonal/State conferences or workshops concerned with the area of specialization.
- Should have presented at least one paper/poster in International/ National/ Zonal/State conferences concerned with the area of specialization.(as per MCI norms)

OR



- At least one publication in a peer reviewed journal or at least two research papers or original works should be submitted for publication in peer reviewed journals (as per MCI norms).

### **2.18 Prescribed/recommended textbooks for each subject**

As stipulated by Head of Department

### **2.19 Reference books**

As stipulated by Head of Department

### **2.20 Journals**

As stipulated by Head of Department.

### **2.21 Logbook**

A log book is mandatory and has to be maintained by all students and this has to be reviewed by HOD / Unit Chief of the department regularly (at least quarterly). Minimum number of each of the academic activities to be performed by the candidate should be outlined for each speciality. Model check list for journal review/seminars/topic presentation/ teaching skill etc: - is shown in the appendix. Periodic formative assessment has also to be done in the department by the super speciality teachers. Log book will be evaluated during the University examination by all the four examiners with a maximum total mark of 20 in the viva component (*Check Lists appended*).

## **3. EXAMINATIONS**

### **3.1 Eligibility to appear for exams**

The examinations shall be organised on the basis of marking system to evaluate and certify candidate's level of knowledge, skill and competence at the end of the training.

A candidate should appear for all the theory examinations and obtaining a minimum aggregate of 50% marks in theory part and practical part (Practical & Viva) separately shall be mandatory for passing the whole examination.

#### ***ELIGIBILITY FOR APPEARING IN FINAL EXAMINATION***

- A minimum of 80% attendance during each year of the course separately.
- Successful Submission of completed Logbook.
- Submission of Dissertation and its approval by the University.

iv. Should have attended minimum of two International/ National/ Zonal/State conferences or workshops concerned with the area of specialization.

v. Should have presented at least one paper/poster in International/ National/ Zonal/State conferences concerned with the area of specialization.(as per MCI norms).

or

At least one publication in a peer reviewed journal or at least two research papers or original works should be submitted for publication in peer reviewed journals (as per MCI norms).

vi. The prescribed form (annexure 3) for each candidate should be filled up by concerned department and sent to KUHS for issuing hall ticket for the candidate to appear for the examination. If the candidate fails to meet the criteria, he will not be permitted to appear for the examination.

### 3.2 Schedule of Regular/Supplementary exams

Generally there shall be two university examinations in a year, one regular and one supplementary examinations with a usual gap of six months.

### 3.3 Scheme of examination showing maximum marks and minimum marks

There shall be theory, practical examination including viva voce at the end of the three year course. Theory examination shall consist of four papers (3 hours duration) including one on recent advances and each paper will carry a maximum of 100 marks. Each question paper shall consist of one essay question of 20 marks and 8 short essays of 10 marks each. There shall be a multiple evaluation of theory papers by two internal examiners and two external examiners and the average mark for each paper is taken as the final marks.

Sl.No.	Subject	Theory		Theory Group		Practical				Practical Group		Total	
		University				University		Viva					
		Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
1	Paper I	100	-	400	200	300		100		400	200	800	400
2	Paper II	100	-										

3	Paper III	100	-										
4	Paper IV	100	-										

### 3.4 Papers in each year

**Not applicable**

### 3.5 Details of theory exams

**Duration 3 hours each**

**As per clause 3.3**

**Theory:**

- Paper I - Basic Sciences
- Paper 2 - Clinical Cardiology
- Paper 3 - Cardiac Investigations and Therapeutics
- Paper 4 - Recent Advances in Cardiology

### 3.6 Model question paper for each subject with question paper pattern

**QP Code:**

**Reg.No:**

**D.M. (Cardiology) Degree Examinations  
(Model Question Paper)**

**Paper I – Basic Sciences**

**Time: 3 hrs Max marks:100**

- Answer all questions
- Draw diagrams wherever necessary

**Essays: (20)**

1. Discuss the development, anatomy and congenital abnormalities of the coronary system.

**Short essays: (8x10=80)**

2. Concealed conduction
3. Hibernating myocardium
4. Structure of myocardium in relation to contractility
5. Pathophysiology of pulsus alternans
6. Role of infections in atherosclerotic cardiovascular disease

7. Nitric oxide
8. Cardiac apoptosis
9. Genetics of hypertrophic cardiomyopathy

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QP Code:

Reg.No:

**D.M. (Cardiology) Degree Examinations  
(Model Question Paper)**

**Paper II – Clinical Cardiology**

**Time: 3 hrs Max marks:100**

- Answer all questions
- Draw diagrams wherever necessary

**Essays: (20)**

1. Discuss the pathophysiology, diagnostic evaluation and management of restenosis after revascularization procedures.

**Short essays: (8x10=80)**

2. Determination of situs in congenital heart disease
3. Importance of jugular venous pulsation in clinical cardiology
4. Assessment of severity of pulmonary stenosis
5. Life style modifications for optimizing cardiovascular risks
6. Compensatory ductus arteriosus
7. Athlete's heart
8. Refractory hypertension
9. Pregnancy and prosthetic cardiac valves.

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QP Code:

Reg.No.:

**D.M. (Cardiology) Degree Examinations  
(Model Question Paper)**

**Paper III – Cardiac Investigations and Therapeutics**

**Time: 3 hrs Max marks:100**

- Answer all questions
- Draw diagrams wherever necessary

**Essays: (20)**

1. Discuss the role of radio frequency ablation in the management of tachyarrhythmias

**Short essays: (8x10=80)**

2. Plasma natriuretic peptides and its role in cardiovascular disease
3. Role of multislice CT in coronary artery imaging
4. Assessment of diastolic dysfunction of the heart
5. Newer antiplatelet agents
6. Clinical utility of intra vascular ultrasound (IVUS)
7. Surgery for Ebstein's anomaly
8. Homocysteine and cardiovascular disease
9. Total ischemic burden.

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**QP Code:**

**Reg.No:**

**D.M. (Cardiology) Degree Examinations  
(Model Question Paper)  
Paper IV – Recent Advances in Cardiology  
Time: 3 hrs Max marks:100**

- Answer all questions
- Draw diagrams wherever necessary

**Essays: (20)**

1. Describe the classification of bifurcation lesions with reference to technical difficulties in intervention and discuss the techniques in bifurcation angioplasty

**Short essays: (8x10=80)**

2. Current status of renal artery revascularization
3. Applications of telemedicine in cardiology
4. Stem cell therapy – current concepts
5. Endothelin antagonists
6. Ventricular assist devices
7. Percutaneous mitral valve repair
8. Insulin secretagogues and insulin sensitizers in cardiovascular disease
9. Role of tissue Doppler imaging in cardiovascular diagnosis.

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**3.7 Internal assessment component**

Not applicable.

### 3.8 Details of practical/clinical practicum exams

***Practical/Clinical examination shall consist of:***

- i. 1 long case –100 marks
- ii. 2 short cases –80 marks each = 160 marks
- iii. Ward rounds –40 marks
- Viva voce –80 marks
- Log Book 20 marks
- Total 100 marks

#### **Total Marks Practicals & Viva Voce –400 marks**

Long case discussion may take a maximum of 1 hr, short cases (total cases 2) - maximum 1 hr, ward rounds – maximum 30 minutes and Viva voce maximum of 1 hr. maximum number of candidates that can be examined per day may be restricted to 3.

### 3.9 Number of examiners needed (Internal & External) and their qualifications

#### ***Examiners***

1. All Examiners shall be a recognised super speciality teacher as per MCI norms. There shall be two internal examiners (from affiliated colleges of KUHS) and two external examiners (exclusively from outside the state). In departments where there are more than 2 professors, the head of the department preferably be a constant member of the board of examiners, and the other professors shall be posted as internal examiners on rotation basis.
2. Under exceptional circumstances, examinations may be held with 3 (three) examiners provided at least two of them is an external examiner subject to the ratification of the pass board.
3. In the event of there being more than one centre in one city, the external examiners at all the centres in that city shall be the same. Where there is more than one centre of examination, the University shall appoint a Co-ordinator/Convenor to coordinate the examination on its behalf.

### 3.10 Details of viva:

Viva voce	:80 Marks
<b>Log book</b>	<b>:20 Marks</b>
<b>Total</b>	<b>:100 Marks</b>

Viva voce: Shall cover all branches of cardiology

#### 4 .INTERNSHIP

Not applicable for Medical Superspeciality degree courses.

#### 4 ANNEXURES

##### 4.1 Check Lists for Monitoring: Log Book, Seminar Assessment etc.

##### ANNEXURE - 1

##### CHECK LIST 1 - EVALUATION OF CLINICAL WORK

Name of the Trainee:

Date:

Name of the Faculty:

Sl.No.	Items for observation during evaluation	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Regularity of attendance					
2.	Punctuality					
3.	Interaction with colleagues and supportive staff					
4.	Maintenance of case records					
5.	Presentation of cases					
6.	Investigations work -up					
7.	Bed - side manners					
8.	Rapport with patients					
9.	Counseling patients relatives for interventional procedures					
10.	Overall quality of clinical work					

	Total score	
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## ANNEXURE - 2

### CHECK LIST 2 EVALUATION OF CLINICAL CASE PRESENTATION

Name of the Trainee:

Date:

Name of the faculty:

Sl.No	Items for observation during presentation	Poor	Below Average	Average	Good	Very Good
		0	1	2	3	4
1.	Completeness of history					
2.	Whether all relevant points elicited					
3.	Clarity of presentation					
4.	Logical order					
5.	Mentioned all positive and negative points of importance					
6.	Accuracy of general physical examination					
7.	Whether all physical signs elicited correctly					
8.	Diagnosis: whether it follows logically					
9.	Investigations required In Relevant order					
10	Interpretation of Investigations					
11	Ability to discuss differential diagnosis.					
12	Discussion on management					



	<b>Grand Total</b>	
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**ANNEXURE 3  
CHECK LIST 3**

**EVALUATION OF SEMINAR PRESENTATION**

**Name of the Trainee:**

**Date:**

**Name of the Faculty:**

Sl no	Items for observation during presentation	<i>Poor</i>	<i>Below Average</i>	<i>Average</i>	<i>Good</i>	<i>Very Good</i>
		0	1	2	3	4
1	<b><i>Whether other relevant publications consulted</i></b>					
2	<b><i>Whether cross - references have been consulted</i></b>					
3	<b><i>Completeness of Preparation</i></b>					
4	<b><i>Clarity of Presentation</i></b>					
5	<b><i>Understanding of subject</i></b>					
6	<b><i>Ability to answer the questions</i></b>					
7	<b><i>Time scheduling</i></b>					
8	<b><i>Appropriate use of Audio - Visual aids</i></b>					
9	<b><i>Overall performance</i></b>					
10	<b><i>Any other observation</i></b>					
	<b><i>Total score</i></b>					

**ANNEXURE - 4****CHECK LIST 4****EVALUATION OF JOURNAL REVIEW PRESENTATIONS****Name of the Trainee:****Date:****Name of the Faculty:**

Sl. No	Items for observation during presentation	Poor	Below Average	Average	Good	Very Good
		0	1	2	3	4
1.	Article chosen					
2.	Extent of understanding of scope & objectives of the paper by the candidate					
3.	Whether cross-references have been consulted					
4.	Whether other relevant publications consulted					
5.	Ability to respond to questions on the paper/ subject					
6.	Audio - Visual aids used					
7.	Ability to discuss the paper					
8.	Clarity of presentation					
9.	Any other observation					
	Total Score					

**ANNEXURE - 5**  
**CHECK LIST 5**

*EVALUATION OF TEACHING SKILL*

Name of the Trainee:

Date:

Name of the faculty:

Sl. No.	Items for observation	Strong Points	Weak Points
1.	<i>Communication of the purpose of the talk</i>		
2.	<i>Evokes audience interest in the subject</i>		
3.	<i>The introduction</i>		
4.	<i>The sequence of ideas</i>		
5.	<i>The use of practical examples and / or illustrations</i>		
6.	<i>Speaking style (enjoyable, monotonous, etc. Specify)</i>		
7.	<i>Attempts audience participation</i>		
8.	<i>Summary of the main points at the end</i>		
9.	<i>Ask questions</i>		
10.	<i>Answer questions asked by the audience</i>		
11.	<i>Rapport of speaker with his audience</i>		
12.	<i>Effectiveness of the talk</i>		
13.	<i>Uses AV aids appropriately</i>		

**ANNEXURE - 6****CHECK LIST 6****EVALUATION OF DISSERTATION PRESENTATION**

Name of the Trainee:

Date:

Name of the faculty / Observer:

SI.No	Points to be considered	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Interest shown in selecting topic					
2.	Appropriate review					
3.	Discussion with guide and other faculty					
4.	Quality of protocol					
5.	Preparation of Proforma					
	<b>Total Score</b>					

**ANNEXURE - 7**  
**CHECK LIST 7**  
**CONTINUOUS EVALUATION OF DISSERTATION WORK**

**Name of the Trainee:**

**Date**

**Name of the Faculty:**

Sl. No.	Items for observation during presentation	Poor	Below Average	Average	Good	Very Good
		0	1	2	3	4
1.	Periodic consultation with guide / co- guide					
2.	Regular collection of case material					
3.	Depth of Analysis / Discussion					
4.	Department presentation of findings					
5.	Quality of final output					
6.	Others					
	<b>Total score</b>					

**ANNEXURE - 8****CHECK LIST 8****OVERALL ASSESSMENT SHEET**

Name of the College:

Date:

<b>Check list no</b>	<b>Particulars</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>1</b>	<b>Clinical work</b>					
<b>2</b>	<b>Clinical presentation</b>					
<b>3</b>	<b>Seminars</b>					
<b>4</b>	<b>Journal review</b>					
<b>5</b>	<b>Teaching skill</b>					
<b>6</b>	<b>Dissertation work</b>					
	<b>TOTAL</b>					

0- Poor 1- Below average 2- Average 3- Good 4- Very good

Signature of HOD

Signature of Principal

## ANNEXURE - 9

TABLE 1

### ACADEMIC ACTIVITIES ATTENDED

Name:

Admission Year:

College:

Date	Type of activity - Specify Seminar, Journal club, Presentation, UG teaching	Particulars

**LOG BOOK  
TABLE 2**

**ACADEMIC PRESENTATIONS MADE BY THE TRAINEE**

**Name :**

**Admission Year:**

**College:**

Date	Topic	Type of activity - Specify Seminar, Journal club, Presentation, UG teaching



## LOG BOOK

**TABLE 3**

### DIAGNOSTIC AND OPERATIVE PROCEDURES PERFORMED

Name

<i>Date</i>	<i>Name</i>	<i>OP No.</i>	<i>Procedure</i>	<i>Category O, A, PA, PI</i>

**Key:**

- O - OBSERVED**
- A - ASSISTED A MORE SENIOR SURGEON**
- PA - PERFORMED PROCEDURE UNDER SUPERVISION**
- PI - PERFORMED INDEPENDENTLY**

## APPENDIX 111 - FINAL EXAMINATION ELIGIBILITY FORM

(To be filled up the candidate)

Name of the candidate :

Date of Joining :

Identification number or  
registration number  
of university :

Course :

Institution :

Eligibility criteria :

Sl No	Parameter	Details	Proof enclosure
1.	Attendance	1 <sup>st</sup> year (minimum 80%) 2 <sup>nd</sup> year(minimum 80%) 3 <sup>rd</sup> year(minimum 80%)	
2.	Thesis	Approved/Not Approved by the University	
3.	Log book	Successfully completed and submitted	
5.	Conferences attended	Number and category : Number of presentations:	
6.	Publications	Number published: Number submitted:	

All the informations provided above are true to the best of my knowledge and if found contrary, I am clearly aware that strict disciplinary actions will be initiated including debarring from examination.

Date

Signature of the candidate :

Place

Name of the candidate :

Countersigned by:

Faculty as guide:

Name:

Designation:

APPROVAL OF HEAD OF THE DEPARTMENT

I, Dr....., herewith approve that the above candidate is eligible to appear for the final examination as per the documentary evidences provided and best of the knowledge and documents of the department.

Date

Signature :

Place

Name :

Designation :

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सर्वं भवन्तु सुखिनः

## **SYLLABUS**

**For Courses affiliated to the  
Kerala University of Health Sciences**

**Thrissur 680596**



**SUPER SPECIALITY COURSE IN MEDICINE**

**DM Medical Gastroenterology**

**Course Code 228**

**(2016-17 Academic year onwards)**

**2016**

## 2 COURSE CONTENT

### 2.1 Title of course:

DM Medical Gastroenterology

### 2.2 Objectives of course

#### Goal

The goal of postgraduate medical education shall be to produce competent specialists and/or Medical teachers.

- i. Who shall recognize the health needs of the community, and carry out professional obligations ethically and in keeping with the objectives of the national health policy
- ii. Who shall have mastered most of the competencies, pertaining to the speciality, that are required to be practiced at the secondary and the tertiary levels of the health care delivery system;
- iii. Who shall be aware of the contemporary advances and developments in the discipline concerned.
- iv. Who shall have acquired a spirit of scientific inquiry and is oriented to the principles of research methodology and epidemiology
- v. Who shall have acquired the basic skills in teaching of the medical and paramedical professionals.

#### **General objectives of Super Speciality training**

At the end of the super speciality training in the discipline concerned, the student shall be able to:

- i. Recognize the importance to the concerned speciality in the context of the health needs of the community and the national priorities in the health section.
- ii. Practice the speciality concerned ethically and in step with the principles of primary health care.
- iii. Demonstrate sufficient understanding of the basic sciences relevant to the concerned speciality.
- iv. 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 measure/strategies.
- v. Diagnose and manage majority of the conditions in the speciality concerned on the basis of clinical assessment, and appropriately selected and conducted investigations.
- vi. Plan and advice measures for the prevention and rehabilitation of patients suffering from disease and disability related to the speciality.
- vii. Demonstrate skills in documentation of individual case details as well as morbidity and mortality rate relevant to the assigned situation.
- viii. Demonstrate empathy and humane approach towards patients and their families and exhibit interpersonal behaviour in accordance with the societal norms and expectations.

- ix. Play the assigned role in the implementation of national health programme, effectively and responsibly.
- x. Organize and supervise the chosen/assigned health care services demonstrating adequate managerial skills in the clinic/hospital or the field situation.
- xi. Develop skills as a self-directed learner, recognize continuing education needs; select and use appropriate learning resources.
- xii. Demonstrate competence in basic concepts of research methodology and epidemiology, and be able to critically analyze relevant published research literature.
- xiii. Develop skills in using educational methods and techniques as applicable to the teaching of medical/nursing students, general physicians and paramedical health workers.
- xiv. Function as an effective leader of a health team engaged in health care, research or training.

The goal of post graduate medical education in gastroenterology — DM (Doctor of Medicine) GASTROENTEROLOGY — is to provide competent gastroenterologists who shall recognize the health needs of the community and carry out professional obligations ethically and in keeping with the objectives of national health policy. They shall have mastered most of the competencies in gastroenterology that are required for the gastroenterology practice at the tertiary levels of health care system. They shall also have acquired the basic skills in teaching of the medical and paramedical professionals. The major components of the curriculum shall be theoretical knowledge, practical and clinical skills, thesis skills, attitude skills and training in research methodology.

### **2.3 Medium of Instruction**

The medium of instruction for the course shall be English.

## **2.4 Course outline**

As given under clause 2.10 of the curriculum

## **2.5 Duration**

Every candidate seeking admission to the training programme to qualify for the degree of D.M in the subjects shall pursue a regular course as a full time student, in the concerned Department under the guidance of a recognized super speciality teacher for a period of three years. Ordinarily, this duration of course shall be not be curtailed. The course commences from the date on which the first candidate joins the course. The maximum course duration is 6 years.

## **2.6 Syllabus**

As given under clause 2.10 of the curriculum.

## **2.7 Total number of hours**

As given under clause 2.10 of the curriculum.

## **2.8 Branches if any with definition**

As given under clause 2. 10 of the curriculum.

## **2.9 Teaching learning methods**

### **TRAINING PROGRAM**

The training program will aim to give the candidate a sound training of cardiac diagnosis and management. During the period of training they shall take part in all the activities of the department including ward rounds, lectures, seminars, teaching assignments, laboratory studies, surgical session and other duties assigned to them by the Head of the Department.

All candidates shall work as full time residents during the period of training.

The training program shall be updated as and when required. The training shall include:-

- a) Active involvement in the diagnosis and management of patients both in the outpatient, ICU) and the wards.
- b) Participation in lectures, seminars, journal clubs, clinical group discussions etc.
- c) Participation in research work in gastroenterology
- d) Exposure to basic and advanced diagnostic, therapeutic and laboratory techniques.



- e) Exposure to biomedical statistics as applicable to basic research methodology
- f) Post graduate students shall maintain log books of the work carried out by them. The log books shall be checked and assessed every 3 months by the faculty members, with a view to assure the progress the candidate has made and spot the inadequacies if any.

#### **Out station training**

Outstation training may be given if required. It should not exceed 2 months, the duration, center etc: - will be at the discretion of the Head of the department.

#### **Teaching**

All D.M students should take part in the teaching of the post graduate degree students of related subjects, undergraduate medical students and paramedical students and allied health science students posted in the department by rotation.

#### **Educational methods**

Lectures

#### **Teaching experience**

Demonstrations

Case discussions Journal clubs Seminars

#### **Research methods**

Projects leading to the degree

- Clinical
- Experimental
- laboratory based
- Other projects

Clinical case studies Epidemiologic studies Statistical methods

Literature search, Critical evaluation of published material

#### **Assessment/evaluation of performance**

Day to day performance

Academic exercises work

Outpatient/special clinics Operation theatre

End term assessments

Final examination

#### **Attitudes**

- Punctuality
- Behaviour
- Keenness
- Motivation and initiative
- Reliability
- Aptitude for research

### **DM – MEDICAL GASTROENTEROLOGY - TEACHING**

#### **Introduction**

The syllabus in case of DM training should be dynamic. Trainees should acquire overall knowledge in Gastroenterology not only by reading standard textbooks, but also should keep abreast of new knowledge dealing with Gastroenterology, Hepatology, Pancreatology and related Basic Sciences and Epidemiology by reading monographs, peer reviewed journals and latest guidelines of the major gastrointestinal and hepatology societies. The training should also focus on the local problems.

#### **TEACHING**

The training program should include close supervision of clinical work and assessment in the initial period followed gradually by greater delegation of responsibility. Log book should be maintained and staged evaluation on a semester basis during the 3 years of training.

##### **a) Clinical Teaching**

Emphasis should be laid on training at work. The trainees should provide supervised outpatient and in-patient care. The consultations coming from the sister departments, surgical departments, paediatrics and Gynecology can be utilized to train the candidates. The trainees would be following a residency system. They should also embark upon basic research.

Trainees must be exposed to clinical features, clinical data analysis, investigative work-up, clinical decision making, emergency care and ethical aspects of all common diseases in the field of gastroenterology and hepatology.

Clinical case presentations by trainees and ward rounds with faculty must serve as important media for training in the art of eliciting history and physical signs, synthesis of information, decision making and treatment of the patients.

#### **b) Procedures on patients**

Several diagnostic and therapeutic procedures are done on patients in the speciality of gastroenterology, most prominent of them being endoscopic procedures. They have to be taught to the trainees in a graded manner. They would be given hands on training in endoscopic procedures and Doppler ultrasound. Prior to introducing the trainees to the endoscopic and Doppler ultrasound procedures, an exam may be conducted to assess the theoretical proficiency of the candidate in all the matters related to these procedures.

#### **Proposed list of minimum number of procedures**

	<b><i>Procedures</i></b>	<b><i>No.</i></b>
i	Upper GI Endoscopy	100
ii	Side Viewing duodenoscopy	25*
iii	Endoscopic variceal ligation	5
iv	Injection treatment	5
v	Full length colonoscopy	25
vi	Polypectomy	5
vii	Endoscopic retrograde cholangio-pancreatography	25*
viii	Doppler ultrasound scans	100
ix	Ultrasound scan guided procedures	25
* May observe		

### **c) Imaging and laboratory**

Diagnostic techniques like radiological and other imaging and laboratory techniques relevant to patients with gastroenterological diseases must receive attention. Trainees must be exposed to the theory behind these techniques and must be demonstrated all the tests. This may be organized either by arranging periodic workshops or through rotation in different areas performing these techniques. Trainees need to be familiarized with interpretation of these data.

### **d) Didactic and theoretical teaching**

Teaching may be organized as seminars and journal clubs the trainees should be encouraged to present the topics under active supervision by the faculty. Emphasis must be placed on review of recent information by the trainees and improvement of their critical faculties. Attempts must be made to cover all particularly common gastroenterological diseases and those that gain importance through recent research and information in pathogenesis, diagnosis and therapy. These topics should be organized in such a way that every trainee gets exposed to most of these areas during his training. The schedule of teaching would be structured in such a way that during the first six months the trainee would be strengthening his clinical gastroenterology, doppler ultrasound exposure would be given in the second half of first year. The training in endoscopy would start from the second year. Posting in the various peripheral centres as part of Community gastroenterology would also start from the second year. In the final year, the candidates would be given independent charge of ward, ICU and endoscopy. Integrated teaching with the other departments should be achieved to address the common problems of interest. The collaborations should be at both horizontal and vertical levels.

### **e) Basic sciences**

DM trainees ought to be familiar with basic science aspects of techniques and diseases that they encounter such as molecular biology, biochemistry, physics, etc. The candidates should be exposed to animal experiments in the department of Pharmacology

## **2.10 Content of each subject in each year**

### **Basic Sciences**

1. Immune system of the gastrointestinal tract (GIT) and its importance in various GI disorders
2. Molecular biology in relation to GIT
3. Genetic diagnosis of relevant conditions.
4. Genetic diseases of the GIT and the liver
5. Gene therapy
6. GI tumors and tumor biology
7. Gastrointestinal hormones in health and diseases
8. Embryology of the gut, liver, pancreas and congenital anomalies
9. Oncogenes

#### **Miscellaneous**

1. Upper and lower gastro-intestinal bleeding
2. Gastrointestinal tuberculosis
3. HIV and the GIT, hepatobiliary and pancreatic systems
4. GIT and liver in systemic diseases
5. Cutaneous manifestations of GI diseases
6. Vascular diseases of the GIT
7. Gastrointestinal side effects of drugs especially NSAIDs
8. Gastro-intestinal symptoms physiology and interpretation
9. Nausea, vomiting
10. Pain abdomen
11. Diarrhoea
12. Constipation
13. Dysphagia
14. Jaundice

#### **Oesophagus**

1. Basic anatomy, histology and physiology
2. Congenital anomalies
3. Motility of the oesophagus and motor disorders
4. Mechanism of deglutition and dysphasia

5. Approach to a patient with dysphasia
6. Gastro-oesophageal reflux disease
7. Tumors of the esophagus
8. Oesophageal webs, membranes and diverticulum
9. Management of benign and malignant esophageal strictures
10. Oesophagus and systemic diseases
11. Infectious diseases of the esophagus
12. Foreign bodies in the oesophagus and stomach
13. Oesophageal perforation
14. Drug induced oesophagitis

### **Stomach**

1. Anatomy, histology, functions
2. Physiology of acid and bicarbonate secretion in health and diseases
3. Defence mechanisms against acid and pepsin
4. Gastroduodenal motor function in health and diseases.
5. Gastritis (nonspecific and specific)
6. Helicobacter pylori infection
7. Peptic ulcer
8. Dyspepsia
9. Stress and stomach
10. Gastric hypersecretory states including Zollinger Ellison syndrome
11. Ulcer complications and their management
12. Surgery for peptic ulcer
13. Post gastrectomy complication
14. Bezoars
15. Tumors of the stomach
16. Diverticula and hernia of the stomach


### **Small Intestine**

1. Anatomy, blood supply, histology

2. Motility of the small intestine
3. Congenital anomalies
4. Normal absorption of the nutrients
5. Intestinal electrolyte absorption and secretion
6. Malabsorption syndromes
- Pathophysiology, manifestations and approach
7. Celiac sprue
8. Infection related diseases
  - a. Intestinal microflora in health and diseases
  - b. Tropical sprue
  - c. Whipple's disease
  - d. Infectious diarrhoea and food poisoning
  - e. Parasitic diseases
9. Small intestinal ulcers
10. Short bowel syndrome and intestinal transplantation.
11. Eosinophilic gastroenteritis
12. Food allergies
13. Intestinal obstruction and pseudo-obstruction
14. Short bowel syndrome
15. Acute appendicitis
16. Malrotation of the gut
17. Bezoars
18. Management of diarrhoea
19. GI lymphomas
20. Small intestinal tumors
21. Small intestinal transplantation

## **Colon**

1. Basic anatomy blood supply, histology and functions
2. Motility of the colon and disorders of motility

- 
3. Congenital anomalies
  4. Megacolon
  5. Constipation
  6. Colonic pseudo-obstruction
  7. Fecal incontinence
  8. Antibiotic associated diarrhoea
  9. Inflammatory bowel disease
    - a. Ulcerative colitis
    - b. Crohn's disease
    - c. Indeterminate colitis
    - d. Ileostomies and its management
  10. Diverticular disease of the colon
  11. Radiation entero-colitis
  12. Colonic polyps and polyposis syndromes
  13. Malignant diseases of the colon
  14. Other inflammatory diseases of colon including
    - a. Solitary rectal ulcer syndrome
    - b. Diversion colitis
    - c. Collagenous and microscopic colitis
    - d. Non specific ulcerations of the colon
    - e. Malakoplakia
    - f. Pneumatosis cystoides intestinalis
  15. Hemorrhoids
  16. Diseases of the anorectum

### **Pancreas**

1. Anatomy, physiology, blood supply, developmental anomalies
2. Physiology of the pancreatic secretion
3. Pancreatic function tests
4. Acute pancreatitis



5. Recurrent acute pancreatitis
6. Chronic pancreatitis
7. Malignancies of the pancreas (Exocrine and endocrine)
8. Cystic fibrosis and other childhood disorders of the pancreas
9. Hereditary pancreatitis
10. Pancreatic transplantation

### **Biliary Tree**

1. Anatomy, Physiology
2. Physiology of bile formation and excretion
3. Enterohepatic circulation
4. Bilirubin metabolism.
5. Approach to a patients with jaundice
6. Gallstones, its complications, and management
7. Acute acalculous cholecystitis
8. Miscellaneous disorders of the gallbladder
9. Acute cholangitis
10. Benign biliary structure
11. Benign and malignant neoplasms of the biliary system.
12. Endoscopic management of biliary obstruction.
13. Motility and dysmotility of the biliary system and sphincter of Oddi dysfunction
14. Congenital diseases of the biliary systems

### **Liver**

1. Anatomy, physiology, blood supply
2. Functions of the liver
3. Microcirculation of liver
4. Liver function tests
5. Portal hypertension
  - i. Extrahepatic portosplenic vein obstruction

ii. Non cirrhotic portal fibrosis

iii. Cirrhosis

6. Acute viral hepatitis
7. Chronic hepatitis
8. Fulminant hepatic failure
9. Subacute hepatic failure
10. Cirrhosis of liver
11. Ascites
12. Hepatorenal syndrome
13. Autoimmune liver disease
14. Metabolic liver disease
15. Sclerosing cholangitis- primary and secondary
16. Primary biliary cirrhosis
17. Hepatic venous outflow tract obstruction
18. Fibrocystic diseases of the liver
19. Wilson's disease
20. Hemochromatosis
21. Liver in porphyria
22. Hepatic tumors
23. Infections of the liver
24. Liver in pregnancy
25. Liver in congestive heart failure
26. Liver biopsy
27. Liver transplantation and artificial liver support

#### **Peritoneum and Retro peritoneum**

1. Ascites
2. Chronic peritonitis
3. Budd-Chiari syndrome
4. Malignant ascites

5. Diseases of the retroperitoneum

### **Nutrition**

1. Normal nutritional requirements
2. Assessment of nutritional status
3. Protein energy malnutrition
4. Manifestations and management of nutritional deficiency and excess
5. Nutritional support in various GI disorders (malabsorption, acute and chronic pancreatitis, inflammatory bowel disease)

### **Geriatric gastroenterology**

### **Pregnancy related GI and hepatologic disorders**

### **Paediatric gastroenterology**

### **Vascular Diseases of the GI Tract**

**GI Radiology :-** Reading and interpreting the common x-ray films including

- \_ X-ray films of the abdomen
- \_ Barium studies, ultrasound examination
- \_ CT scans, MR scans and angiography and ERCP films

**GI Pathology:-**Reading and interpreting histological slides of common gastrointestinal and liver diseases.

**Endoscopic Training:-**Endoscopic training is an integral part of training in super specialty of gastroenterology. A trainee is supposed to have knowledge of instruments and its application.

- i. Endoscopes
- ii. Accessories
- iii. Sterilization of endoscopes and accessories
- iv. Electrosurgical instrument
- v. Keeping of endoscopes and accessories

### **2.11 No: of hours per subject**

Not applicable as the course is a Residency programme

## **2.12 Practical training**

### **Training – DM MEDICAL GASTROENTEROLOGY**

The training would be a residency programme spanning a duration of 3 years. The pattern of training in each of the semester would be as follows

#### **1<sup>st</sup> year**

Clinical ward posting including ICU  
Initiating Research process  
Human Rights information  
Awareness about right to information  
Development of communication skills both in the vernacular and English language  
Ethical training  
Defining brain death  
Counseling for organ transplantation  
Computer orientation  
Initiating Doppler ultrasound scan under supervision

#### **2<sup>nd</sup> year**

Change of posting to a busier ward with greater responsibility  
Independent OPD and Doppler ultrasound scanning  
Initiating Oesophagogastro duodenoscopy under supervision  
Organising CME, workshops and seminars

#### **3<sup>rd</sup> year**

Change of posting – Independent charge of the wards  
Independent Oesophagogastro duodenoscopy and ultrasound scan based procedures  
Teaching (Inter and intradepartmental)  
Organising CME, workshops and seminars  
Outside posting  
Organising CME, workshops and seminars

### **2.13 Records**

As given in clause 2.21.

### **2.14 Dissertation: As per Dissertation Regulations of KUHS**

Thesis is an absolute requirement for D.M. course and the candidate has to register the thesis synopsis in the University through proper channel within 6 months of admission. Thesis has to be submitted to the University for Evaluation at least 6 months prior to the conduct of final examination. Modifications and resubmission should be done before writing the examination. Even if the guide is transferred/ retired, the thesis has to be continued under his/her guidance or entrust to another guide in case the original person is not willing to continue. In extra ordinary situations change of guide and change of thesis topic is permissible with prior permission from the University. Only after accepting the thesis, the candidate will be eligible for writing the examination. In addition to this, the student has to present at least one paper/poster in a regional /national / international conference of the concerned speciality during his three year course or at least one publication in a peer reviewed journal. Research paper should be approved by the Institutional Review Board/ Institutional Ethical Committee.

#### **Evaluation of Thesis**

The thesis shall be evaluated by a minimum of three experts; one internal and two external experts, who shall not be the examiners for the Theory and Clinical examination of the concerned candidates and it may be accepted/ accepted with modifications/rejected. Only on the acceptance of the thesis by two experts out of three, the candidate shall be permitted to appear for the University examination. If the thesis is not accepted on evaluation by at least two experts, it shall be resubmitted with suggested modifications along with prescribed fees within the prescribed time stipulated by the University from time to time and it shall be re-evaluated by the same experts. If thesis is rejected by two experts, the candidate will lose first chance for appearing in the University examination and has to redo a fresh thesis for further evaluation.

### **2.15 Speciality training if any**

As given in clause 2.10 of the curriculum.

### **2.16 Project work to be done if any**

As stipulated by the Head of the Department

**2.17 Any other requirements [CME, Paper Publishing etc.]**

- Should have attended minimum of two International/ National/ Zonal/State conferences or workshops concerned with the area of specialization.
- Should have presented at least one paper/poster in International/ National/ Zonal/State conferences concerned with the area of specialization.(as per MCI norms)

or

- At least one publication in a peer reviewed journal or at least two research papers or original works should be submitted for publication in peer reviewed journals (as per MCI norms).

**2.18 Prescribed/recommended textbooks for each subject**

As stipulated by the Head of Department.

**2.19 Reference books**

As stipulated by the Head of Department.

**2.20 Journals**

As stipulated by the Head of Department.

**2.21 Logbook**

A log book is mandatory and has to be maintained by all students and this has to be reviewed by HOD / Unit Chief of the department regularly (at least quarterly). Minimum number of each of the academic activities to be performed by the candidate should be outlined for each speciality. Model check list for journal review/seminars/topic presentation/teaching skill etc: - is shown in the appendix. Periodic formative assessment has also to be done in the department by the super speciality teachers. Log book will be evaluated during the University examination by all the four examiners with a maximum total mark of 20 in the viva component (*Check Lists appended*).

### 3. EXAMINATIONS

#### 3.1 Eligibility to appear for exams

The examinations shall be organised on the basis of marking system to evaluate and certify candidate's level of knowledge, skill and competence at the end of the training.

A candidate should appear for all the theory examinations and obtaining a minimum aggregate of 50% marks in theory part and practical part (Practical & Viva) separately shall be mandatory for passing the whole examination.

##### *ELIGIBILITY FOR APPEARING IN FINAL EXAMINATION*

- i. A minimum of 80% attendance during each year of the course separately.
- ii. Successful Submission of completed Logbook.
- iii. Submission of Dissertation and its approval by the University.
- iv. Should have attended minimum of two International/ National/ Zonal/State conferences or workshops concerned with the area of specialization.
- v. Should have presented at least one paper/poster in International/ National/ Zonal/State conferences concerned with the area of specialization.(as per MCI norms).

or

At least one publication in a peer reviewed journal or at least two research papers or original works should be submitted for publication in peer reviewed journals (as per MCI norms).

vi. The prescribed form (annexure 3) for each candidate should be filled up by concerned department and sent to KUHS for issuing hall ticket for the candidate to appear for the examination. If the candidate fails to meet the criteria, he will not be permitted to appear for the examination.

#### 3.2 Schedule of Regular/Supplementary exams

Generally there shall be two university examinations in a year, one regular and one supplementary examinations with a usual gap of six months.

### 3.3 Scheme of examination showing maximum marks and minimum marks

There shall be theory, practical examination including viva voce at the end of the three year course. Theory examination shall consist of four papers (3 hours duration) including one on recent advances and each paper will carry a maximum of 100 marks. Each question paper shall consist of one essay question of 20 marks and 8 short essays of 10 marks each. There shall be a multiple evaluation of theory papers by two internal examiners and two external examiners and the average mark for each paper is taken as the final marks.

Sl.No.	Subject	Theory		Theory Group		Practical				Practical Group		Total	
		University				University		Viva					
		Max	Min	Max	Min	Max	Min	Max	Min	Max	Min		
1	Paper I	100	-	400	200	300	100	400	200	800	400		
2	Paper II	100	-										
3	Paper III	100	-										
4	Paper IV	100	-										

### 3.4 Papers in each year

Not applicable

### 3.5 Details of theory exams

Duration: Three hours each As per clause 3.3

Paper I - Basic Sciences

Paper II – Principals and practice of gastroenterology

Paper III – Principals and practice of gastroenterology

Paper IV – Recent activities in gastroenterology



### 3.6 Model question paper for each subject with question paper pattern

QP Code:

Reg.No:

#### **D.M. (Gastroenterology) Degree Examinations**

##### **(Model Question Paper)**

##### **Paper I – Basic Sciences**

**Time: 3 hrs Max marks:100**

- Answer all questions
- Draw diagrams wherever necessary

##### **Essays: (20)**

1. Describe enteroinsular axis

##### **Short essays: (8x10=80)**

2. Antigen presentation in the gut and its relevance in disease
3. Describe the extra oesophageal manifestations of GERD
4. Pathophysiology of vomiting
5. Outline the daily fluid exchange in GIT
6. List the factors involved in maintaining faecal continence
7. Outline the current role of oesophageal manometry in clinical practice
8. Pathophysiology of refeeding syndrome and steps to avoid it
9. Diagnostic imaging for HCC

\*\*\*\*\*

**QP Code:**

**Reg.No:**

**D.M. (Gastroenterology) Degree Examinations**

**(Model Question Paper)**

**Paper II – Principles and Practice of Gastroenterology**

**Time: 3 hrs Max marks: 100**

- Answer all questions
- Draw diagrams wherever necessary

**Essays: (20)**

1. Describe the pathogenesis of ascites in cirrhosis. Discuss the management of clinically overt ascites. How will you follow up a patient with ascites. Mention the complications of ascites. Define hepatorenal syndrome (HRS) and briefly outline the management

**Short essays: (8x10=80)**

2. Define recurrent pancreatitis. How will you investigate a patient with recurrent pancreatitis.
3. Discuss the strategy for screening the relatives of a patient with Wilson disease. How will you manage them
4. Define irritable Bowel syndrome (IBS). Outline the differential diagnosis and investigations for constipation predominant IBS
5. Describe the fluid collections in acute pancreatitis. Discuss the management of post necrotic peripancreatic fluid collection
6. Discuss the indications and options for therapy in decompensated HBV cirrhosis. How will you manage them after liver transplantation.
7. Discuss briefly the classification, clinical features and management of choledochal cyst
8. Discuss the causes, clinical features and diagnosis of early graft rejection after liver transplantation.
9. Discuss the clinical features, diagnosis and management of portal biliopathy.

\*\*\*\*\*

QP Code:

Reg.No:

**D.M. (Gastroenterology) Degree Examinations**

**(Model Question Paper)**

**Paper III – Principles and Practice of Gastroenterology**

**Time: 3 hrs Max marks:100**

- Answer all questions
- Draw diagrams wherever necessary

**Essays: (20)**

1. Classify gastric polyps and briefly outline the management

**Short essays: (8x10=80)**

2. Define refractory celiac disease. How will you manage this condition
3. What is DALM. Outline the approach and management of DALMs
4. How will you diagnosis gall stone pancreatitis. Mention the indications for early sphincterotomy in such patients
5. Discuss the endoscopic, histologic and imaging features differentiating crohns from intestinal TB
6. Outline the strategy for surveillance in patients at high risk for carcinoma colon
7. Hydrogen breath tests in clinical practice
8. Define tropical sprue. How will you diagnose and treat it
9. Describe the algorithm for the management of chronic mesenteric ischemia

\*\*\*\*\*

QP Code:

Reg.No:

**D.M. (Gastroenterology) Degree Examinations**

**(Model Question Paper)**

**Paper IV – Recent Advances in Gastroenterology**

**Time: 3 hrs Max marks:100**

- Answer all questions
- Draw diagrams wherever necessary

**Essays: (20)**

1. How will you assess the severity of acute pancreatitis

**Short essays: (8x10=80)**

2. Outline the principles of response guided therapy for HCV
3. What is PET scan and describe its usefulness in GI practice
4. Describe Milan's criteria. What is extended Milan's
5. Discuss the principles of 2nd line therapy for H pylori infection
6. What is top down therapy. What is its current position in practice
7. What are the current indications of TIPSS. What are its contra indications. How will you follow up a patient with TIPSS
8. Define ACLF. What are the precipitating factors
9. What is the principle of HBsAg quantification. What is its current role.

\*\*\*\*\*

**3.7 Internal assessment component**

Not applicable.

**3.8 Details of practical/clinical practicum exams**

***Practical/Clinical examination shall consist of:***

- i. 1 long case –100 marks
- ii. 2 short cases –80 marks each = 160 marks
- iii. Ward rounds –40 marks

Viva voce –80 marks  
Log Book 20 marks  
Total 100 marks

**Total Marks Practicals & Viva Voce –400 marks**

Long case discussion may take a maximum of 1 hr, short cases (total cases 2) - maximum 1 hr, ward rounds – maximum 30 minutes and Viva voce maximum of 1 hr. Maximum number of candidates that can be examined per day may be restricted to 3.

**3.9 Number of examiners needed (Internal & External) and their qualifications**

***Examiners***

1. All Examiners shall be a recognised super speciality teacher as per MCI norms. There shall be two internal examiners (from affiliated colleges of KUHS) and two external examiners (exclusively from outside the state). In departments where there are more than 2 professors, the head of the department preferably be a constant member of the board of examiners, and the other professors shall be posted as internal examiners on rotation basis.

2. Under exceptional circumstances, examinations may be held with 3 (three) examiners provided at least two of them is an external examiner subject to the ratification of the pass board.

3. In the event of there being more than one centre in one city, the external examiners at all the centres in that city shall be the same. Where there is more than one centre of examination, the University shall appoint a Co-ordinator/Convenor to coordinate the examination on its behalf.

**3.10 Details of viva**

Viva voce	:80 Marks
<b>Log book</b>	<b>:20 Marks</b>
<b>Total</b>	<b>:100 Marks</b>

**4.INTERNSHIP**

Not applicable for Medical Superspeciality degree courses.

**5.ANNEXURES**

## 5.1 Check Lists for Monitoring: Log Book, Seminar Assessment etc.

### ANNEXURE - 1

#### CHECK LIST 1 - EVALUATION OF CLINICAL WORK

Name of the Trainee:

Date:

Name of the Faculty:

Sl.No.	Items for observation during evaluation	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Regularity of attendance					
2.	Punctuality					
3.	Interaction with colleagues and supportive staff					
4.	Maintenance of case records					
5.	Presentation of cases					
6.	Investigations work -up					
7.	Bed - side manners					
8.	Rapport with patients					
9.	Counseling patients relatives for interventional procedures					
10.	Overall quality of clinical work					
	Total score					

## ANNEXURE - 2

### CHECK LIST 2 EVALUATION OF CLINICAL CASE PRESENTATION

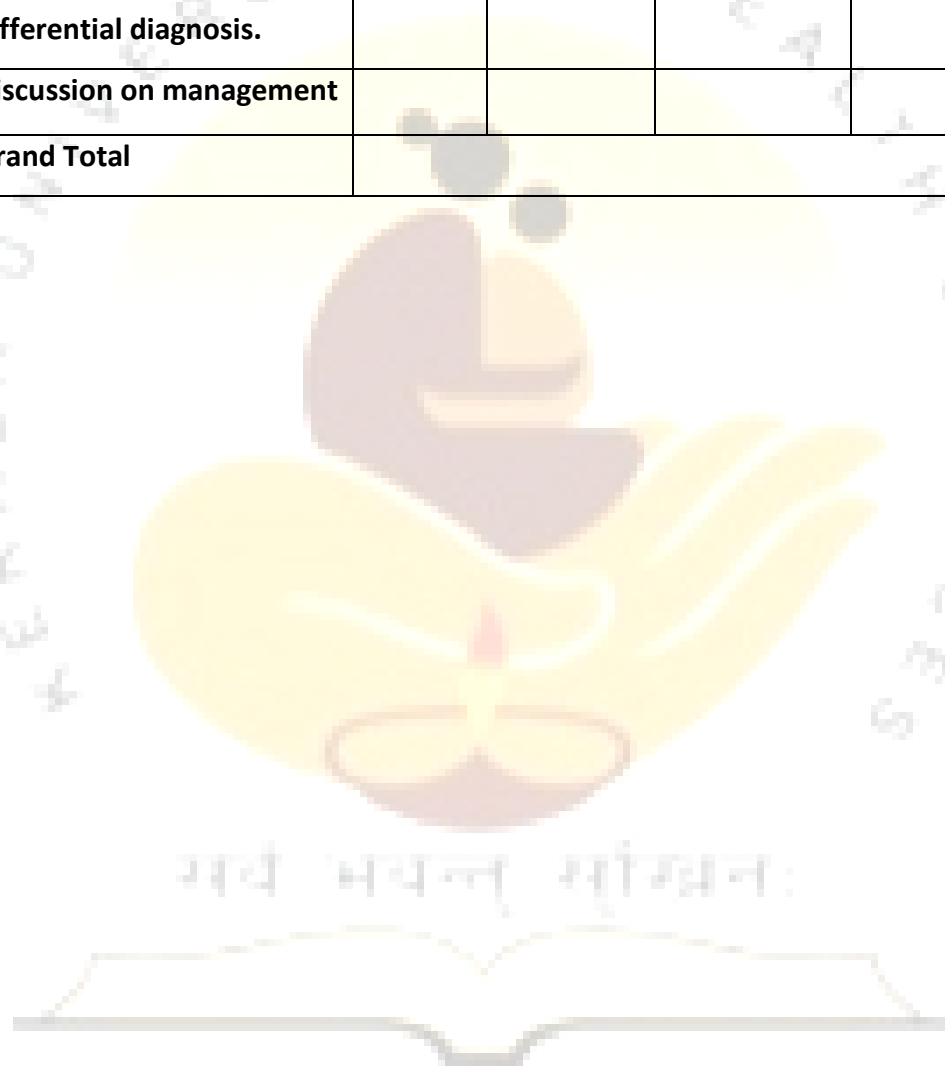
Name of the Trainee:

Date:

Name of the faculty:

Sl.No	Items for observation during presentation	Poor	Below Average	Average	Good	Very Good
		0	1	2	3	4
1.	Completeness of history					
2.	Whether all relevant points elicited					
3.	Clarity of presentation					
4.	Logical order					
5.	Mentioned all positive and negative points of importance					
6.	Accuracy of general physical examination					
7.	Whether all physical signs elicited correctly					
8.	Diagnosis: whether it follows logically					

9.	Investigations required In Relevant order					
10	Interpretation of Investigations					
11	Ability to discuss differential diagnosis.					
12	Discussion on management					
	Grand Total					





### ANNEXURE 3

#### CHECK LIST 3

#### EVALUATION OF SEMINAR PRESENTATION

Name of the Trainee:

Date:

Name of the Faculty:

Sl no	Items for observation during presentation	Poor	Below Average	Average	Good	Very Good
		0	1	2	3	4
1	<b>Whether other relevant publications consulted</b>					
2	<b>Whether cross - references have been consulted</b>					
3	<b>Completeness of Preparation</b>					
4	<b>Clarity of Presentation</b>					
5	<b>Understanding of subject</b>					
6	<b>Ability to answer the questions</b>					
7	<b>Time scheduling</b>					
8	<b>Appropriate use of Audio - Visual aids</b>					
9	<b>Overall performance</b>					
10	<b>Any other observation</b>					
	<b>Total score</b>					

**ANNEXURE - 4****CHECK LIST 4****EVALUATION OF JOURNAL REVIEW PRESENTATIONS****Name of the Trainee:****Date:****Name of the Faculty:**

Sl. No	Items for observation during presentation	Poor	Below Average	Average	Good	Very Good
		0	1	2	3	4
1.	Article chosen					
2.	Extent of understanding of scope & objectives of the paper by the candidate					
3.	Whether cross-references have been consulted					
4.	Whether other relevant publications consulted					
5.	Ability to respond to questions on the paper/ subject					
6.	Audio - Visual aids used					
7.	Ability to discuss the paper					
8.	Clarity of presentation					
9.	Any other observation					
	Total Score					

## ANNEXURE - 5

### CHECK LIST 5

#### EVALUATION OF TEACHING SKILL

Name of the Trainee:

Date:

Name of the faculty:

Sl. No.	Items for observation	Strong Points	Weak Points
1.	<i>Communication of the purpose of the talk</i>		
2.	<i>Evokes audience interest in the subject</i>		
3.	<i>The introduction</i>		
4.	<i>The sequence of ideas</i>		
5.	<i>The use of practical examples and / or illustrations</i>		
6.	<i>Speaking style (enjoyable, monotonous, etc. Specify)</i>		
7.	<i>Attempts audience participation</i>		
8.	<i>Summary of the main points at the end</i>		
9.	<i>Ask questions</i>		
10.	<i>Answer questions asked by the audience</i>		
11.	<i>Rapport of speaker with his audience</i>		
12.	<i>Effectiveness of the talk</i>		
13.	<i>Uses AV aids appropriately</i>		

## ANNEXURE - 6

### CHECK LIST 6

#### EVALUATION OF DISSERTATION PRESENTATION

Name of the Trainee:

Date:

Name of the faculty / Observer:

Sl.No	Points to be considered	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Interest shown in selecting topic					
2.	Appropriate review					
3.	Discussion with guide and other faculty					
4.	Quality of protocol					
5.	Preparation of Proforma					
	<b>Total Score</b>					

## ANNEXURE - 7

### CHECK LIST 7

#### CONTINUOUS EVALUATION OF DISSERTATION WORK

Name of the Trainee:

Date

Name of the Faculty:

Sl. No.	Items for observation during presentation	Poor	<i>Below Average</i>	<i>Average</i>	<i>Good</i>	<i>Very Good</i>
		0	1	2	3	4
1.	<i>Periodic consultation with guide / co- guide</i>					
2.	<i>Regular collection of case material</i>					
3.	<i>Depth of Analysis / Discussion</i>					
4.	<i>Department presentation of findings</i>					
5.	<i>Quality of final output</i>					
6.	<i>Others</i>					
	<b>Total score</b>					

## ANNEXURE - 8

### CHECK LIST 8

#### OVERALL ASSESSMENT SHEET

Name of the College:

Date:

<b>Check list no</b>	<b>Particulars</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>1</b>	<b><i>Clinical work</i></b>					
<b>2</b>	<b><i>Clinical presentation</i></b>					
<b>3</b>	<b><i>Seminars</i></b>					
<b>4</b>	<b><i>Journal review</i></b>					
<b>5</b>	<b><i>Teaching skill</i></b>					
<b>6</b>	<b><i>Dissertation work</i></b>					
	<b><i>TOTAL</i></b>					

0- Poor 1- Below average 2- Average 3- Good 4- Very good

Signature of HOD

Signature of Principal

## Name:

**Admission Year:**

**College:**

[illegible]

## LOG BOOK

TABLE 2

### ACADEMIC PRESENTATIONS MADE BY THE TRAINEE

Name :

Admission Year:

College:

Date	Topic	Type of activity - Specify Seminar, Journal club, Presentation, UG teaching



## LOG BOOK

**TABLE 3**

### DIAGNOSTIC AND OPERATIVE PROCEDURES PERFORMED

Name

<i>Date</i>	<i>Name</i>	<i>OP No.</i>	<i>Procedure</i>	<i>Category O, A, PA, PI</i>

**Key:**

**O - OBSERVED**

**A - ASSISTED A MORE SENIOR SURGEON**

**PA - PERFORMED PROCEDURE UNDER SUPERVISION**

**PI - PERFORMED INDEPENDENTLY**

#### APPENDIX 111 - FINAL EXAMINATION ELIGIBILITY FORM

(To be filled up the candidate)

Name of the candidate :

Date of Joining :

Identification number or

registration number

of university :

Course :

Institution :

Eligibility criteria :

Sl No	Parameter	Details	Proof enclosure
1.	Attendance	1 <sup>st</sup> year (minimum 80%) 2 <sup>nd</sup> year(minimum 80%) 3 <sup>rd</sup> year(minimum 80%)	
2.	Thesis	Approved/Not Approved by the University	
3.	Log book	Successfully completed and submitted	
5.	Conferences attended	Number and category : Number of presentations:	
6.	Publications	Number published: Number submitted:	

All the informations provided above are true to the best of my knowledge and if found contrary, I am clearly aware that strict disciplinary actions will be initiated including debarring from examination.

Date Signature of the candidate :

Place Name of the candidate :

Countersigned by:

Faculty as guide:

Name:

Designation:

APPROVAL OF HEAD OF THE DEPARTMENT

I, Dr....., herewith approve that the above candidate is eligible to appear for the final examination as per the documentary evidences provided and best of the knowledge and documents of the department.

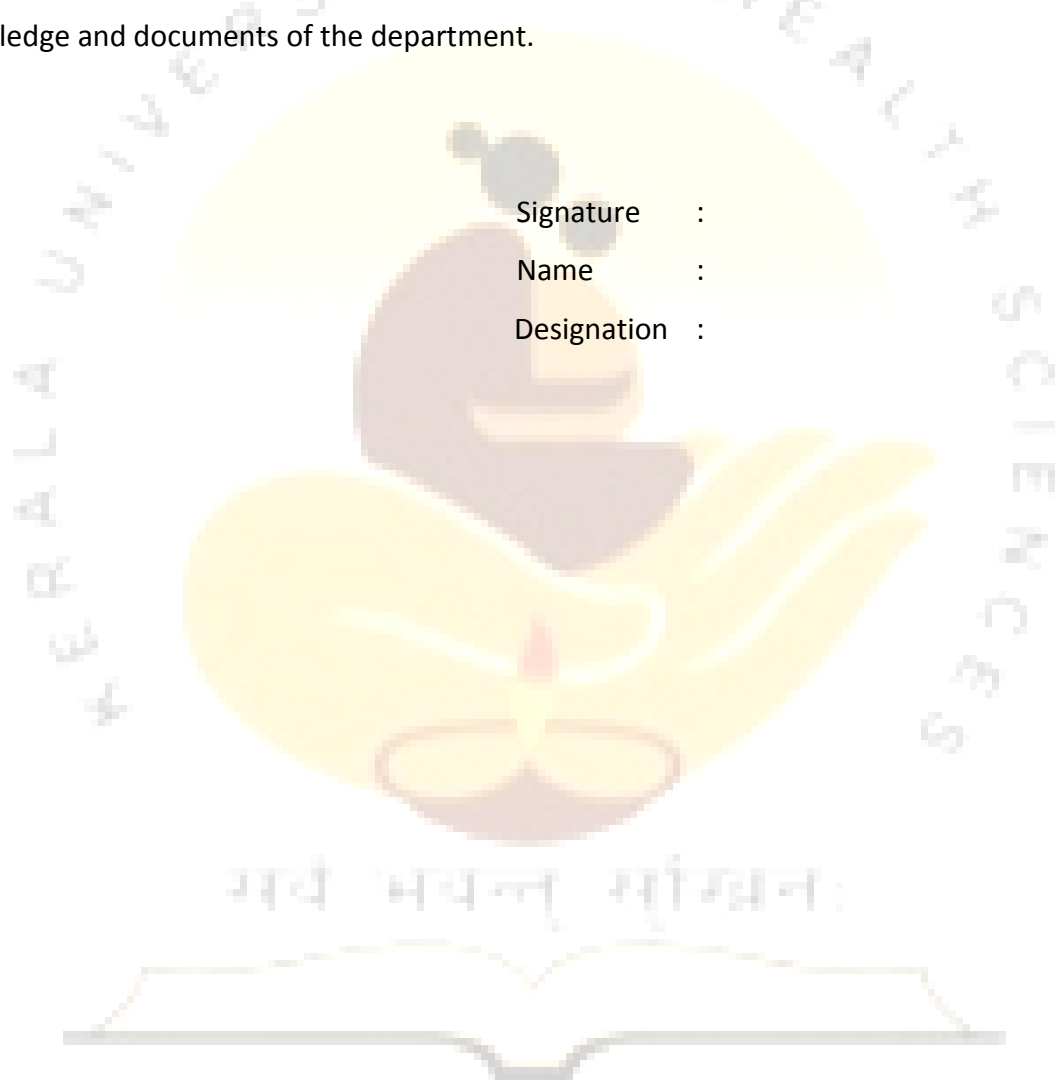
Date

Signature :

Place

Name :

Designation :



## **SYLLABUS**

**For Courses affiliated to the**

**Kerala University of Health Sciences**

**Thrissur 680596**



**SUPER SPECIALITY COURSE IN MEDICINE**

**DM Neurology**

**Course Code 229**

**(2016-17 Academic year onwards)**

**2016**

## 2. COURSE CONTENT

### 2.1 Title of course:

DM NEUROLOGY

### 2.2 Objectives of course

#### Goal

The goal of postgraduate medical education shall be to produce competent specialists and/or Medical teachers.

- i. Who shall recognize the health needs of the community, and carry out professional obligations ethically and in keeping with the objectives of the national health policy
- ii. Who shall have mastered most of the competencies, pertaining to the speciality, that are required to be practiced at the secondary and the tertiary levels of the health care delivery system;
- iii. Who shall be aware of the contemporary advances and developments in the discipline concerned.
- iv. Who shall have acquired a spirit of scientific inquiry and is oriented to the principles of research methodology and epidemiology
- v. Who shall have acquired the basic skills in teaching of the medical and paramedical professionals.

#### General objectives of Super Speciality training

At the end of the super speciality training in the discipline concerned, the student shall be able to:

- i. Recognize the importance to the concerned speciality in the context of the health needs of the community and the national priorities in the health section.
- ii. Practice the speciality concerned ethically and in step with the principles of primary health care.

- iii. Demonstrate sufficient understanding of the basic sciences relevant to the concerned speciality.
- iv. 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 measure/strategies.
- v. Diagnose and manage majority of the conditions in the speciality concerned on the basis of clinical assessment, and appropriately selected and conducted investigations.
- vi. Plan and advice measures for the prevention and rehabilitation of patients suffering from disease and disability related to the speciality.
- vii. Demonstrate skills in documentation of individual case details as well as morbidity and mortality rate relevant to the assigned situation.
- viii. Demonstrate empathy and humane approach towards patients and their families and exhibit interpersonal behaviour in accordance with the societal norms and expectations.
- ix. Play the assigned role in the implementation of national health programme, effectively and responsibly.
- x. Organize and supervise the chosen/assigned health care services demonstrating adequate managerial skills in the clinic/hospital or the field situation.
- xi. Develop skills as a self-directed learner, recognize continuing education needs; select and use appropriate learning resources.
- xii. Demonstrate competence in basic concepts of research methodology and epidemiology, and be able to critically analyze relevant published research literature.
- xiii. Develop skills in using educational methods and techniques as applicable to the teaching of medical/nursing students, general physicians and paramedical health workers.

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

The goal of post graduate medical education in Neurology — DM (Doctor of Medicine) NEUROLOGY — is to provide competent Neurologist who shall recognize the health needs of the community and carry out professional obligations ethically and in keeping with the objectives of national health policy. They shall have mastered most of the competencies in neurology that are required for the neurology practice at the tertiary levels of health care system. They shall also have acquired the basic skills in teaching of the medical and paramedical professionals. The major components of the curriculum shall be theoretical knowledge, practical and clinical skills, thesis skills, attitude skills and training in research methodology.

#### **OBJECTIVES OF THE COURSE - DM Neurology**

The course of DM Neurology is intended to train residents in

- Medical Ethics and communication skills.
- Basics of Neurology.
- Teaching skills to teach paramedical and medical professionals.
- Clinical investigations.
- Management of Neurological illness.
- Research.

He/she should be able to work in the community, general hospitals, teaching hospitals and/or in tertiary care centres in keeping with the objectives of national health policy. This will be achieved through a closely supervised, graduated in service training programme, involving practical training and education within the framework of the department of neurology and its related field.

#### **2.3 Medium of Instruction**

The medium of instruction for the course shall be English.

#### **2.4 Course outline**

As given under clause 10 of the curriculum

#### **2.5 Duration**

Every candidate seeking admission to the training programme to qualify for the degree of D.M in the subjects shall pursue a regular course as a full time student, in the concerned Department under the guidance of a recognized super speciality teacher for a period of three years. The course commences from 1<sup>st</sup> August in each year.

## **2.6 Syllabus**

As given under clause 2.10 of the curriculum.

## **2.7 Total number of hours**

As given under clause 2. 10 of the curriculum.

## **2.8 Branches if any with definition**

As given under clause 2.10 of the curriculum.

## **2.9 Teaching learning methods**

### **TRAINING PROGRAM**

The training program will aim to give the candidate a sound training of neurologic diagnosis and management. During the period of training they shall take part in all the activities of the department including ward rounds, lectures, seminars, teaching assignments, laboratory studies, surgical session and other duties assigned to them by the Head of the Department.

All candidates shall work as full time residents during the period of training. The training program shall be updated as and when required. The training shall include:-

- a) Active involvement in the diagnosis and management of patients both in the outpatient, neuro-intensive care unit and the wards.
- b) Participation in lectures, seminars, journal clubs, clinical group discussions etc.
- c) Participation in research work in Neurology
- d) Exposure to basic and advanced diagnostic, therapeutic and laboratory techniques.
- e) Exposure to biomedical statistics as applicable to basic research methodology
- f) Post graduate students shall maintain log books of the work carried out by them. The log books shall be checked and assessed every 6 months by the faculty members, with a view to assure the progress the candidate has made and spot the inadequacies if any.

### **Out station training**



Outstation training may be given if required. It should not exceed 2 months, the duration, center etc: - will be at the discretion of the Head of the department.

### **Teaching**

All D.M students should take part in the teaching of the post graduate degree students of related subjects, undergraduate medical students and paramedical students and allied health science students posted in the department by rotation.

#### **DM – Neurology - TEACHING**

All candidates shall work as full time residents (residency system) during the period of training. During the initial period they will be under close supervision followed gradually by greater delegation of responsibility. During the period of training they shall take part in all the activities of the department including ward rounds, lectures, seminars, teaching assignments, laboratory studies, surgical session and other duties assigned to them by the Head of the Department or his representative. These activities are viewed as means of training. The training programme shall be updated as and when required at the discretion of the head of the department or his/her representative.

The training shall include:-

- Active involvement in the diagnosis and management of patients both in the out patient, stroke unit, intensive care unit, and the wards.
- Exposure to basic and advanced diagnostic, therapeutic and laboratory techniques.
- Participation in Lectures, seminars, Journal clubs, clinical group discussions etc.
- Participate in teaching of paramedical and medical students.
- Exposure to biomedical statistics as applicable to basic research methodology.
- Participation in research work in Neurology.
- The consultations coming from the other sister departments, including surgical departments , paediatrics and Gynaecology can be utilised to train the candidates.
- They should be trained in emergency care in Neurology particularly in the care of acute stroke with exposure to causality services.

- Post graduate students shall maintain log books of the work carried out by them. The log books shall be checked and assessed (internal assessment) every 6 month by the faculty members, with a view to assure the progress the candidate has made and spot the inadequacies if any.
- Periodic internal assessment – NA

**Time table:**

Time table is only a broad outline subject to the discretion of the head of the department or his/her representative under the existing circumstances and need for the community from time to time.

**Daily teaching programme:**

- Bedside rounds – daily
- Mortality meeting/Interesting cases - once a week
- Topic discussion – Twice a weeks
- Journal club - once a weeks
- Clinical case discussion - once a week
- Radiology meeting - once a week
- Electrophysiology - once a week

**Residents are rotated between units.**

**First Year**

Maintenance of Log book

Neuro-anaesthesia with special emphasis on airway protection and maintenance, intubation, different modes of ventilation, management of ventilator failure and ARDS.

Stroke unit management

Learn the protocol for thrombolysis for acute ischaemic stroke.

Basics of research methodology communication.

Decide on the research project atleast by the end of 3 months, and get the clearance of research committee and ethics committee at the end of 3 months.

Complete University registration of research project by end of 6 months.

Basics of Plasma exchange. Initiate Plasma exchange under supervision in the initial couple

of cases.

Brain death criteria and diagnosis.

Counselling for organ transplantation.

Computer orientation and maintenance of records both as hard and soft copy.

Right to information.

Ethics in Neurology

Theory of Peripheral nerves, myoneural junction, cranial nerves, with a view to learn nerve conduction studies during the last 3 months. Radiological anatomy of the brachial and lumbar plexus. Anatomy of the cranial nerve course as seen in imaging.

During the initial 3 months learn the tracts, and learn the theoretical basis of evoked potential studies.

Cerebral lobes and its functions with special emphasis on lobe function tests.

Learning anatomy through sections of brain resembling CT and MRI sections.

Basic theory of normal wake and sleep EEG with its documentation on polysomnography.

Theory and basics of CT scan brain, MRI brain and spine

Basics theory of Transcranial Doppler and neck vessel doppler.

Vascular anatomy consistent with application in digital subtraction angiography of brain and spinal cord

### **Second year:**

Maintenance of Log book

Start doing NCV and EMG under supervision

Report EEG under supervision.

Introduction to transcranial Doppler under supervision.

Introduction to neck vessel Doppler.

Abnormalities detected on polysomnography

Drug induced Neurological disorders

Neurological disorders in pregnancy like preeclampsia, eclampsia, women with epilepsy

Diseases diagnostic criteria, Scales used, treatment protocols in stroke, movement disorders, muscle diseases.

Muscle and nerve biopsy.

Diseases diagnostic criteria, Scales used, treatment protocols in peripheral nerve diseases, myoneural junction disorders, Dementia, Metabolic, nutritional and toxic disorders affecting nervous system.

Presentation of research work in National, State and Regional conferences.

### **Third year**

Maintenance of Log book

Diseases diagnostic criteria, Scales used, treatment protocols in cerebellar degenerations, infections of the central nervous system, Demyelinating disorders of the central nervous system.

Diseases diagnostic criteria, Scales used, treatment protocols of the rest of the disorders in the syllabus.

Botulinum toxin injections

Basics of interventional neurology.

Recent advances in Neurology. Learn to do literature search.

Presentation of research work in National, State and Regional conferences.

Submission/publication of research manuscript in indexed journals.

Submit research project to University six months before final University examination.

## **2.10 Content of each subject in each year**

### **SYLLABUS-THEORY**

- **Neuroanatomy:**
- Anatomy of whole brain and spinal cord
- Anatomy of the cranial nerves, plexuses, peripheral nerves, and muscle
- Histology of: Cerebral hemispheres, Basal ganglia, cerebellum, Brainstem, Spinal cord, Peripheral nerves, muscle and myoneural junction.
- Study of the section of various part of cerebral hemispheres, cerebellum, diencephalon, brainstem, spinal cord etc.
- Blood supply of brain, spinal cord and anatomical regions of nervous system
- CSF formation, its pathway and related anatomy

- Anatomy of skull, craniocervical junction, vertebral column and rest of the skeletal system.
- Embryology: Development of the nervous system the skull, craniocervical junction and the vertebral column.
- **Neurophysiology**:-Study related with functions of various Areas of the brain, spinal cord and peripheral nerves. Candidates should acquire a comprehensive knowledge in the electrophysiology especially in Electroencephalography, Electromyography and evoked potential studies.
- **Neuropathology**:- Candidates should attend the Neuropathology department to acquire knowledge regarding the pathological aspects of various nervous system diseases and they must be able to report on the pathological slides.
- **Neuroradiology**:-candidates should acquire knowledge in reading and reporting plain X-ray of the skull ,spine, CT scan, MRI, Transcranial Doppler, carotid doppler and DSA..They should also be aware about the advanced investigations like Isotop studies, SPECT and PET.
- **Neurogenetics**:-Candidate should acquire sufficient knowledge in molecular genetics regarding the inheritance of various nervous system diseases and should have a scientific idea about the prenatal diagnosis and treatment of certain neurological inherited diseases.
- Neurochemistry with specific reference to application in diseases in Neurology.
- Neuropharmacology and its application in Neurology.
- Disturbances of cerebrospinal fluid and its circulation.
- Intracranial Neoplasms and Paraneoplastic Disorders
- Infections of the Nervous System and Sarcoidosis
- Viral Infections of the Nervous System, Chronic Meningitis, and Prion Diseases
- Cerebrovascular Diseases
- Craniocerebral Trauma
- Multiple Sclerosis and Allied Demyelinating Diseases

- Inherited Metabolic Diseases of the Nervous System
- Developmental Diseases of the Nervous System
- Degenerative Diseases of the Nervous System
- The Acquired Metabolic Disorders of the Nervous System
- Diseases of the Nervous System Caused by Nutritional Deficiency
- Alcohol and Alcoholism
- Disorders of the Nervous System Caused by Drugs, Toxins, and Other Chemical Agents
- Diseases of the Spinal Cord
- Electrophysiologic and Laboratory Aids in the Diagnosis of Neuromuscular Disease
- Diseases of the Peripheral Nerves
- Diseases of the Cranial Nerves
- Principles of Clinical Myology: Diagnosis and Classification of Diseases of Muscle and Neuromuscular Junction
- The Infectious and Inflammatory Myopathies
- Electrophysiologic and Laboratory Aids in the Diagnosis of Neuromuscular Disease
- The Muscular Dystrophies
- The Metabolic and Toxic Myopathies
- The Congenital Neuromuscular Disorders
- Myasthenia Gravis and Related Disorders of the Neuromuscular Junction
- Ion Channel Disorders: The Periodic Paralysis and Hereditary Nondystrophic Myotonias (Channelopathies)
- Disorders of Muscle Characterized by Cramp, Spasm, Pain, and Localized Masses
- Medical ethics and communication.
- Neuroepidemiology.

#### **Practical Training:**

The candidate should gain adequate skill to elicit the clinical history and to pick up the physical findings, they should possess the ability to make the correct and

complete diagnosis and competency to treat the cases, which include all the common as well as less common disease entities.

They shall have adequate exposure and hands on training in plasma exchange, Transcranial Doppler, Electromyography, Nerve conduction studies, Video EEG and sleep studies. Management of patients in intensive care unit, with special emphasis on thrombolysis in stroke, myaesthetic crisis, patients with AIDP, Encephalitis, Status epilepticus, Neuroleptic malignant syndrome etc.

**2.11 No: of hours per subject**

Not applicable as the course is a Residency programme

**2.12 Practical training**

**Training – DM NEUROLOGY**

All candidates shall work as full time residents (residency system) during the period of training. During the initial period they will be under close supervision followed gradually by greater delegation of responsibility. During the period of training they shall take part in all the activities of the department including ward rounds, lectures, seminars, teaching assignments, laboratory studies, surgical session and other duties assigned to them by the Head of the Department or his representative. These activities are viewed as means of training. The training programme shall be updated as and when required at the discretion of the head of the department or his/her representative.

**The training shall include:-**

- Active involvement in the diagnosis and management of patients both in the out patient, stroke unit, intensive care unit, and the wards.
- Exposure to basic and advanced diagnostic, therapeutic and laboratory techniques.
- Participation in Lectures, seminars, Journal clubs, clinical group discussions etc.
- Participate in teaching of paramedical and medical students.
- Exposure to biomedical statistics as applicable to basic research methodology.
- Participation in research work in Neurology.
- The consultations coming from the other sister departments, including surgical departments, paediatrics and Gynaecology can be utilised to train the candidates.

- They should be trained in emergency care in Neurology particularly in the care of acute stroke with exposure to causality services.
- Post graduate students shall maintain log books of the work carried out by them. The log books shall be checked and assessed (internal assessment) every 6 month by the faculty members, with a view to assure the progress the candidate has made and spot the inadequacies if any.

10. Periodic internal assessment every six months. This will be done continuously over the preceding six months and not on a single day. The progress and deficiencies of the student should be communicated at the end of each six months so that students get an opportunity to improve.

#### **Time table:**

Time table is only a broad outline subject to the discretion of the head of the department or his/her representative under the existing circumstances and need for the community from time to time.

#### **Daily teaching programme:**

- Bedside rounds – daily
- Mortality meeting/Interesting cases - once a week
- Topic discussion – Twice a weeks
- Journal club - once a weeks
- Clinical case discussion - once a week
- Radiology meeting - once a week
- Electrophysiology - once a week
- Residents are rotated between units.

#### **First Year**

Maintanance of Log book

Neuro-anaesthesia with special emphasis on airway protection and maintenace, intubation, different modes of ventilation, management of ventilator failure and ARDS.

Stroke unit management

Learn the protocol for thrombolysis for acute ischaemic stroke.



Basics of research methodology communication.

Decide on the research project atleast by the end of 3 months, and get the clearance of research committee and ethics committee at the end of 3 months.

Complete University registration of research project by end of 6 months.

Basics of Plasma exchange. Initiate Plasma exchange under supervision in the initial couple of cases.

Brain death criteria and diagnosis.

Counselling for organ transplantation.

Computer orientation and maintenance of records both as hard and soft copy.

Right to information.

Ethics in Neurology

Theory of Peripheral nerves, myoneural junction, cranial nerves, with a view to learn nerve conduction studies during the last 3 months. Radiological anatomy of the brachial and lumbar plexus. Anatomy of the cranial nerve course as seen in imaging.

During the initial 3 months learn the tracts, and learn the theoretical basis of evoked potential studies.

Cerebral lobes and its functions with special emphasis on lobe function tests.

Learning anatomy through sections of brain resembling CT and MRI sections.

Basic theory of normal wake and sleep EEG with its documentation on polysomnography.

Theory and basics of CT scan brain, MRI brain and spine

Basics theory of Transcranial Doppler and neck vessel doppler.

Vascular anatomy consistent with application in digital subtraction angiography of brain and spinal cord

### **Second year:**

Maintenance of Log book

Start doing NCV and EMG under supervision

Report EEG under supervision.

Introduction to transcranial Doppler under supervision.

Introduction to neck vessel Doppler.

Abnormalities detected on polysomnography

Drug induced Neurological disorders

Neurological disorders in pregnancy like preeclampsia, eclampsia, women with epilepsy

Diseases diagnostic criteria, Scales used, treatment protocols in stroke, movement disorders, muscle diseases.

Muscle and nerve biopsy.

Diseases diagnostic criteria, Scales used, treatment protocols in peripheral nerve diseases, myoneural junction disorders, Dementia, Metabolic, nutritional and toxic disorders affecting nervous system.

Presentation of research work in National, State and Regional conferences.

### **Third year**

Maintenance of Log book

Diseases diagnostic criteria, Scales used, treatment protocols in cerebellar degenerations, infections of the central nervous system, Demyelinating disorders of the central nervous system.

Diseases diagnostic criteria, Scales used, treatment protocols of the rest of the disorders in the syllabus.

Botulinum toxin injections

Basics of interventional neurology.

Recent advances in Neurology. Learn to do literature search.

Presentation of research work in National, State and Regional conferences.

Submission/publication of research manuscript in indexed journals.

Submit research project to University six months before final University examination.

### **PERIOD OF POSTINGS IN VARIOUS UNITS, DIVISION/DEPARTMENTS**

The trainee will be posted in basically in Neurology department. Out station posting can be given for a **maximum of 2 months**. The out station posting will be

according to the discretion of the head of the department looking at the deficiencies in the department or centre. Out side posting may be given for

- Neuropathology,
- Neuro anaesthesiology,
- Electrophysiology,
- Psychiatry,
- Neurosurgery
- Paediatric Neurology.

### **2.13 Records**

As given in clause 2. 21.

### **2.14 Dissertation: As per Dissertation Regulations of KUHS**

Thesis is an absolute requirement for D.M. course and the candidate has to register the thesis synopsis in the University through proper channel within 6 months of admission. Thesis has to be submitted to the University for Evaluation at least 6 months prior to the conduct of final examination. Modifications and resubmission should be done before writing the examination. Even if the guide is transferred/ retired, the thesis has to be continued under his/her guidance or entrust to another guide in case the original person is not willing to continue. In extra ordinary situations change of guide and change of thesis topic is permissible with prior permission from the University. Only after accepting the thesis, the candidate will be eligible for writing the examination. In addition to this, the student has to present at least one paper/poster in a regional /national / international conference of the concerned speciality during his three year course or at least one publication in a peer reviewed journal. Research paper should be approved by the Institutional Review Board/ Institutional Ethical Committee.

### **Evaluation of Thesis**

The thesis shall be evaluated by a minimum of three experts; one internal and two external experts, who shall not be the examiners for the Theory and Clinical examination of the concerned candidates and it may be accepted/ accepted with modifications/rejected. Only on the acceptance of the thesis by two experts out of

three, the candidate shall be permitted to appear for the University examination. If the thesis is not accepted on evaluation by at least two experts, it shall be resubmitted with suggested modifications along with prescribed fees within the prescribed time stipulated by the University from time to time and it shall be re-evaluated by the same experts. If thesis is rejected by two experts, the candidate will lose first chance for appearing in the University examination and has to redo a fresh thesis for further evaluation.

**2.15 Speciality training if any**

As given in clause 2.10 of the curriculum

**2.16 Project work to be done if any**

As stipulated by the Head of the Department

**2.17 Any other requirements [CME, Paper Publishing etc.]**

- Should have attended minimum of two International/ National/ Zonal/State conferences or workshops concerned with the area of specialization.
- Should have presented at least one paper/poster in International/ National/ Zonal/State conferences concerned with the area of specialization.(as per MCI norms)

OR

- At least one publication in a peer reviewed journal or at least two research papers or original works should be submitted for publication in peer reviewed journals (as per MCI norms).

**2.18 Prescribed/recommended textbooks for each subject**

As stipulated by the Head of Department

**2.19 Reference books**

As stipulated by the Head of Department

**2.20 Journals**

As stipulated by the Head of Department

**2.21 Logbook**

A log book is mandatory and has to be maintained by all students and this has to be reviewed by HOD / Unit Chief of the department regularly (at least quarterly). Minimum number of each of the academic activities to be performed by the candidate should be outlined for each speciality. Model check list for journal review/seminars/topic presentation/ teaching skill etc: - is shown in the appendix. Periodic formative assessment has also to be done in the department by the super speciality teachers. Log book will be evaluated during the University examination by all the four examiners with a maximum total mark of 20 in the viva component (*Check Lists appended*).

### **3.EXAMINATIONS**

#### **3.1 Eligibility to appear for exams**

The examinations shall be organised on the basis of marking system to evaluate and certify candidate's level of knowledge, skill and competence at the end of the training.

A candidate should appear for all the theory examinations and obtaining a minimum aggregate of 50% marks in theory part and practical part (Practical & Viva) separately shall be mandatory for passing the whole examination.

#### ***ELIGIBILITY FOR APPEARING IN FINAL EXAMINATION***

- i. A minimum of 80% attendance during each year of the course separately.
- ii. Successful Submission of completed Logbook.
- iii. Submission of Dissertation and its approval by the University.
- iv. Should have attended minimum of two International/ National/ Zonal/State conferences or workshops concerned with the area of specialization.
- v. Should have presented at least one paper/poster in International/ National/ Zonal/State conferences concerned with the area of specialization.(as per MCI norms).

or

At least one publication in a peer reviewed journal or at least two research papers or original works should be submitted for publication in peer reviewed journals (as per MCI norms).

- vi. The prescribed form (annexure 3) for each candidate should be filled up by concerned department and sent to KUHS for issuing hall ticket for the candidate to

appear for the examination. If the candidate fails to meet the criteria, he will not be permitted to appear for the examination.

### 3.2 Schedule of Regular/Supplementary exams

Generally there shall be two university examinations in a year, one regular and one supplementary examinations with a usual gap of six months.

### 3.3 Scheme of examination showing maximum marks and minimum marks

There shall be theory, practical examination including viva voce at the end of the three year course. Theory examination shall consist of four papers (3 hours duration) including one on recent advances and each paper will carry a maximum of 100 marks. Each question paper shall consist of one essay question of 20 marks and 8 short essays of 10 marks each. There shall be a multiple evaluation of theory papers by two internal examiners and two external examiners and the average mark for each paper is taken as the final marks.

Sl.No.	Subject	Theory		Theory Group		Practical				Practical Group		Total	
		University				University		Viva					
		Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
1	Paper I	100	-	400	200	300		100		400	200	800	400
2	Paper II	100	-										
3	Paper III	100	-										
4	Paper IV	100	-										

### 3.4 Papers in each year

Not applicable.

### 3.5 Details of theory exams

Duration: Three hours each

As given under clause 3.3.

Paper I – Basic Sciences

Paper II – Clinical Neurology

Paper III – Principles and Practice of Neurology

Paper IV – Recent Advances in Neurology

### 3.6 Model question paper for each subject with question paper pattern

QP Code:

Reg.No:

**D.M. (Neurology) Degree Examinations  
(Model Question Paper)**

**Paper I – Basic Sciences**

**Time: 3 hrs**

**Max marks:100**

- Answer all questions
- Draw diagrams wherever necessary

**Essays:**

**(20)**

1. Discuss briefly animal models in neurological disorders

**Short essays:**

**(8x10=80)**

2. Anatomy of cerebral venous sinus system and pathophysiology of venous strokes
3. Neurological disorders due to channelopathies
4. Discuss pathophysiology of brain herniation
5. Transthyretin
6. Pathophysiology of tuberculous meningo-encephalitis
7. Discuss pathophysiology of dystonia

\*\*\*\*\*

QP Code:

Reg.No.:.....

**D.M. (Neurology) Degree Examinations**  
**(Model Question Paper)**  
**Paper II – Clinical Neurology**

**Time: 3 hrs**

**Max marks:100**

- Answer all questions
- Draw diagrams wherever necessary

**Essays:**

**(20)**

1. Discuss the approach to a 50 year old man who presents with a two month history of rapidly progressive dementia

**Short essays:**

**(8x10=80)**

2. Autoimmune encephalopathies
3. Autistic spectrum disorders
4. Management of a 20 year old woman presenting with an acute spinal cord injury
5. Arterial dissections and effects on the central nervous system
6. Cluster headaches
7. Congenital myasthenic syndromes
8. Spinal dural arteriovenous fistulas
9. Stiff person syndrome

\*\*\*\*\*



QP Code:

Reg.No.:.....

**D.M. (Neurology) Degree Examinations**

**(Model Question Paper)**

**Paper III – Principles and Practice of Neurology**

**Time: 3 hrs**

**Max marks:100**

- Answer all questions
- Draw diagrams wherever necessary

**Essays:**

**(20)**

1. Utility of DTI in neurological disorders

**Short essays:**

**(8x10=80)**

2. Clinical utility of MR perfusion imaging
3. Predictors for outcome after hypoxic encephalopathy
4. Critique the various rating scales in multiple sclerosis
5. Discuss the non-invasive evaluation of extracranial and intracranial atherosclerosis
6. Discuss the travails of treating tuberculous meningitis
7. Discuss the investigations in work up for stroke in the young
8. Utility of multiple segmental stimulation in evaluation of peripheral neuropathies
9. MUSK ab myasthenia

\*\*\*\*\*

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QP Code:

Reg.No.:.....

**D.M. (Neurology) Degree Examinations**

**(Model Question Paper)**

**Paper IV – Recent Advances in Neurology**

**Time: 3 hrs**

**Max marks:100**

- Answer all questions
- Draw diagrams wherever necessary

**Essays:**

**(20)**

1. Critical appraisal of neuro protective agents in stroke

**Short essays:**

**8x10=80)**

2. Discuss treatment strategies in advance Parkinson's disease
3. Impact of HAART on HIV dementia and HIV related peripheral neuropathies
4. Botulinum toxin
5. Impact on neuro-epidemiology from Indian studies
6. Discuss a detailed work up for an autonomic dysfunction in neurological disorders
7. Critique the current status and future prospects of stem cell therapy in neurological disorders
8. Prenatal diagnosis
9. Metabolic syndrome and its impact on neurological disorders

\*\*\*\*\*

**3.7 Internal assessment component**

Not applicable.

**3.8 Details of practical/clinical practicum exams**

***Practical/Clinical examination shall consist of:***

- i. 1 long case –100 marks
- ii. 2 short cases —80 marks each = 160 marks
- iii. Ward rounds – 40 marks

Viva voce – 80 marks

Log Book 20 marks  
Total 100 marks

**Total Marks Practicals & Viva Voce –400 marks**

Long case discussion may take a maximum of 1 hr, short cases (total cases 2) - maximum 1 hr, ward rounds – maximum 30 minutes and Viva voce maximum of 1 hr. Maximum number of candidates that can be examined per day may be restricted to 3.

**3.9 Number of examiners needed (Internal & External) and their qualifications**

***Examiners***

- 1) All Examiners shall be a recognised super speciality teacher as per MCI norms. There shall be two internal examiners (from affiliated colleges of KUHS) and two external examiners (exclusively from outside the state). In departments where there are more than 2 professors, the head of the department preferably be a constant member of the board of examiners, and the other professors shall be posted as internal examiners on rotation basis.
- 2) Under exceptional circumstances, examinations may be held with 3 (three) examiners provided at least two of them is an external examiner subject to the ratification of the pass board.
- 3) In the event of there being more than one centre in one city, the external examiners at all the centres in that city shall be the same. Where there is more than one centre of examination, the University shall appoint a Co-ordinator/Convenor to coordinate the examination on its behalf.

**3.10 Details of viva:**

Viva voce	:80 Marks
<b>Log book</b>	<b>:20 Marks</b>
<b>Total</b>	<b>:100 Marks</b>

**4. INTERNSHIP**

Not applicable for Medical Superspeciality degree courses.

## **5. ANNEXURES**

### **5.1 Check Lists for Monitoring: Log Book, Seminar Assessment etc.**

#### **ANNEXURE - 1**

##### **CHECK LIST 1 - EVALUATION OF CLINICAL WORK**

Name of the Trainee:

Date:

**Name of the Faculty:**

<b>Sl.No.</b>	<b>Items for observation during evaluation</b>	<i>Poor</i>  0	<i>Below Average</i>  1	<i>Average</i>  2	<i>Good</i>  3	<i>Very Good</i>  4
1.	<i>Regularity of attendance</i>					
2.	<i>Punctuality</i>					
3.	<i>Interaction with colleagues and supportive staff</i>					
4.	<i>Maintenance of case records</i>					
5.	<i>Presentation of cases</i>					
6.	<i>Investigations work -up</i>					
7.	<i>Bed - side manners</i>					
8.	<i>Rapport with patients</i>					
9.	<i>Counseling patients relatives for interventional procedures</i>					
10.	<i>Overall quality of clinical work</i>					

	Total score	
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## ANNEXURE - 2

### CHECK LIST 2 EVALUATION OF CLINICAL CASE PRESENTATION

Name of the Trainee:

Date:

Name of the faculty:

Sl.No	Items for observation during presentation	Poor	Below Average	Average	Good	Very Good
		0	1	2	3	4
1.	Completeness of history					
2.	Whether all relevant points elicited					
3.	Clarity of presentation					
4.	Logical order					
5.	Mentioned all positive and negative points of importance					
6.	Accuracy of general physical examination					
7.	Whether all physical signs elicited correctly					
8.	Diagnosis: whether it follows logically					
9.	Investigations required In Relevant order					
10	Interpretation of Investigations					

11	Ability to discuss differential diagnosis.					
12	Discussion on management					
	Grand Total					

### ANNEXURE 3

#### CHECK LIST 3

#### EVALUATION OF SEMINAR PRESENTATION

Name of the Trainee:

Date:

Name of the Faculty:

Sl no	Items for observation during presentation	Poor	Below Average	Average	Good	Very Good
		0	1	2	3	4
1	<b>Whether other relevant publications consulted</b>					
2	<b>Whether cross - references have been consulted</b>					
3	<b>Completeness of Preparation</b>					
4	<b>Clarity of Presentation</b>					
5	<b>Understanding of subject</b>					
6	<b>Ability to answer the questions</b>					
7	<b>Time scheduling</b>					
8	<b>Appropriate use of Audio - Visual aids</b>					
9	<b>Overall performance</b>					
10	<b>Any other observation</b>					

	<i>Total score</i>	
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#### ANNEXURE - 4

##### CHECK LIST 4

##### EVALUATION OF JOURNAL REVIEW PRESENTATIONS

**Name of the Trainee:**

**Date:**

**Name of the Faculty:**

Sl. No	Items for observation during presentation	<i>Poor</i>	<i>Below Average</i>	<i>Average</i>	<i>Good</i>	<i>Very Good</i>
		<i>0</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>
1.	<i>Article chosen</i>					
2.	<i>Extent of understanding of scope &amp; objectives of the paper by the candidate</i>					
3.	<i>Whether cross-references have been consulted</i>					
4.	<i>Whether other relevant publications consulted</i>					
5.	<i>Ability to respond to questions on the paper/ subject</i>					
6.	<i>Audio - Visual aids used</i>					
7.	<i>Ability to discuss the paper</i>					
8.	<i>Clarity of presentation</i>					

9.	<i>Any other observation</i>					
	<i>Total Score</i>					

### ANNEXURE - 5

#### CHECK LIST 5

#### EVALUATION OF TEACHING SKILL

Name of the Trainee:

Date:

Name of the faculty:

Sl. No.	Items for observation	Strong Points	Weak Points
1.	<i>Communication of the purpose of the talk</i>		
2.	<i>Evokes audience interest in the subject</i>		
3.	<i>The introduction</i>		
4.	<i>The sequence of ideas</i>		
5.	<i>The use of practical examples and / or illustrations</i>		
6.	<i>Speaking style (enjoyable, monotonous, etc. Specify)</i>		
7.	<i>Attempts audience participation</i>		
8.	<i>Summary of the main points at the end</i>		
9.	<i>Ask questions</i>		
10.	<i>Answer questions asked by the audience</i>		
11.	<i>Rapport of speaker with his audience</i>		
12.	<i>Effectiveness of the talk</i>		



13.	<i>Uses AV aids appropriately</i>		
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## ANNEXURE - 6

### CHECK LIST 6

#### EVALUATION OF DISSERTATION PRESENTATION

Name of the Trainee:

Date:

Name of the faculty / Observer:

Sl.No	Points to be considered	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	<i>Interest shown in selecting topic</i>					
2.	<i>Appropriate review</i>					
3.	<i>Discussion with guide and other faculty</i>					
4.	<i>Quality of protocol</i>					
5.	<i>Preparation of Proforma</i>					
	<b>Total Score</b>					

## ANNEXURE - 7

# CHECK LIST 7

## CONTINUOUS EVALUATION OF DISSERTATION WORK

Name of the Trainee:

Date

Name of the Faculty:

Sl. No.	Items for observation during presentation	Poor	Below Average	Average	Good	Very Good
		0	1	2	3	4
1.	Periodic consultation with guide / co- guide					
2.	Regular collection of case material					
3.	Depth of Analysis / Discussion					
4.	Department presentation of findings					
5.	Quality of final output					
6.	Others					
	<b>Total score</b>					

## ANNEXURE - 8

## CHECK LIST 8

### OVERALL ASSESSMENT SHEET

Name of the College:

Date:

<b>Check list no</b>	<b>Particulars</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>1</b>	<b><i>Clinical work</i></b>					
<b>2</b>	<b><i>Clinical presentation</i></b>					
<b>3</b>	<b><i>Seminars</i></b>					
<b>4</b>	<b><i>Journal review</i></b>					
<b>5</b>	<b><i>Teaching skill</i></b>					
<b>6</b>	<b><i>Dissertation work</i></b>					
	<b><i>TOTAL</i></b>					

0- Poor 1- Below average 2- Average 3- Good 4- Very good

Signature of HOD

Signature of Principal

**ANNEXURE - 9**

TABLE 1

ACADEMIC ACTIVITIES ATTENDED

Name:

Admission Year:

College:

Date	Type of activity - Specify Seminar, Journal club, Presentation, UG teaching	Particulars

LOG BOOK

**TABLE 2**

**ACADEMIC PRESENTATIONS MADE BY THE TRAINEE**

**Name :**

**Admission Year:**

**College:**

<b>Date</b>	<b>Topic</b>	<b>Type of activity - Specify Seminar, Journal club, Presentation, UG teaching</b>

**TABLE 3**

**DIAGNOSTIC AND OPERATIVE PROCEDURES PERFORMED**

**Name**

<i>Date</i>	<i>Name</i>	<i>OP No.</i>	<i>Procedure</i>	<i>Category O, A, PA, PI</i>

**Key:**

**O - OBSERVED**

**A - ASSISTED A MORE SENIOR SURGEON**

**PA - PERFORMED PROCEDURE UNDER SUPERVISION**

**PI - PERFORMED INDEPENDENTLY**

(To be filled up the candidate)

Name of the candidate :

Date of Joining :

Identification number or

registration number

of university :

Course :

Institution :

Eligibility criteria :

Sl N o	Parameter	Details	Proof enclosure
1.	Attendance	1 <sup>st</sup> year (minimum 80%) 2 <sup>nd</sup> year(minimum 80%) 3 <sup>rd</sup> year(minimum 80%)	
2.	Thesis	Approved/Not Approved by the University	
3.	Log book	Successfully completed and submitted	
5.	Conferences attended	Number and category : Number of presentations:	
6.	Publications	Number published: Number submitted:	

All the informations provided above are true to the best of my knowledge and if found contrary, I am clearly aware that strict disciplinary actions will be initiated including debarring from examination.

Date

Signature of the candidate :

Place

Name of the candidate :

Countersigned by:

Faculty as guide:

Name:

Designation:

APPROVAL OF HEAD OF THE DEPARTMENT

I , Dr....., herewith approve that the above candidate is eligible to appear for the final examination as per the documentary evidences provided and best of the knowledge and documents of the department.

Date

Signature :

Place

Name :

Designation :

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## **SYLLABUS**

**For Courses affiliated to the**

**Kerala University of Health Sciences**

**Thrissur 680596**



**SUPER SPECIALITY COURSE IN MEDICINE**

**DM NEPHROLOGY**

**Course Code: 230**

**(2016-17 Academic year onwards)**

**2016**

## 2.COURSE CONTENT

### 2.1 Title of course:

DM Nephrology

### 2.2 Objectives of course

#### Goal

The goal of postgraduate medical education shall be to produce competent specialists and/or Medical teachers.

- i. Who shall recognize the health needs of the community, and carry out professional obligations ethically and in keeping with the objectives of the national health policy
- ii. Who shall have mastered most of the competencies, pertaining to the speciality, that are required to be practiced at the secondary and the tertiary levels of the health care delivery system;
- iii. Who shall be aware of the contemporary advances and developments in the discipline concerned.
- iv. Who shall have acquired a spirit of scientific inquiry and is oriented to the principles of research methodology and epidemiology
- v. Who shall have acquired the basic skills in teaching of the medical and paramedical professionals.

#### General objectives of Super Speciality training

At the end of the super speciality training in the discipline concerned, the student shall be able to:

- i. Recognize the importance to the concerned speciality in the context of the health needs of the community and the national priorities in the health section.
- ii. Practice the speciality concerned ethically and in step with the principles of primary health care.

- iii. Demonstrate sufficient understanding of the basic sciences relevant to the concerned speciality.
- iv. 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 measure/strategies.
- v. Diagnose and manage majority of the conditions in the speciality concerned on the basis of clinical assessment, and appropriately selected and conducted investigations.
- vi. Plan and advice measures for the prevention and rehabilitation of patients suffering from disease and disability related to the speciality.
- vii. Demonstrate skills in documentation of individual case details as well as morbidity and mortality rate relevant to the assigned situation.
- viii. Demonstrate empathy and humane approach towards patients and their families and exhibit interpersonal behaviour in accordance with the societal norms and expectations.
- ix. Play the assigned role in the implementation of national health programme, effectively and responsibly.
- x. Organize and supervise the chosen/assigned health care services demonstrating adequate managerial skills in the clinic/hospital or the field situation.
- xi. Develop skills as a self-directed learner, recognize continuing education needs; select and use appropriate learning resources.
- xii. Demonstrate competence in basic concepts of research methodology and epidemiology, and be able to critically analyze relevant published research literature.
- xiii. Develop skills in using educational methods and techniques as applicable to the teaching of medical/nursing students, general physicians and paramedical health workers.
- xiv. Function as an effective leader of a health team engaged in health care, research or training.

#### **AIMS & OBJECTIVES- DM NEPHROLOGY**

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.
7. Recognize the role of pain management, supportive care and palliation in the treatment of neonatal disease.
8. Familiarize with the pharmacodynamics, pharmacokinetics and pharmacoeconomics of drugs in neonatal care. Rationalize antibiotics usage and drug utilization based on the appropriate clinical situations.

The Department should have adequate regular permanent faculty, renal pathology, Hemodialysis, Peritoneal dialysis, CRRT, CAPD programmes and regular renal transplantation, this is an indispensable for starting DM course in Nephrology.

At the end of the training period for the degree of DM in Nephrology, a candidate should be able to give advanced specialist training in the field of clinical investigations and management of Nephrological diseases.

### **2.3 Medium of Instruction**

The medium of instruction for the course shall be English.

### **2.4 Course outline**

As per clause 2.10 of the curriculum.

## **2.5 Duration**

Every candidate seeking admission to the training programme to qualify for the degree of D.M in the subjects shall pursue a regular course as a full time student, in the concerned Department under the guidance of a recognized super speciality teacher for a period of three years. The course commences from 1<sup>st</sup> August in each year.

## **2.6 Syllabus**

As given under clause 2.10 of the curriculum.

## **2.7 Total number of hours**

As given under clause 2.10 of the curriculum.

## **2.8 Branches if any with definition**

As given under clause 2.10 of the curriculum.

## **2.9 Teaching learning methods**

### **TRAINING PROGRAM**

The training program will aim to give the candidate a sound training of renal diagnosis and management. During the period of training they shall take part in all the activities of the department including ward rounds, lectures, seminars, teaching assignments, laboratory studies, surgical session and other duties assigned to them by the Head of the Department.

All candidates shall work as full time residents during the period of training.

The training program shall be updated as and when required. The training shall include:-

- a) Active involvement in the diagnosis and management of patients both in the outpatient, coronary care unit and the wards.
- b) Candidates should be able to do all intervention done in the care of patients with kidney disease like placement of jugular catheter, permcath, femoral catheter, CAPD catheter and renal biopsy
- c) Candidates should be able to conduct conventional hemodialysis, SLED, CRRT and Peritoneal dialysis
- d) Active participation in live donor kidney transplantation and deceased donor kidney transplantation.

- e) Participation in lectures, seminars, journal clubs, clinical group discussions etc.
- f) Participation in research work in nephrology
- g) Exposure to basic and advanced diagnostic, therapeutic and laboratory techniques.
- h) Exposure to biomedical statistics as applicable to basic research methodology
- i) Post graduate students shall maintain log books of the work carried out by them. The log books shall be checked and assessed every 6 months by the faculty members, with a view to assure the progress the candidate has made and spot the inadequacies if any.

#### **Out station training**

Outstation training may be given if required. It should not exceed 2 months, the duration, center etc: - will be at the discretion of the Head of the department.

#### **Teaching**

All D.M students should take part in the teaching of the post graduate degree students of related subjects, undergraduate medical students and paramedical students and allied health science students posted in the department by rotation.

#### **METHOD OF TRAINING- DM NEPHROLOGY**

The training of the post graduate for the DM degree course shall be on a residency pattern with assigned responsibilities of patient care. The participation of the students in all facts of the training process shall be insisted upon.

Ist year	-	Nephrology Ward work
IIInd year	-	6 months dialysis posting
		6 months transplantation posting
IIIrd year	-	11 months ward posting
		2 weeks Radiology
		2 weeks Urology

Outstation posting - maximum period of 2 months may be given as per institutional dicission

#### **Nephrology ward posting**

Candidate is expected to acquire the ability of case taking and healthy personal relationship with the patient, Investigate and manage the patient under the guidance of a Postgraduate Teacher.

### **Dialysis posting**

Trainee is expected to do the canulations, making access for different extracorporeal treatments, peritoneal catheter insertions and renal biopsy procedures under the guidance of a postgraduate teacher

### **Renal Transplantation posting**

Trainee is expected to do the donor, recipient evaluation, perfusion procedures of transplantation, Brain death criteria and diagnosis, Counselling for organ transplantation, ICU care of recipients and follow up of the transplant recipients under the cover of a post graduate teacher.

During the training period he/she is expected to participate in a public meeting where renal diseases are discussed for the common people.

During the training period he/she is expected to take classes for undergraduates, postgraduates, nursing students, and trainees of dialysis technology.

### **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.

#### ***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 immuno-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 fungal cultures, Serological and PCR techniques

***Immunological test:***

- ANCA, ANA, anti DsDNA, complement, anti GBM ab, cryoglobulin, 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

**2.10 Content of each subject in each year**

## **SYLLABUS-THEORY**

1. Anatomy and embryology of the kidney.
2. Physiology of the Kidney.
3. Basic and advanced investigations in renal diseases
4. Fluid and Electrolyte disorders
5. Basic knowledge of Immunology
6. Basic knowledge of Renal Pathology
7. Basic knowledge of Renal therapeutics
8. Basic training in Renal Radiology
9. Kidney diseases in children
10. Hereditary & congenital kidney diseases
11. Kidney diseases in Pregnancy
12. Kidney diseases in Pregnancy
13. Glomerular diseases
14. Interstitial diseases
15. Hypertension & Vascular diseases
16. Kidney disorders in geriatricsgy
  - i. Infections of Kidneys
  - ii. Acute Kidney injury
  - iii. Chronic Kidney diseases
  - iv. Sytemic diseases & Kisney
  - v. Dialytic therapies
  - vi. Renal Transplantation
  - vii. Drugs and Kidney
  - viii. Urological diorders.

### **2.11 No: of hours per subject**

As given in clause “Content of each subject in each year “ of the curriculum.

### **2.12 Practical training given in labs/supervision (No: of hours for each exercise/training)**

As given in clause “Content of each subject in each year “ of the curriculum.

### **2.13 Records**

As given in clause 2.21.

### **2.14 Dissertation: As per Dissertation Regulations of KUHS**

Thesis is an absolute requirement for D.M./M Ch course and the candidate has to register the thesis synopsis in the University through proper channel within 6 months of admission. Thesis has to be submitted to the University for Evaluation at least 6 months prior to the conduct of final examination. Modifications and resubmission should be done before writing the examination. Even if the guide is transferred/ retired, the thesis has to be continued under his/her guidance or entrust to another guide in case the original person is not willing to continue. In extra ordinary situations change of guide and change of thesis topic is permissible with prior permission from the University. Only after accepting the thesis, the candidate will be eligible for writing the examination. In addition to this, the student has to present at least one paper/poster in a regional /national / international conference of the concerned speciality during his three year course or at least one publication in a peer reviewed journal. Research paper should be approved by the Institutional Review Board/ Institutional Ethical Committee.

### **Evaluation of Thesis**

The thesis shall be evaluated by a minimum of three experts; one internal and two external experts, who shall not be the examiners for the Theory and Clinical examination of the concerned candidates and it may be accepted/ accepted with modifications/rejected. Only on the acceptance of the thesis by two experts out of three, the candidate shall be permitted to appear for the University examination. If the thesis is not accepted on evaluation by at least two experts, it shall be resubmitted with suggested modifications along with prescribed fees within the prescribed time stipulated by the University from time to time and it shall be re-evaluated by the same experts. If thesis is rejected by two experts, the candidate will lose first chance for appearing in the University examination and has to redo a fresh thesis for further evaluation.

### **2.15 Speciality training if any**

As given in clause "Content of each subject in each year of the curriculum".

### **2.16 Project work to be done if any**

As stipulated by the Head of the Department.

### **2.17 Any other requirements [CME, Paper Publishing etc.]**

- Should have attended minimum of two International/ National/ Zonal/State conferences or workshops concerned with the area of specialization.
- Should have presented at least one paper/poster in International/ National/ Zonal/State conferences concerned with the area of specialization.(as per MCI norms)

OR

- At least one publication in a peer reviewed journal or at least two research papers or original works should be submitted for publication in peer reviewed journals (as per MCI norms).

### **2.18 Prescribed/recommended textbooks for each subject**

As prescribed by HOD

### **2.19 Reference books**

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 davisson, Stewart Cameron et al
7. Massry and Glasscock's Text Book of Nephrology
8. The Kidney- Physiology and Pathophysiology DW Seldin and G Giebisch
9. Immunological Renal Diseases- EG Neilson and WG Couser.
10. Comprehensive Clinical Nephrology-Jurgen Floege,Richard Jhonson ,john Feehally
11. Critical Care Nephrology- Ronco, Bellomo,Kellum

12. Comprehensive Pediatric Nephrology- Denis f geary, Franz Shaefer
13. Pediatric Nephrology-Ellis, William, Patrick Nerishigl
14. Text Book of Tramsplantation -Danowich
15. Principles & Prracticeof dialysis –William L Henrich

## 2.20 Journals

1. Kidney International
2. Nephrology Dialysis and Transplantation
3. Nature reviews in Nephrology
4. Amercan Journal of Kidney Diseases
5. Journal of American Soceity ofNephrology
6. Nephron
- 7 .Transplantation
8. Seminars' in Nephrology
9. Indian Jourology
10. Electronic edition of Uptodate in Nephrology and Hypertension
11. Current opinion in Nephrology and Hypertension
12. New England J of Medcine
13. Indian Journal of Peritoneal Dialysis
14. International journal of Peritoneal Dialysis

## 2.21 Logbook

A log book is mandatory and has to be maintained by all students and this has to be reviewed by HOD / Unit Chief of the department regularly (at least quarterly). Minimum number of each of the academic activities to be performed by the candidate should be outlined for each speciality. Model check list for journal review/seminars/topic presentation/ teaching skill etc: - is shown in the appendix. Periodic formative assessment has also to be done in the department by the super speciality teachers. Log book will be evaluated during the University examination by all the four examiners with a maximum total mark of 20 in the viva component (*Check Lists appended*).

### 3 EXAMINATIONS

#### 3.1 Eligibility to appear for exams

The examinations shall be organised on the basis of marking system to evaluate and certify candidate's level of knowledge, skill and competence at the end of the training.

A candidate should appear for all the theory examinations and obtaining a minimum aggregate of 50% marks in theory part and practical part (Practical & Viva) separately shall be mandatory for passing the whole examination.

##### *ELIGIBILITY FOR APPEARING IN FINAL EXAMINATION*

- i. A minimum of 80% attendance during each year of the course separately.
- ii. Successful Submission of completed Logbook.
- iii. Submission of Dissertation and its approval by the University.
- iv. Should have attended minimum of two International/ National/ Zonal/State conferences or workshops concerned with the area of specialization.
- v. Should have presented at least one paper/poster in International/ National/ Zonal/State conferences concerned with the area of specialization.(as per MCI norms).

or

At least one publication in a peer reviewed journal or at least two research papers or original works should be submitted for publication in peer reviewed journals (as per MCI norms).

- vi. The prescribed form (annexure 3) for each candidate should be filled up by concerned department and sent to KUHS for issuing hall ticket for the candidate to appear for the examination. If the candidate fails to meet the criteria, he will not be permitted to appear for the examination.

#### 3.2 Schedule of Regular/Supplementary exams

Generally there shall be two University examinations in a year, one regular and one supplementary examinations with a usual gap of six months.

### 3.3 Scheme of examination showing maximum marks and minimum marks

There shall be theory, practical examination including viva voce at the end of the three year course. Theory examination shall consist of four papers (3 hours duration) including one on recent advances and each paper will carry a maximum of 100 marks. Each question paper shall consist of one essay question of 20 marks and 8 short essays of 10 marks each. There shall be a multiple evaluation of theory papers by two internal examiners and two external examiners and the average mark for each paper is taken as the final marks.

Sl.No.	Subject	Theory		Theory Group		Practical				Practical Group		Total	
		University				University		Viva					
		Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
1	Paper I	100	-	400	200	300		100		400	200	800	400
2	Paper II	100	-										
3	Paper III	100	-										
4	Paper IV	100	-										

### 3.4 Papers in each year

Not applicable.

### 3.5 Details of theory exams

As per clause 3.3

Paper I – Basic Sciences

Paper II – Clinical Nephrology

Paper III – Clinical Nephrology , dialysis and transplantation

Paper IV – Recent Advances in Nephrology

### 3.6 Model question paper for each subject with question paper pattern

QP Code:

Reg.No.:.....

**D.M. (Nephrology) Degree Examinations**

**(Model Question Paper)**

**Paper I – Basic Sciences**

**Time: 3 hrs Max marks:100**

- Answer all questions
- Draw diagrams wherever necessary

**Essays: (20)**

1. Discuss magnesium handling and associated tubular disorders of the kidney

**Short essays: (8x10=80)**

2. Cerebral salt wasting
3. Stewart approach in metabolic acidosis
4. Pathogenesis of ANCA vasculitis
5. TTKG
6. Glomerular basement membrane
7. Pathogenesis of diabetic nephropathy
8. Klotho
9. Prehypertension

\*\*\*\*\*



QP Code:

Reg.No.:...

**D.M. (Nephrology) Degree Examinations**

**(Model Question Paper)**

**Paper II – Clinical Nephrology**

**Time: 3 hrs Max marks:100**

- Answer all questions
- Draw diagrams wherever necessary

**Essays: (20)**

1. Discuss pathogenesis of preclampsia

**Short essays: (8x10=80)**

2. Rituximab in renal disease
3. Hemoperfusion
4. Adequacy of hemodialysis
5. Cast nephropathy
6. Congenital nephrotic syndrome
7. HIVAN
8. Defence mechanisms in UTI
9. Sclerosing peritonitis

\*\*\*\*\*

QP Code:

Reg.No.:....

**D.M. (Nephrology) Degree Examinations**

**(Model Question Paper)**

**Paper III – Clinical Nephrology, dialysis and transplantation**

**Time: 3 hrs Max marks:100**

- Answer all questions
- Draw diagrams wherever necessary

**Essays: (20)**

1. Discuss renal replacement therapy in acute kidney injury

**Short essays: (8x10=80)**

2. CMV prophylaxis in renal transplantation
3. Potassium profiling in hemodialysis
4. Investigations in renal artery stenosis
5. Plasmapheresis in renal disease
6. Primary hyperoxaluria
7. Outcome of deceased donor transplant
8. Pathogenesis of membranous nephropathy
9. ABO incompatatble kidney transplantation

\*\*\*\*\*

QP Code:

Reg.No:

**D.M. (Nephrology) Degree Examinations**

**(Model Question Paper)**

**Paper IV – Recent Advances in Nephrology**

**Time: 3 hrs Max marks:100**

- Answer all questions
- Draw diagrams wherever necessary

**Essays: (20)**

1. Discuss the protocol of desensitisation in renal transplantation

**Short essays: (8x10=80)**

2. New anti virus drugs for treatment of HCV infection in CKD patients
3. Multi targeted therapy for Resistant Lupus Nephritis
4. Constimulatory blockade
5. Diagnosis of BK virus infection
6. NODAT
7. Memory T cells in Kidney Transplantation
8. Steroid free immunosuppression
9. Lymphocoele in renal transplant

\*\*\*\*\*

**3.7 Internal assessment component**

Not applicable.

**3.8 Details of practical/clinical practicum exams**

***Practical examination shall consist of clinical practicals and viva voce.  
(Marks: clinical practicals 240 + Viva voce 60 = Total 300 marks):***

- i. 1 long case – 100
- ii. 2 short cases – (80 marks each) 160marks
- iii. Ward rounds – 40 marks
- iv. Viva voce – **80 marks** (consisting of a+b+c as mentioned below)

- a. Table Viva 40 marks
- b. Publication in indexed journal : 10 marks
- c. Paper presentation in National or International conference in the form of abstract published in the conference proceedings: 5 marks
- d. Log book : = 20 marks.
- Total =100 marks (Viva voce 80 marks and Log book 20 marks)

### **Total Marks Practicals examination – 400**

Long case discussion may take a maximum of 1 hr, short cases (total cases 2) - maximum 1 hr, ward rounds – maximum 30 minutes and Viva voce maximum of 1 hr. Maximum number of candidates that can be examined per day may be restricted to 3.

### **3.9 Number of examiners needed (Internal & External) and their qualifications**

#### ***Examiners***

1. All Examiners shall be a recognised super speciality teacher as per MCI norms. There shall be two internal examiners (from affiliated colleges of KUHS) and two external examiners (exclusively from outside the state). In departments where there are more than 2 professors, the head of the department preferably be a constant member of the board of examiners, and the other professors shall be posted as internal examiners on rotation basis.
2. Under exceptional circumstances, examinations may be held with 3 (three) examiners provided at least two of them is an external examiner subject to the ratification of the pass board.
3. In the event of there being more than one centre in one city, the external examiners at all the centres in that city shall be the same. Where there is more than one centre of examination, the University shall appoint a Co-ordinator/Convenor to coordinate the examination on its behalf.

### **3.10 Details of Viva**

Viva voce	:80 Marks
<b>Log book</b>	<b>:20 Marks</b>
<b>Total</b>	<b>:100 Marks</b>

#### **4. INTERNSHIP**

Not applicable for Medical Superspeciality degree courses.

#### **5. ANNEXURES**

##### **5.1 Check Lists for Monitoring: Log Book, Seminar Assessment etc.**

**DM NEPHROLOGY PROGRAM**

**(KERALA UNIVERSITY OF HEALTH SCIENCES)**

**RECORD OF TRAININGS**

**LOG BOOK**

**DEPARTMENT OF NEPHROLOGY**

**NAME OF INSTITUTION.....**

**LOG BOOK**

**OF**

**.....**

**SENIOR RESIDENT**

**20....- 20.....**

### CERTIFICATE

This is to certify that this record of Dr..... during his DM Nephrology training from .....20....to .....20...., has personally been verified by me.

This work record includes the details of the procedures diagnostic and therapeutic, Renal biopsies and abdominal ultrasonograms either done, assisted or observed by him. It also includes the details of the academic activities like Seminars, Journals and Case presentations done by him.

Professor and Head

Dept. of Nephrology

photo

**Certified that this is the true likeness of**

**Dr.....**

**Signature of the Head of the Department**

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## CURRICULUM VITAE

Name of the candidate :

Age & Date of birth :

Sex :

Address :

Email :

Nationality :

Educational Qualifications :

Date of joining of the

present course :

Signature of the candidate :

Date:

Signature of Head of the Department



## **CONTENTS**

### **I. ANNEXURE I – CHECK LIST**

1. Evaluation of clinical work
2. Evaluation of clinical case presentation
3. Evaluation of seminar presentation
4. Evaluation of journal review presentations
5. Evaluation of teaching skill
6. Evaluation of dissertation presentation
7. Continuous evaluation of dissertation work
8. Overall assessment sheet

### **II. ANNEXURE II**

1. Seminars
2. Journals
3. Case Presentations
4. Miscellaneous

### **III. ANNEXURE III**

#### **DIAGNOSTIC AND THERAPEUTIC PROCEDURES PERFORMED/OBSERVED**

1. Insertion of temporary hemodialysis catheters
2. Insertion of Permanent cuffed catheters
3. Percutaneous native kidney biopsy
4. Percutaneous graft kidney biopsy
5. Perfusion of donor kidney
6. Percutaneous CAPD catheter insertion

### **IV. ANNEXURE IV - PAPERS PRESENTED**

### **V . ANNEXURE V – CONFERENCE ATTENDED**

### **VI . PUBLICATIONS IN INDEXED JOURNALS**

## ANNEXURE - 1

### 1 - EVALUATION OF CLINICAL WORK - 1st year

Name of the Trainee:

Date:

Name of the Faculty:

Sl.No.	Items for observation during evaluation	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Regularity of attendance					
2.	Punctuality					
3.	Interaction with colleagues and supportive staff					
4.	Maintenance of case records					
5.	Presentation of cases					
6.	Investigations work -up					
7.	Bed - side manners					
8.	Rapport with patients					
9.	Counseling patients relatives for interventional procedures					
10.	Overall quality of clinical work					
	Total score					

# 1 - EVALUATION OF CLINICAL WORK - IInd year

Name of the Trainee:

Date:

Name of the Faculty:

Sl.No.	Items for observation during evaluation	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Regularity of attendance					
2.	Punctuality					
3.	Interaction with colleagues and supportive staff					
4.	Maintenance of case records					
5.	Presentation of cases					
6.	Investigations work -up					
7.	Bed - side manners					
8.	Rapport with patients					
9.	Counseling patients relatives for interventional procedures					
10.	Overall quality of clinical work					
	Total score					

# 1 - EVALUATION OF CLINICAL WORK - IIIrd year

Name of the Trainee:

Date:

Name of the Faculty:

Sl.No.	Items for observation during evaluation	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Regularity of attendance					
2.	Punctuality					
3.	Interaction with colleagues and supportive staff					
4.	Maintenance of case records					
5.	Presentation of cases					
6.	Investigations work -up					
7.	Bed - side manners					
8.	Rapport with patients					
9.	Counseling patients relatives for interventional procedures					
10.	Overall quality of clinical work					
	Total score					

## 2 EVALUATION OF CLINICAL CASE PRESENTATION – Ist year

Name of the Trainee:

Date:

Name of the faculty:

Sl.No	Items for observation during presentation	Poor	Below Average	Average	Good	Very Good
		0	1	2	3	4
1.	Completeness of history					
2.	Whether all relevant points elicited					
3.	Clarity of presentation					
4.	Logical order					
5.	Mentioned all positive and negative points of importance					
6.	Accuracy of general physical examination					
7.	Whether all physical signs elicited correctly					
8.	Diagnosis: whether it follows logically					
9.	Investigations required In Relevant order					
10	Interpretation of Investigations					
11	Ability to discuss differential diagnosis.					
12	Discussion on management					
	Grand Total					

## 2 EVALUATION OF CLINICAL CASE PRESENTATION –IIInd year

Name of the Trainee:

Date:

Name of the faculty:

Sl.No	Items for observation during presentation	Poor	Below Average	Average	Good	Very Good
		0	1	2	3	4
1.	Completeness of history					
2.	Whether all relevant points elicited					
3.	Clarity of presentation					
4.	Logical order					
5.	Mentioned all positive and negative points of importance					
6.	Accuracy of general physical examination					
7.	Whether all physical signs elicited correctly					
8.	Diagnosis: whether it follows logically					
9.	Investigations required					
	In Relevant order					
10	Interpretation of Investigations					
11	Ability to discuss differential diagnosis.					
12	Discussion on management					
	Grand Total					

## 2 EVALUATION OF CLINICAL CASE PRESENTATION – IIIrd year

Name of the Trainee:

Date:

Name of the faculty:

Sl.No	Items for observation during presentation	Poor	Below Average	Average	Good	Very Good
		0	1	2	3	4
1.	Completeness of history					
2.	Whether all relevant points elicited					
3.	Clarity of presentation					
4.	Logical order					
5.	Mentioned all positive and negative points of importance					
6.	Accuracy of general physical examination					
7.	Whether all physical signs elicited correctly					
8.	Diagnosis: whether it follows logically					
9.	Investigations required In Relevant order					
10	Interpretation of Investigations					
11	Ability to discuss differential diagnosis.					
12	Discussion on management					
	Grand Total					

### 3 - EVALUATION OF SEMINAR PRESENTATION –1st year

Name of the Trainee:

Date:

Name of the Faculty:

Sl n	Items for observation during presentation	Poor	Below Average	Average	Good	Very Good
		0	1	2	3	4
1	<b>Whether other relevant publications consulted</b>					
2	<b>Whether cross - references have been consulted</b>					
3	<b>Completeness of Preparation</b>					
4	<b>Clarity of Presentation</b>					
5	<b>Understanding of subject</b>					
6	<b>Ability to answer the questions</b>					
7	<b>Time scheduling</b>					
8	<b>Appropriate use of Audio - Visual aids</b>					
9	<b>Overall performance</b>					
10	<b>Any other observation</b>					
	<b>Total score</b>					



### 3 - EVALUATION OF SEMINAR PRESENTATION – IIInd year

Name of the Trainee:

Date:

Name of the Faculty:

Sl n	Items for observation during presentation	Poor	Below Average	Average	Good	Very Good
		0	1	2	3	4
1	<b>Whether other relevant publications consulted</b>					
2	<b>Whether cross - references have been consulted</b>					
3	<b>Completeness of Preparation</b>					
4	<b>Clarity of Presentation</b>					
5	<b>Understanding of subject</b>					
6	<b>Ability to answer the questions</b>					
7	<b>Time scheduling</b>					
8	<b>Appropriate use of Audio - Visual aids</b>					
9	<b>Overall performance</b>					
10	<b>Any other observation</b>					
	<b>Total score</b>					

## EVALUATION OF SEMINAR PRESENTATION – IIIrd year

Name of the Trainee:

Date:

Name of the Faculty:

Sl n	Items for observation during presentation	Poor	Below Average	Average	Good	Very Good
		0	1	2	3	4
1	<b>Whether other relevant publications consulted</b>					
2	<b>Whether cross - references have been consulted</b>					
3	<b>Completeness of Preparation</b>					
4	<b>Clarity of Presentation</b>					
5	<b>Understanding of subject</b>					
6	<b>Ability to answer the questions</b>					
7	<b>Time scheduling</b>					
8	<b>Appropriate use of Audio - Visual aids</b>					
9	<b>Overall performance</b>					
10	<b>Any other observation</b>					
	<b>Total score</b>					

## ANNEXURE - 4

### 4 - EVALUATION OF JOURNAL REVIEW PRESENTATIONS – Ist year

**Name of the Trainee:**

**Date:**

**Name of the Faculty:**

Sl. No	Items for observation during presentation	Poor	Below Average	Average	Good	Very Good
		0	1	2	3	4
1.	Article chosen					
2.	Extent of understanding of scope & objectives of the paper by the candidate					
3.	Whether cross-references have been consulted					
4.	Whether other relevant publications consulted					
5.	Ability to respond to questions on the paper/ subject					
6.	Audio - Visual aids used					
7.	Ability to discuss the paper					
8.	Clarity of presentation					
9.	Any other observation					
	Total Score					

#### 4 - EVALUATION OF JOURNAL REVIEW PRESENTATIONS – IIInd year

**Name of the Trainee:**

**Date:**

**Name of the Faculty:**

Sl. No	Items for observation during presentation	Poor	Below Average	Average	Good	Very Good
		0	1	2	3	4
1.	Article chosen					
2.	Extent of understanding of scope & objectives of the paper by the candidate					
3.	Whether cross-references have been consulted					
4.	Whether other relevant publications consulted					
5.	Ability to respond to questions on the paper/ subject					
6.	Audio - Visual aids used					
7.	Ability to discuss the paper					
8.	Clarity of presentation					
9.	Any other observation					
	Total Score					

#### 4 - EVALUATION OF JOURNAL REVIEW PRESENTATIONS – IIIrd year

**Name of the Trainee:**

**Date:**

**Name of the Faculty:**

Sl. No	Items for observation during presentation	Poor	Below Average	Average	Good	Very Good
		0	1	2	3	4
1.	Article chosen					
2.	Extent of understanding of scope & objectives of the paper by the candidate					
3.	Whether cross-references have been consulted					
4.	Whether other relevant publications consulted					
5.	Ability to respond to questions on the paper/ subject					
6.	Audio - Visual aids used					
7.	Ability to discuss the paper					
8.	Clarity of presentation					
9.	Any other observation					
	Total Score					

## 5 - EVALUATION OF TEACHING SKILL

Name of the Trainee:

Date:

Name of the faculty:

Sl. No.	Items for observation	Strong Points	Weak Points
1.	<i>Communication of the purpose of the talk</i>		
2.	<i>Evokes audience interest in the subject</i>		
3.	<i>The introduction</i>		
4.	<i>The sequence of ideas</i>		
5.	<i>The use of practical examples and / or illustrations</i>		
6.	<i>Speaking style (enjoyable, monotonous, etc. Specify)</i>		
7.	<i>Attempts audience participation</i>		
8.	<i>Summary of the main points at the end</i>		
9.	<i>Ask questions</i>		
10.	<i>Answer questions asked by the audience</i>		
11.	<i>Rapport of speaker with his audience</i>		
12.	<i>Effectiveness of the talk</i>		
13.	<i>Uses AV aids appropriately</i>		

## ANNEXURE - 6

### 6 - EVALUATION OF DISSERTATION PRESENTATION

Name of the Trainee:

Date:

Name of the faculty / Observer:

Sl.No	Points to be considered	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Interest shown in selecting topic					
2.	Appropriate review					
3.	Discussion with guide and other faculty					
4.	Quality of protocol					
5.	Preparation of Proforma					
	<b>Total Score</b>					

## 7- CONTINUOUS EVALUATION OF DISSERTATION WORK

Name of the Trainee:

Date

Name of the Faculty:

Sl. No.	Items for observation during presentation	Poor	Below Average	Average	Good	Very Good
		0	1	2	3	4
1.	Periodic consultation with guide / co- guide					
2.	Regular collection of case material					
3.	Depth of Analysis / Discussion					
4.	Department presentation of findings					
5.	Quality of final output					
6.	Others					
	<b>Total score</b>					



## 8- OVERALL ASSESSMENT SHEET

Name of the College:

Date:

<b>Check list no</b>	<b>Particulars</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>1</b>	<b><i>Clinical work</i></b>					
<b>2</b>	<b><i>Clinical presentation</i></b>					
<b>3</b>	<b><i>Seminars</i></b>					
<b>4</b>	<b><i>Journal review</i></b>					
<b>5</b>	<b><i>Teaching skill</i></b>					
<b>6</b>	<b><i>Dissertation work</i></b>					
	<b><i>TOTAL</i></b>					

0- Poor 1- Below average 2- Average 3- Good 4- Very good

Signature of HOD

Signature of Principal

## ANNEXURE –II

### SEMINARS PRESENTED

Name: \_\_\_\_\_  
Admission Year: \_\_\_\_\_ College: \_\_\_\_\_

Date	Topic	Signature of the Faculty

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## ANNEXURE -II

### 2. JOURNALS PRESENTED

Date	Topic	Signature of the faculty



## ANNEXURE -II

### 3. CASE PRESENTATION

<i>Date</i>	<i>Case</i>	<i>Signature of the faculty</i>

## ANNEXURE –II

### 4. MISCELLANEOUS

## ANNEXURE –III

### 1. INSERTION OF TEMPORARY HEMODIALYSIS CATHETERS

Sl.No	Date	Name	Age	IP/OP No	Indiac tion	Dia gno sis	Ac ce ss

सर्व भयन्तु मुग्धानः



# ANNEXURE –III

## 2. INSERTION OF PERMENENT CUFFED CATHETERS

Sl.No	Date	Name	Age	IP/OP No	Indiacati on	Diagno sis	Acces s



# ANNEXURE –III

## 3. PERCUTANEOUS CAPD CATHETER INSERTION

Sl.No	Date	Name	Age	IP/OP No	Indiacati on	Diagno sis	Acces s

#### 4. PERCUTANEOUS NATIVE KIDNEY BIOPSY



ANNEXURE –III

5. PERCUTANEOUS GRAFT KIDNEY BIOPSY

Sl.No	Date	Name	Age	IP/OP No	Diagnosis	LM	IF

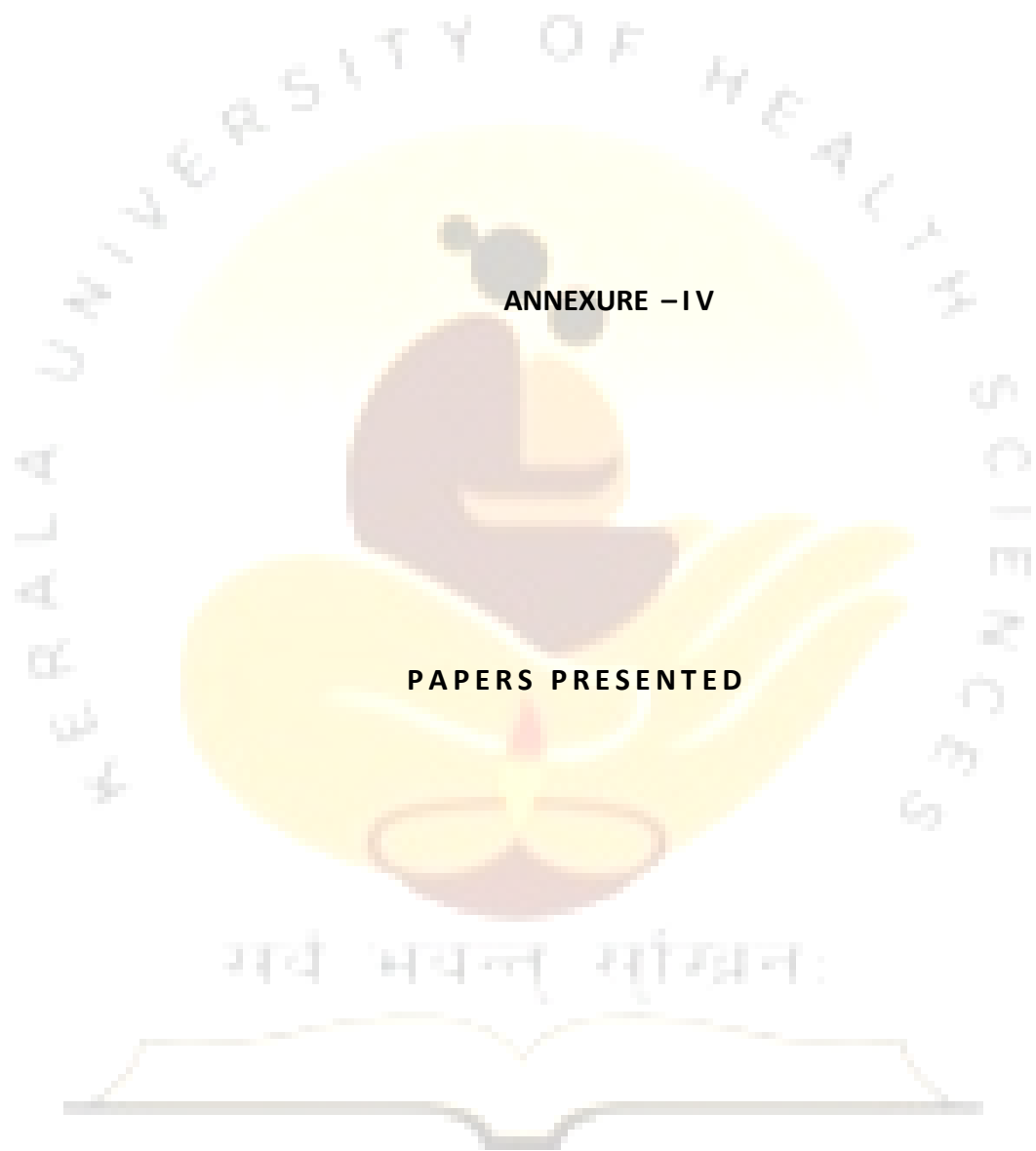
सर्वे भयन्तु मुग्धानः



## ANNEXURE – III

## 6. PERFUSION OF DONOR KIDNEY

[illegible]



**ANNEXURE –IV**

**PAPERS PRESENTED**

**1.NEPHROLOGY ASSOCIATION OF KERALA ANNUAL MEETING**



**2.INDIAN SOCIETY OF NEPHROLOGY – SOUTHERN CHAPTER – ANNUAL MEETING**



**3.INDIAN SOCIETY OF NEPHROLOGY ANNUAL MEETING**



**4.INDIAN SOCIETY OF PERITONEAL DIALYSIS ANNUAL MEETING**



**5.INDIAN SOCIETY OF ORGAN TRANSPLANTATION MEETING**





ANNEXURE –V

CONFERENCES ATTENDED



ANNEXURE –VI

PUBLICATIONS IN INDEXED JOURNALS



### **FINAL EXAMINATION ELIGIBILITY FORM**

(To be filled up the candidate)

Name of the candidate :

Date of Joining :

Identification number / Registration number of University :

Course & Institution :

Eligibility criteria:

Sl No	Parameter	Details	Proof enclosure
1.	Attendance	1 <sup>st</sup> year (minimum 80%) 2 <sup>nd</sup> year(minimum 80%) 3 <sup>rd</sup> year(minimum 80%)	
2.	Thesis	Approved/Not Approved by the University	
3.	Log book	Successfully completed and submitted	
5.	Conferences attended	Number and category : Number of presentations:	
6.	Publications	Number published: Number submitted:	

All the informations provided above are true to the best of my knowledge and if found contrary, I am clearly aware that strict disciplinary actions will be initiated including debarring from examination.

Date

Signature of the candidate :

Place

Name of the candidate :

Countersigned by HOD:

**APPROVAL OF HEAD OF THE DEPARTMENT**

I, Dr....., herewith approve that the above candidate is eligible to appear for the final examination as per the documentary evidences provided and best of the knowledge and documents of the department.

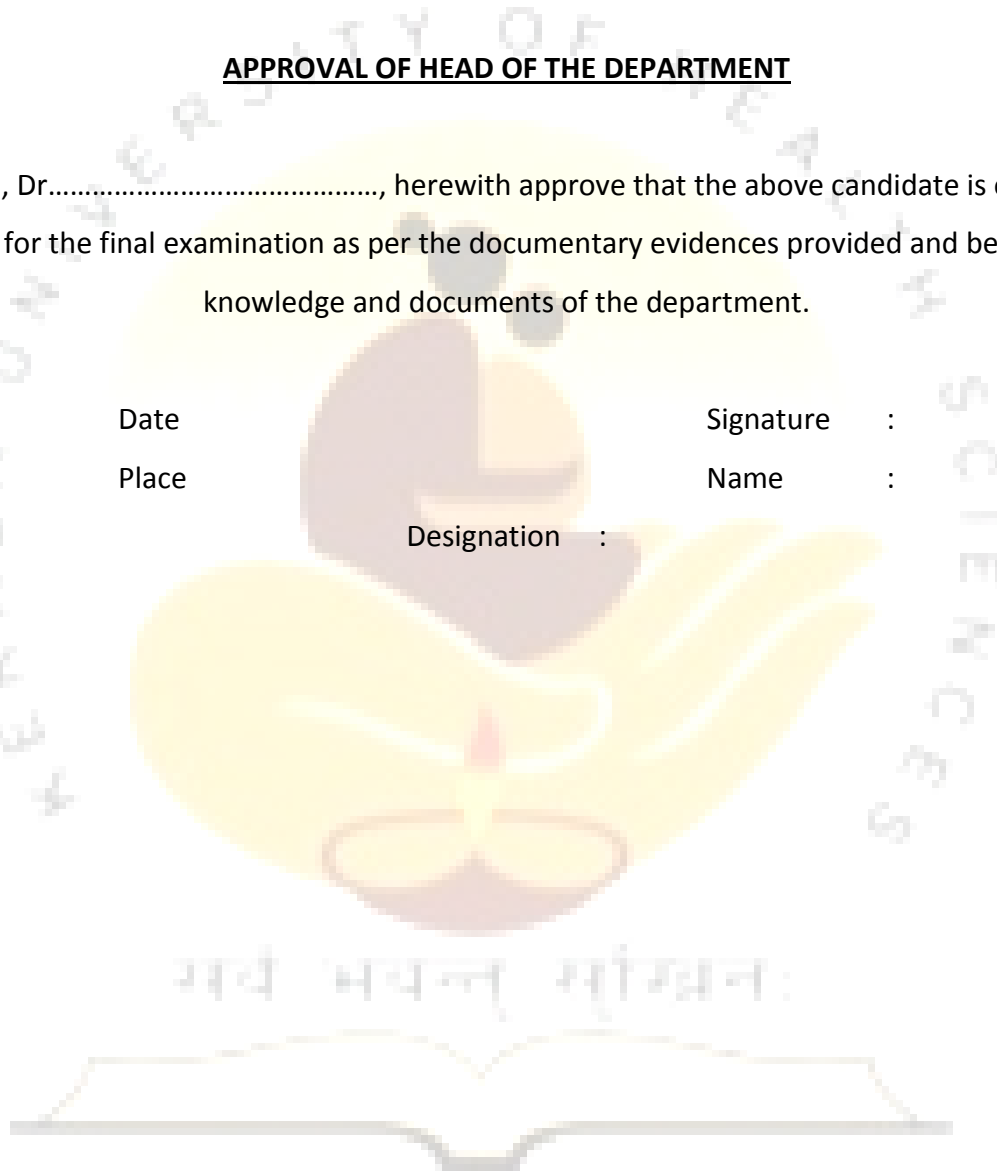
Date

Signature :

Place

Name :

Designation :



## **SYLLABUS**

**For Courses affiliated to the**

**Kerala University of Health Sciences**

**Thrissur 680596**



**SUPER SPECIALITY COURSE IN MEDICINE**

**DM Medical Oncology**

**Course Code 239**

**(2016-17 Academic year onwards)**

**2016**

## 2. COURSE CONTENT

### 2.1 Title of course:

DM Medical Oncology

### 2.2 Objectives of course

#### GOAL

Provide specialized training in medical Oncology, including Hospital based oncology practice, Community Oncology development and Community intervention Strategies.

Instill the concept of wholesome management of a cancer patient.

Instill team spirit by involving the radiation oncologist, surgical oncologist, Nuclear medicine & allied imaging departments, palliative care specialists & pathologists as team players in all patients and other departments as & when necessary.

#### OBJECTIVES

At the end of the training program the candidate should have: -

- 1) Basic Scientific Principles – The trainee should have clear concepts regarding the basic principles of Biology of normal cells, basic processes of carcinogenesis, gene structure, expression and regulation, cell cycle and interaction with therapy, tumor cell kinetics, tumor cell proliferation, tumor immunology and molecular techniques.
- 2) Basic Principles in the Management and Treatment of Malignant Diseases – The trainee at the end of training program, should be thorough with the basic principles of malignant disease management including clear understanding of pathologic techniques, serum markers, cell membrane and DNA markers, TNM staging systems, Indications for clinical, radiographic and nuclear medicine procedures, response assessment.
- 3) Management and Treatment of Individual Cancers and their associated complications – After completion of the training program the trainee should be well versed with the management of all human cancers, chiefly Head and neck, Lung, Gastrointestinal, genitourinary, gynecological, breast, mesenchymal, skin, endocrine, neurological and hematological malignancies. He also needs to be competent in managing pediatric oncology patients.

- 4) Psychosocial Aspects of Cancer – The trainee should become skillful in handling cultural issues, spiritual conflicts, adaptive behavior, coping mechanisms, communication.
- 5) Patient Education – The trainee should learn to consciously involve in educating the patients in matters of genetic counseling (screening and assessment of risk), health maintenance (Diet, smoking, alcohol consumption), long term complications, risk of treatment induced cancer, endocrine dysfunctions.
- 6) Bioethics, Legal, and Economic Issues – The trainee should be fully proficient in dealing with issues of taking informed consent for research activities, ethical conduct of medical research, legal issues (Life support and its withdrawal), cost efficiency and professional attitude.
- 7) Skills – During the training period the trainee should imbibe and develop the skills of anticancer agent administration (Prescribing, administering, Handling and disposal of chemotherapeutic and biologic agents), clinical procedures (bone marrow aspiration, biopsy, lumbar punctures, abdominal and thoracic paracentesis), ommaya reservoir management. He should be capable of treating pain & other symptoms associated with advanced malignancies.
- 8) Community responsibilities – He should be well versed with community aspects of cancer screening including cancer registry and other aspects of preventive oncology. He should become competent to plan and implement community intervention strategies and should be well trained to link up with the existing health care system and be able to address screening, early detection and health awareness issues.
- 9) Constant development – He should be aware of the recent developments in the field of Medical Oncology, chemotherapeutics, preventive oncology, molecular biology.

### **2.3 Medium of instruction:**

The medium of instruction for the course shall be English.

### **2.4 Course outline**

Present in clause “Content of each subject in each year “ of the curriculum.

## **2.5 Duration**

Every candidate seeking admission to the training programme to qualify for the degree of D.M in the subjects shall pursue a regular course as a full time student, in the concerned Department under the guidance of a recognized super speciality teacher for a period of three years. The course commences from 1<sup>st</sup> August in each year.

## **2.6 Syllabus**

Present in clause “Content of each subject in each year “ of the curriculum.

## **2.7 Total number of hours**

Present in clause 2.9 of the curriculum.

## **2.8 Branches if any with definition**

Present in clause “Content of each subject in each year “ of the curriculum.

## **2.9 Teaching learning methods**

### **TRAINING PROGRAM**

The training program will aim to give the candidate a sound training of cardiac diagnosis and management. During the period of training they shall take part in all the activities of the department including ward rounds, lectures, seminars, teaching assignments, laboratory studies, surgical session and other duties assigned to them by the Head of the Department.

All candidates shall work as full time residents during the period of training.

The training program shall be updated as and when required. The training shall include:-

- a) Active involvement in the diagnosis and management of patients both in the outpatient, coronary care unit and the wards.
- b) Participation in lectures, seminars, journal clubs, clinical group discussions etc.
- c) Exposure to basic and advanced diagnostic, therapeutic and laboratory techniques.
- d) Exposure to biomedical statistics as applicable to basic research methodology
- e Post graduate students shall maintain log books of the work carried out by them. The log books shall be checked and assessed every 6 months by the faculty members, with a view to assure the progress the candidate has made and spot the inadequacies if any.



### Out station training

Outstation training may be given if required. It should not exceed 2 months, the duration, center etc: - will be at the discretion of the Head of the department.

### Teaching

All D.M students should take part in the teaching of the post graduate degree students of related subjects, undergraduate medical students and paramedical students and allied health science students posted in the department by rotation.

### SKILLS

As a part of 'Hands on training', the following are the minimum stipulated requirements to be fulfilled by the candidate at the end of three-year training period in Medical Oncology. The candidate will maintain a logbook and take signatures of the concerned consultant involved in each case.

<b>Region</b>	<b>Level</b>	<b>No of Cases</b>	<b>Treatment</b>
Head and Neck	Supervised	20	Multidisciplinary Management of head and neck cancers
	Independently	30	
Breast	Supervised	30	Chemotherapy protocols
	Independently	50	
GI Cancers	Supervised	20	Chemotherapyfor major GI malignancies  Like Ca stomach, Ca pancreas, Colorectal and hepatobiliary cancer
	Independently	30	
Gynecology Cancer	Supervised	10	Chemotherapy for gynaecological tumors
	Independently	30	

Skin and Sarcomas	Supervised	10	Chemotherapy protocols
	Independently	25	
Hematological	Supervised and independently (AML/ALL/ Lymphomas)		
Germ Cell tumors			
Radiotherapy	Should have assisted in planning and treatment execution of at least 5 malignancies of different sites including at least one brachytherapy plan		

### **METHODS OF TRAINING**

The candidate would spend the 3 years with the following structured rotations

Number of months	Department
24 months	Medical Oncology
2 months	Radiation Oncology and Nuclear Medicine
2 months	Molecular Biology and Basic Science Lab
1 month	Pain and Palliative Care
2 months	Pediatric Oncology
1 month	Radiology
2 months	Bone Marrow Transplantation
2 months	Rotation to another Cancer Institute

### **2.10 Content of each subject in each year**

#### **Basic Science**

Lectures on basic science as relevant to oncology.

1. Essential of Molecular Biology: Principles, Genomics and cancer, signal transduction ,Immunology , Cytogenetics , cell Cycle , Apoptosis , Invasion and metastases,angiogenesis and Carcinogenesis:Genetics, viral , physical and chemical. Genomics and Proteomics , Destabilization of the Cancer, telomeres , Telomerase , and cell Immortalization , Cancer Stem Cells.
2. Epidemiology –epidemiological methods, descriptive and analytical epidemiology.

3. Principles of Cancer management; Surgical Oncology , Medical Oncology , Radiation Oncology and Biologic Therapy.
4. Cancer Therapy.
5. Pharmacology of Cancer Biotherapeutics –Interferon Interleukin , Hormonal Therapy, Differentiating agents, monoclonal antibodies, antiangiogenic factors.
6. Clinical Trials.
7. Cancer Prevention , Tobacco related cancers, diet , chemo prevention.
8. Cancer screening.
9. Cancer Diagnosis- Molecular pathology and Cytology , Imaging , Endoscopy.Laparoscopy.
10. Specialized techniques-vascular access, isolated perfusion , and Intensity Modulated Radiation therapy.
11. System Oncology:
  - i. Head and neck Cancer
  - ii. Lung Cancer
  - iii. Mediastinal neoplasm
  - iv. Gastrointestinal tract cancer
  - v. Cancers of Genitourinary system
  - vi. Gynecologic cancer
  - vii. Breast cancer
  - viii. Endocrine malignancies
  - ix. Musculoskeletal tumours
  - x. Sacomas of the Soft Tissue
  - xi. Mesothelioma
  - xii. Cancer of the skin
  - xiii. Malignant Melanoma
  - xiv. Central nervous system
  - xv. Pediatric malignancies
  - xvi. Lymphomas and Leukemia's

12. Paraneoplastics syndromes
13. Cancer of the Unknown primary
14. Peritoneal carcinomatosis
15. Cancer in immunosuppressed host.
16. Oncological emergencies – SVC syndrome, spinal cord compression , metabolic emergencies, urology emergencies.
17. Treatment of metastatic cancer-brain,lung,bone,liver,malignant Effusions and ascites.
18. Haemopoietic therapy –transfusion , grown factors, autologous and Allogenic stem cell transplantation.
19. Infection in the cancer patient.
20. Supportive care and quality of life-pain management , nutrition support , sexual problems , genetic counselling,psychological issues, community resources, care of the terminally ill patient.
21. Adverse effects of treatment-nausea and vomiting . Oral complications, pulmonary toxicity , cardiac toxicity , hair loss,gonadal dysfunction, recurrence, miscellaneous toxicity.
22. Rehabilitation of cancer patients.
23. Oncology nursing including various access routes.
24. Ethical Issues in Oncology.
25. Societal Issues in Oncology.
26. Information system in Oncology.
27. Alternative method in Cancer treatments.
28. New approaches in Cancer treatment- Gene therapy , Molecular therapy , Cancer vaccines, image guided surgery , heavy particles in Radiation therapy, Focused Ultrasound, RNA Inhibition, Charged Particle Therapy,Robotic Surgery, Nanotechnology.
29. Reconstructive surgery.

### **2.11 No: of hours per subject**

Present in clause 2.9 of the curriculum.

### **2.12 Practical training given**

#### **Clinical Experience**

- Clinical work including chemotherapy , daily management . management of patient on chemotherapy and palliative care for advanced malignancy patient.
- Weekly multi-disciplinary seminar so as to cover the topics of malignancies of Head & Neck, gastrointestinal tract , Thorax , Bones & soft tissue sarcomas , Breast, Gynecologic oncology and other miscellaneous sites- over a 36 month period.
- Once a month journal club presentation.
- Attendance to at least 2 oncology conference and 2 oncology CME during the period of 3 years.
- Involvement in clinical trials.
- A research project(thesis)
- Teaching and learning activities like seminar, symposium, Guest lecturers etc.

#### **Diagnostic Skills**

He should carry out diagnostic procedures like bone marrow aspiration and biopsy, Lumbar Puncture, thoracocentesis etc.

#### **Chemotherapy treatment-aware of protocols and regimens.**

As mentioned in the table on skills.

**Internal assessment of the candidates:** This will be done on a continual basis by the faculty with respect to the overall objectives of the course, and specifically with respect to their treatment skills, time spent with patients in pre & post treatment assessments, planning Chemotherapy, seminars, journal club & tumour board presentations.

### **2.13 Records**

As per clause 2.21

#### **2.14 Dissertation: As per Dissertation Regulations of KUHS**

Thesis is an absolute requirement for D.M course and the candidate has to register the thesis synopsis in the University through proper channel within 6 months of admission. Thesis has to be submitted to the University for Evaluation at least 6 months prior to the conduct of final examination. Modifications and resubmission should be done before writing the examination. Even if the guide is transferred/ retired, the thesis has to be continued under his/her guidance or entrust to another guide in case the original person is not willing to continue. In extra ordinary situations change of guide and change of thesis topic is permissible with prior permission from the University. Only after accepting the thesis, the candidate will be eligible for writing the examination. In addition to this, the student has to present at least one paper/poster in a regional /national / international conference of the concerned speciality during his three year course or at least one publication in a peer reviewed journal. Research paper should be approved by the Institutional Review Board/ Institutional Ethical Committee.

#### **Evaluation of Thesis**

The thesis shall be evaluated by a minimum of three experts; one internal and two external experts, who shall not be the examiners for the Theory and Clinical examination of the concerned candidates and it may be accepted/ accepted with modifications/rejected. Only on the acceptance of the thesis by two experts out of three, the candidate shall be permitted to appear for the University examination. If the thesis is not accepted on evaluation by at least two experts, it shall be resubmitted with suggested modifications along with prescribed fees within the prescribed time stipulated by the University from time to time and it shall be re-evaluated by the same experts. If thesis is rejected by two experts, the candidate will lose first chance for appearing in the University examination and has to redo a fresh thesis for further evaluation.

#### **2.15 Speciality training if any**

Present in clause “Content of each subject in each year “ of the curriculum.

#### **2.16 Project work to be done if any**

As stipulated by the Head of Department.

### 2.17 Any other requirements [CME, Paper Publishing etc.]

- Should have attended minimum of two International/ National/ Zonal/State conferences or workshops concerned with the area of specialization.
- Should have presented at least one paper/poster in International/ National/ Zonal/State conferences concerned with the area of specialization.(as per MCI norms)

OR

- At least one publication in a peer reviewed journal or at least two research papers or original works should be submitted for publication in peer reviewed journals (as per MCI norms).

### 2.18 Prescribed/recommended textbooks for each subject

As prescribed by the Head of Department

### 2.19 Reference books

As prescribed by the Head of Department

### 2.20 Journals

Journal Title	Freq.	Publisher
Blood	weekly	American Society of Haematology
British Journal of Hematology	Biweekly	Wiley
Lymphoma and Leukemia	Monthly	Taylor and Francis
New England Journal of Medicine	Weekly	Massachusetts Medical University
Lancet	Weekly	Elsevier
Indian Journal of Medical and Pediatric Oncology	Quarterly	Medknow

The following is the list of journals for the proposed DM course in Medical Oncology.

S.No	Journal Title	Freq.	Publisher
1	Clinics of North America	Q	W.B Saunders
2	Journals of Clinical Oncology	BM	W.B Saunders



3	Lancet Oncology	M	Elsevier Science
4	Nature Clinical Practice Oncology	M	Nature
5	Indian Journal of Cancer	Q	Medknow Publishers
6	Gynecologic Oncology	M	Elsevier Science
7	Annals of Oncology	10/Yr	Elsevier Science
8	CA: a cancer journal for clinicians	BM	Lippincott Williams and Wilkins
9	Cancer Treatment Reviews	BM	W.B Saunders
10	Journal of Experimental & Clinical cancer Research	Q	Regina Elena Institute for Cancer Research(Italy)
11	Cancer Control	BM	Mosfitt Cancer Center and Research Institute
12	Cancer	30/yr	John Wiley & Sons
13	British Journal of Cancer	SM	Churchill Livingstone
14	Acta Oncologica	8/yr	Taylor and Francis
15	Current Problems in Cancer	BM	Elsevier Science
16	Current Opinion in Oncology	BM	Elsevier Science

#### Abbreviations used

W Weekly

M Monthly

SM Semi monthly

BM Bimonthly

Q Quarterly

I Indian

F Foreign

#### 2.21 Logbook

A log book is mandatory and has to be maintained by all students and this has to be reviewed by HOD / Unit Chief of the department regularly (at least quarterly). Minimum





number of each of the academic activities to be performed by the candidate should be outlined for each speciality. Model check list for journal review/seminars/topic presentation/ teaching skill etc: - is shown in the appendix. Periodic formative assessment has also to be done in the department by the super speciality teachers. Log book will be evaluated during the University examination by all the four examiners with a maximum total mark of 20 in the viva component (*Check Lists appended*)

Maintenance of a logbook of cases worked up, assisted , done, administered , Chemotherapy and palliative care cases.

### **3.EXAMINATIONS**

#### **3.1 Eligibility to appear for exams**

The examinations shall be organised on the basis of marking system to evaluate and certify candidate's level of knowledge, skill and competence at the end of the training.

A candidate should appear for all the theory examinations and obtaining a minimum aggregate of 50% marks in theory part and practical part (Practical & Viva) separately shall be mandatory for passing the whole examination.

#### *ELIGIBILITY FOR APPEARING IN FINAL EXAMINATION*

- i. A minimum of 80% attendance during each year of the course separately.
- ii. Successful Submission of completed Logbook.
- iii. Submission of Dissertation and its approval by the University.
- iv. Should have attended minimum of two International/ National/ Zonal/State conferences or workshops concerned with the area of specialization.
- v. Should have presented at least one paper/poster in International/ National/ Zonal/State conferences concerned with the area of specialization.(as per MCI norms).

or

At least one publication in a peer reviewed journal or at least two research papers or original works should be submitted for publication in peer reviewed journals (as per MCI norms).

vi. The prescribed form (annexure 3) for each candidate should be filled up by concerned department and sent to KUHS for issuing hall ticket for the candidate to appear for the examination. If the candidate fails to meet the criteria, he will not be permitted to appear for the examination.

### 3.2 Schedule of Regular/Supplementary exams

Generally there shall be two university examinations in a year, one regular and one supplementary examinations with a usual gap of six months.

### 3.3 Scheme of examination showing maximum marks and minimum marks

There shall be theory, practical examination including viva voce at the end of the three year course. Theory examination shall consist of four papers (3 hours duration) including one on recent advances and each paper will carry a maximum of 100 marks. Each question paper shall consist of one essay question of 20 marks and 8 short essays of 10 marks each. There shall be a multiple evaluation of theory papers by two internal examiners and two external examiners and the average mark for each paper is taken as the final marks.

Sl.No.	Subject	Theory		Theory Group		Practical				Practical Group		Total	
		University				University		Viva					
		Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
1	Paper I	100	-	400	200	300		100		400	200	800	400
2	Paper II	100	-										
3	Paper III	100	-										
4	Paper IV	100	-										

### 3.4 Papers in each year

Not applicable



### 3.5 Details of theory exams

As per clause 3.3

Paper 1: Basic science as applied to Medical Oncology.

Paper 2: Medical Oncology – I (Breast, Gynaecology, Genito-urinary, GI and Pediatric malignancies)

Paper 3: Medical Oncology – II (Head & Neck, Thorax, skin, soft tissue & bone, lymphomas and miscellaneous)

Paper 4: Recent advances in oncology and palliative care

### 3.6 Model question paper for each subject with question paper pattern

QP Code:

Reg.No.:.....

**D.M. (Medical Oncology) Degree Examinations  
(Model Question Paper)**

**Paper I – Basic Science in Medical Oncology**

Time: 3 hrs

Max marks:100

- Answer all questions
- Draw diagrams wherever necessary

Essays:

(20)

1. Describe cancer cell kinetics and principles of chemotherapy in detail

Short essays:

(8x10=80)

2. Molecular events in apoptosis.
3. Hereditary cancers
4. Meta analysis
5. Polymerase chain reaction
6. Growth factors
7. Pulmonary toxicity due to anti cancer agents
8. IMRT
9. Chimerism

QP Code:

Reg.No.:.....



**D.M. (Medical Oncology) Degree Examinations**

**(Model Question Paper)**

**Paper II – Medical Oncology – 1**

**( Breast, Gynaec, Genito urinary, Gastrointestinal and Pediatric oncology)**

**Time: 3 hrs**

**Max marks:100**

• Answer all questions

• Draw diagrams wherever necessary

**Essays:**

**(20)**

1. Outline the WHO classification of ovarian tumours. Discuss the role of neoadjuvant and adjuvant chemo therapy in epithelial tumours of ovary.

**Short essays:**

**(8x10=80)**

2. Adjuvant treatment of colon cancer

3. Neoplastic meningitis

4. Screening for Ca cervix

5. Wilm's tumour

6. Epidemiology of stomach cancer

7. Seminoma of testes

8. Management of hormone refractory prostate cancer

9. Gestational trophoblastic disease

\*\*\*\*\*

**QP Code:**

**Reg.No.:.....**

**D.M. (Medical Oncology) Degree Examinations**



**(Model Question Paper)**

**Paper III – Medical Oncology- 2**

**( Head & Neck, Thorax, Bone & soft tissue, skin, Hemato oncology, Miscellaneous)**

**Time: 3 hrs**

**Max marks:100**

- Answer all questions
- Draw diagrams wherever necessary

**Essays:**

**(20)**

1. Describe in brief the unique pathophysiology of acute promyelocytic leukemia (APML). Discuss the current standard approach and treatment of APML.

**Short essays:**

**(8x10=80)**

2. Unknown primary tumour.
3. Tumour lysis syndrome
4. Nodular lymphocyte predominant Hodgkin's lymphoma
5. Diagnostic criteria for multiple myeloma
6. Imatinib resistance in CML
7. Ewing's sarcoma
8. Role of chemotherapy in head and neck cancer
9. Anaplastic large cell lymphoma

\*\*\*\*\*

**QP Code:**

**Reg.No.:.....**

**D.M. (Medical Oncology) Degree Examinations**



(Model Question Paper)

Paper IV – Recent Advances in Medical Oncology & Palliative Care

Time: 3 hrs

Max marks:100

• Answer all questions

• Draw diagrams wherever necessary

**Essays:** (20)

1. Discuss the indications, contra indications, methodology and complications of allogenic bone marrow transplantation

**Short essays:** (8x10=80)

2. Nanotechnology in oncology.
3. Differentiating agents in the treatment of cancer
4. Role of PET scan in the management of lymphomas
5. Opioids in pain management
6. Proteasome inhibitors
7. Total parenteral nutrition
8. Metronomic chemotherapy
9. Cancer cachexia

\*\*\*\*\*

**3.7 Internal assessment component**

Not applicable.

**3.8 Details of practical/clinical practicum exams**

***Practical/Clinical examination shall consist of:***

- i. 1 long case –100 marks
- ii. 2 short cases –80 marks each = 160 marks
- iii. Ward rounds –40 marks

Viva voce –80 marks

Log Book 20 marks

Total 100 marks

**Total Marks Practicals & Viva Voce – 400 marks**



Long case discussion may take a maximum of 1 hr, short cases (total cases 2) - maximum 1 hr, ward rounds – maximum 30 minutes and Viva voce maximum of 1 hr. Maximum number of candidates that can be examined per day may be restricted to 3.

### 3.9 Number of examiners needed (Internal & External) and their qualifications

#### **Examiners**

1. All Examiners shall be a recognised super speciality teacher as per MCI norms. There shall be two internal examiners (from affiliated colleges of KUHS) and two external examiners (exclusively from outside the state). In departments where there are more than 2 professors, the head of the department preferably be a constant member of the board of examiners, and the other professors shall be posted as internal examiners on rotation basis.
2. Under exceptional circumstances, examinations may be held with 3 (three) examiners provided at least two of them is an external examiner subject to the ratification of the pass board.
3. In the event of there being more than one centre in one city, the external examiners at all the centres in that city shall be the same. Where there is more than one centre of examination, the University shall appoint a Co-ordinator/Convenor to coordinate the examination on its behalf.

### 3.10 Details of viva

Viva voce	:80 Marks
Log book	:20 Marks
Total	:100 Marks

## 4. INTERNSHIP

Not applicable for Medical Superspeciality degree courses.



#### 4 ANNEXURES

##### 4.1 Check Lists for Monitoring: Log Book, Seminar Assessment etc.

###### ANNEXURE - 1

###### CHECK LIST 1 - EVALUATION OF CLINICAL WORK

Name of the Trainee:

Date:

Name of the Faculty:

Sl.No.	Items for observation during evaluation	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Regularity of attendance					
2.	Punctuality					
3.	Interaction with colleagues and supportive staff					
4.	Maintenance of case records					
5.	Presentation of cases					
6.	Investigations work -up					
7.	Bed - side manners					
8.	Rapport with patients					
9.	Counseling patients relatives for interventional procedures					





10.	Overall quality of clinical work					
	Total score					

## ANNEXURE - 2

### CHECK LIST 2 EVALUATION OF CLINICAL CASE PRESENTATION

Name of the Trainee:

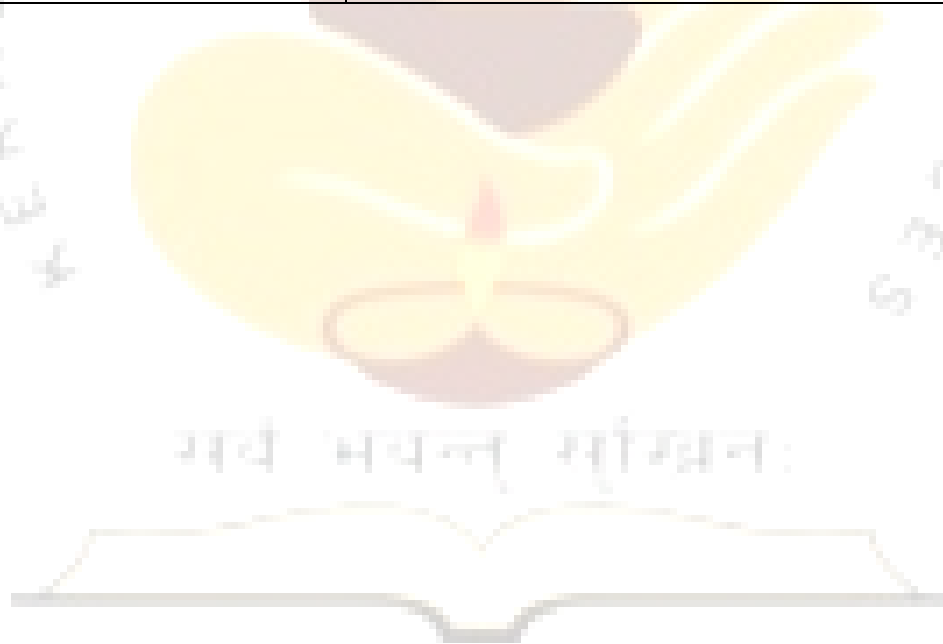
Date:

Name of the faculty:

Sl.No	Items for observation during presentation	Poor	Below Average	Average	Good	Very Good
		0	1	2	3	4
1.	Completeness of history					
2.	Whether all relevant points elicited					
3.	Clarity of presentation					
4.	Logical order					
5.	Mentioned all positive and negative points of importance					
6.	Accuracy of general physical examination					



7.	Whether all physical signs elicited correctly					
8.	Diagnosis: whether it follows logically					
9.	Investigations required In Relevant order					
10	Interpretation of Investigations					
11	Ability to discuss differential diagnosis.					
12	Discussion on management					
	Grand Total					



### ANNEXURE 3

#### CHECK LIST 3

#### EVALUATION OF SEMINAR PRESENTATION

Name of the Trainee:

Date:

Name of the Faculty:

Sl no	Items for observation during presentation	Poor	Below Average	Average	Good	Very Good
		0	1	2	3	4
1	<b>Whether other relevant publications consulted</b>					
2	<b>Whether cross - references have been consulted</b>					
3	<b>Completeness of Preparation</b>					
4	<b>Clarity of Presentation</b>					
5	<b>Understanding of subject</b>					
6	<b>Ability to answer the questions</b>					
7	<b>Time scheduling</b>					
8	<b>Appropriate use of Audio - Visual aids</b>					
9	<b>Overall performance</b>					
10	<b>Any other observation</b>					
	<b>Total score</b>					

## ANNEXURE - 4

### CHECK LIST 4

#### EVALUATION OF JOURNAL REVIEW PRESENTATIONS

Name of the Trainee:

Date:

Name of the Faculty:

		0	1	2	3	4
1.	Article chosen					
2.	Extent of understanding of scope & objectives of the paper by the candidate					
3.	Whether cross-references have been consulted					
4.	Whether other relevant publications consulted					
5.	Ability to respond to questions on the paper/ subject					
6.	Audio - Visual aids used					
7.	Ability to discuss the paper					
8.	Clarity of presentation					
9.	Any other observation					
	Total Score					

## ANNEXURE - 5

### CHECK LIST 5

#### EVALUATION OF TEACHING SKILL

Name of the Trainee:

Date:

Name of the faculty:

Sl. No.	Items for observation	Strong Points	Weak Points
1.	<i>Communication of the purpose of the talk</i>		
2.	<i>Evokes audience interest in the subject</i>		
3.	<i>The introduction</i>		
4.	<i>The sequence of ideas</i>		
5.	<i>The use of practical examples and / or illustrations</i>		
6.	<i>Speaking style (enjoyable, monotonous, etc. Specify)</i>		
7.	<i>Attempts audience participation</i>		
8.	<i>Summary of the main points at the end</i>		
9.	<i>Ask questions</i>		
10.	<i>Answer questions asked by the audience</i>		
11.	<i>Rapport of speaker with his audience</i>		
12.	<i>Effectiveness of the talk</i>		
13.	<i>Uses AV aids appropriately</i>		



## ANNEXURE - 6

### CHECK LIST 6

#### EVALUATION OF DISSERTATION PRESENTATION

Name of the Trainee:

Date:

Name of the faculty / Observer:

Sl.No	Points to be considered	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Interest shown in selecting topic					
2.	Appropriate review					
3.	Discussion with guide and other faculty					
4.	Quality of protocol					
5.	Preparation of Proforma					
	<b>Total Score</b>					

## ANNEXURE - 7

### CHECK LIST 7

#### CONTINUOUS EVALUATION OF DISSERTATION WORK

Name of the Trainee: \_\_\_\_\_

Date \_\_\_\_\_

Name of the Faculty: \_\_\_\_\_

Sl. No.	Items for observation during presentation	Poor	Below Average	Average	Good	Very Good
		0	1	2	3	4
1.	Periodic consultation with guide / co- guide					
2.	Regular collection of case material					
3.	Depth of Analysis / Discussion					
4.	Department presentation of findings					
5.	Quality of final output					
6.	Others					
	<b>Total score</b>					

## ANNEXURE - 8

### CHECK LIST 8

### OVERALL ASSESSMENT SHEET

Name of the College:

Date:

<b>Check list no</b>	<b>Particulars</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>1</b>	<b><i>Clinical work</i></b>					
<b>2</b>	<b><i>Clinical presentation</i></b>					
<b>3</b>	<b><i>Seminars</i></b>					
<b>4</b>	<b><i>Journal review</i></b>					
<b>5</b>	<b><i>Teaching skill</i></b>					
<b>6</b>	<b><i>Dissertation work</i></b>					
	<b><i>TOTAL</i></b>					

0- Poor 1- Below average 2- Average 3- Good 4- Very good

Signature of HOD

Signature of Principal





## ANNEXURE - 9

TABLE 1

### ACADEMIC ACTIVITIES ATTENDED

Name:

Admission Year:

College:

Date	Type of activity - Specify Seminar, Journal club, Presentation, UG teaching	Particulars



**LOG BOOK**

**TABLE 2**

**ACADEMIC PRESENTATIONS MADE BY THE TRAINEE**

**Name :**

**Admission Year:**

**College:**

<b>Date</b>	<b>Topic</b>	<b>Type of activity - Specify Seminar, Journal club, Presentation, UG teaching</b>



## LOG BOOK

TABLE 3

### DIAGNOSTIC AND OPERATIVE PROCEDURES PERFORMED

Name

<i>Date</i>	<i>Name</i>	<i>OP No.</i>	<i>Procedure</i>	<i>Category O, A, PA, PI</i>

**Key:**

**O - OBSERVED**

**A - ASSISTED A MORE SENIOR SURGEON**

**PA - PERFORMED PROCEDURE UNDER SUPERVISION**

**PI - PERFORMED INDEPENDENTLY**



# APPENDIX 111 - FINAL EXAMINATION ELIGIBILITY FORM

(To be filled up the candidate)

Name of the candidate :

Date of Joining :

Identification number or  
registration number

of university :

Course :

Institution :

Eligibility criteria :

Sl No	Parameter	Details	Proof enclosure
1.	Attendance	1 <sup>st</sup> year (minimum 80%) 2 <sup>nd</sup> year(minimum 80%) 3 <sup>rd</sup> year(minimum 80%)	
2.	Thesis	Approved/Not Approved by the University	
3.	Log book	Successfully completed and submitted	
5.	Conferences attended	Number and category : Number of presentations:	
6.	Publications	Number published: Number submitted:	

All the informations provided above are true to the best of my knowledge and if found contrary, I am clearly aware that strict disciplinary actions will be initiated including debarring from examination.

Date Signature of the candidate :

Place Name of the candidate :

Countersigned by:

Faculty as guide:

Name:

Designation:

APPROVAL OF HEAD OF THE DEPARTMENT

I, Dr....., herewith approve that the above candidate is eligible to appear for the final examination as per the documentary evidences provided and best of the knowledge and documents of the department.

Date Signature :

Place Name :

Designation :

## **SYLLABUS**

**For Courses affiliated to the**

**Kerala University of Health Sciences**

**Thrissur 680596**



**SUPER SPECIALITY COURSE IN MEDICINE**

**DM Pulmonary Medicine**

**Course Code 240**

**(2016-17 Academic year onwards)**

**2016**

## **2. COURSE CONTENT**

### **2.1 Title of course:**

DM Pulmonary Medicine

### **2.2 Objectives of course**

#### **GENERAL GOALS OF THE RESIDENCY TEACHING CUM TRAINING PROGRAM IN DM**

##### **Pulmonary Medicine**

The main goal of the training program is to produce pulmonary physicians with the necessary knowledge, skill and attitude to diagnose and manage in an effective manner, a wide range of clinical problems in Pulmonary Medicine as seen in the community or in secondary/tertiary care setting. Special emphasis is placed on the relatively common and treatable disorders. Possession of clinical skills required for making a diagnosis is given utmost importance.

As a result of training in Pulmonary Medicine, the physician should become competent in life saving interventions, the use of the various diagnostic tests, and interprets their results intelligently & promptly. In addition, trained pulmonary physician should possess knowledge and skills of all the relevant medical fields and appropriately deliver the required health care in these sectors. It is considered desirable for the post graduate residents from this specialty to be familiar with the fundamentals of research methodology also.

In order to be considered a competent Pulmonologist, a resident in Pulmonary Medicine must possess humanistic qualities, attitudes and behaviour necessary for the development of appropriate patient-doctor relationship.

#### **SPECIFIC AIMS AND OBJECTIVES OF THE RESIDENT TRAINING PROGRAM IN PULMONARY MEDICINE**

As a result of the training under this program, at the end of 3 years of postgraduate training, a resident must acquire the following knowledge, skills and competencies:

1. A thorough knowledge of pathological abnormalities, clinical manifestations, and principles of management of a large variety of medical conditions affecting respiratory system.
2. Skill and competence to choose and interpret correctly the results of the various routine investigations necessary for proper management of the patient. While ordering these investigations, a resident must be able to understand the sensitivity, specificity and the predictive value of the proposed investigation, as well as its cost-effectiveness in the management of the patient.
3. Skill and competence in interventions like endotracheal intubation, needle lung biopsy, bronchoscopy, needle thoracocentesis, Intercostal drain placement, pericardiocentesis, thoracoscopy, and various endobronchial procedures.
4. Skills and competence to perform commonly used diagnostic procedures, namely, pleural aspiration, pleural biopsy, lung biopsy, allergy testing, fine needle aspiration, polysomnography, ultrasonography and cardiopulmonary exercise testing.
5. Skill and competence to choose and interpret correctly the results of specialized investigations including radiologic, ultra-sonographic, biochemical, hemodynamic, electro-cardio graphic, electrophysiological, pulmonary functional, haematological, immunological, nuclear isotope scanning, arterial blood gas analysis results. polysomnographic and bronchoscopic results.
6. Skill and competence to provide consultation to other medical and surgical specialties and sub-specialties, whenever needed.
7. Skill and competence to function effectively in varied clinical settings, namely emergency/critical care, ambulatory care, out-patient clinic, in-patient wards.
8. Skill and competence to take sound decisions regarding hospitalization, or timely referral to other consultants of various medical sub specialties recognizing his limitations in knowledge and skills in these areas.
9. Proficiency in selecting correct drug combinations for different clinical problems with thorough knowledge of their pharmacological effects, side-effects, interactions with the



other drugs, alteration of their metabolism in different clinical situations, including that in the elderly.

10. Skill and competence to advise on the preventive, restorative and rehabilitative aspects including those in the elderly, so as to be able to counsel the patient correctly after recovery from an acute or chronic illness.

11. Skill and competence to understand research methodology in Pulmonary Medicine and to undertake a critical appraisal of the literature published in various medical journals and be able to apply the same in the setting in which the resident is working.

12. Skill and competence to work cohesively in Resuscitation team along with paramedical personnel and maintain discipline and healthy interaction with the colleagues.

13. Skill and competence to communicate clearly and consciously, and teach other junior residents, medical students, nurses and other paramedical staff, the theory as well as the practical clinical skills required for the practice of Pulmonary Medicine.

### **2.3 Medium of instruction:**

The medium of instruction for the course shall be English.

### **2.4 Course outline**

Present in clause “Content of each subject in each year “ the curriculum.

### **2.5 Duration**

Every candidate seeking admission to the training programme to qualify for the degree of D.M in the subjects shall pursue a regular course as a full time student, in the concerned Department under the guidance of a recognized super speciality teacher for a period of three years. The course commences from 1<sup>st</sup> August in each year.

### **2.6 Syllabus**

Present in clause “Content of each subject in each year “ of the curriculum.

### **2.7 Total number of hours**

There are 52 weeks in a year. Approximately 2 weeks are gazetted / restricted holidays. Therefore, for academic requirements 50 weeks per year are available. Hence, for a

three year course 150 weeks are available. Out of these, 10 weeks in three years are not available for hospital work & academics due to conferences / CMEs / exchange programmes / thesis and case study writing.

Since this speciality demands a 24 hour service to the people, post graduates are required to work 8 hours a day and they are given a day off in a week.

Hours available per day

Six days in a week                      8 hours                      8 hours

Total number of hours per week      8X6                      48 hours.

Total credit hours available for academics

(No of weeks X No of hours available /week = 150 X 48 = 7200 hrs)

**The break up is proposed to be as follows :**

A	Bedside teaching / Practicals.	5040
	No of weeks( 140) X No of working day / week (6) X No of hours available /day	hrs
	(6)	
B	Thesis / case study writing / conferences / CMEs programmes	480 hrs.
	(No of weeks ( 10) X No of hours available /week (48) )	
C	Theory	1680
	No of weeks( 140) X No of working day / week (6) X No of hours available /day	hrs
	(2)	
	Grand total	7200
		hrs

#### **A. Practical**

1) **Skill stations**    140 X 6 hours = 840 hrs.

Duration 6 hrs / week

No of weeks    140.

Skill Stations: Includes all the bedside medical skills pertaining to Pulmonary Medicine

2) **Bed side Medical clerkly**    140 X 30 = 4200 Hrs

Duration    5 Hrs / day.- 30 hrs / week.

Bed side Medical clerkly includes case history taking, formulating a working diagnosis, ordering appropriate investigations, and accompanying the patient to the specialized investigation areas, interpretation of all the results and finally starting the treatment protocol for them.

It also lays emphasis on in field resuscitation and transportation of critically ill patients and continuing the care in the ER, ICU and various other places also.

**B. Thesis writing :**

NOTE: The 480 hours available should be fruitfully utilized by the student for attending conferences / CME programmes and for dissertation and case study. Apart from this they can utilize these hours for creating basic awareness of Pulmonary Medicine among the other specialties and common masses.

**C. Theory**

Total Hours Available      1680 hours.

- └ Besides interactive lectures theory includes Induction, documentation, Orientation,
- └ Journal Club, Internal Examination and Final Examination.

**2.8 Branches if any with definition**

Present in clause “Content of each subject in each year “ of the curriculum.

**2.9 Teaching learning methods**

**TRAINING PROGRAM**

The training program will aim to give the candidate a sound training of cardiac diagnosis and management. During the period of training they shall take part in all the activities of the department including ward rounds, lectures, seminars, teaching assignments, laboratory studies, surgical session and other duties assigned to them by the Head of the Department.

All candidates shall work as full time residents during the period of training.

The training program shall be updated as and when required. The training shall include:-

- a) Active involvement in the diagnosis and management of patients both in the outpatient, coronary care unit and the wards.
- b) Participation in lectures, seminars, journal clubs, clinical group discussions etc.
- c) Exposure to basic and advanced diagnostic, therapeutic and laboratory techniques.

- d) Exposure to biomedical statistics as applicable to basic research methodology
- e) Post graduate students shall maintain log books of the work carried out by them. The log books shall be checked and assessed every 6 months by the faculty members, with a view to assure the progress the candidate has made and spot the inadequacies if any.

### **Out station training**

Outstation training may be given if required. It should not exceed 2 months, the duration, center etc: - will be at the discretion of the Head of the department.

### **Teaching**

All D.M students should take part in the teaching of the post graduate degree students of related subjects, undergraduate medical students and paramedical students and allied health science students posted in the department by rotation.

### **CLINICAL SKILLS**

- 1 History taking & Physical examination: Analysis of data for clinical diagnosis
- 2 Knowledge about common clinical problems, Symptom complex, Diagnostic reasoning
- 3 Various investigations, interpretation
- 4 Interventional procedures
- 5 Critical care, Life saving procedures, Palliation and end of life decisions

### **COMMUNICATION SKILLS**

- 1 Professional Relationships
  - A Patients and relatives
  - B Colleagues/team work
  - C Other staff
- 2 Consultation Skills
- 3 Record keeping
- 4 Bereavement Care
  - A Breaking bad news
  - B Referral for counselling

## MANAGERIAL SKILLS

- 1 Policies/procedures (NHS, Hospital, Departmental)
- 2 Staff management (planning, recruitment, appraisal)
- 3 Equipment (choosing to ordering, medical physics)
- 4 Resource management/clinical budgeting
- 5 Contracting/ setting standards, quality monitoring
- 6 Information technology/Health informatics
- 7 Clinical governance/audit, risk management
- 8 Compliments/complaints
- 9 Medico-legal statements
- 10 Committee Work
- 11 Liasing with other agencies (e.g. police, coroner)
- 12 Public Relations/media
- 13 Major Incident planning/exercises

## TEACHING SKILLS

- 1 Lecture preparation
- 2 Small Group techniques
- 3 Presentation techniques
- 4 Teaching critique
- 5 Departmental teaching programme
- 6 Professional Development (self-directed learning)

- 7 Teaching certificate expected

## **RESEARCH SKILLS**

- 1 Literature survey
- 2 Scientific study design
- 3 Data evaluation/Statistics
- 4 Preparing publications

## **PROFESSIONAL ATTRIBUTES**

- 1 Leadership
- 2 Reliability
- 3 Teamwork
- 4 Self-motivation (prioritisation, project completion)

### **2.10 Content of each subject in each year**

Each DM student is required to possess a comprehensive knowledge of the basic and clinical sciences related to pulmonary medicine and critical care, and clinical skills in diagnosing respiratory vis a vis other medical disorders. He/She should have personally performed a sufficient number of both invasive and non-invasive procedures for diagnosis and treatment such as bronchoendoscopic examinations and assisted ventilation; and manage acute respiratory emergencies. He/She should also possess sufficient knowledge and experience in research methodology and development.

### **1.Theory of Pulmonary and Critical Care Medicine**

#### **1. Basic Sciences**

##### **A. Anatomy of Respiratory system**

1. Anatomy and histology of Respiratory System including airways, pleura, chest wall, lungs and mediastinum

2. Applied Embryology of lungs, mediastinum and diaphragm
3. Developmental anomalies

### **B. Physiology and Biochemistry**

1. Assessment of pulmonary functions
2. Control of ventilation
3. Pulmonary mechanics
4. Ventilation, pulmonary blood flow, gas exchange and gas transport, Respiratory reflexes including cough reflex, lung defence including respiratory surfactant
5. Exercise physiology and testing
6. Non-respiratory functions of lung
7. Inhalation kinetics and its implication in aerosol therapy, sputum induction etc.
8. Acid-base and electrolytic balance
9. Physiology of sleep and their disorders
10. Pathophysiology of respiratory disorders

### **C. Microbiology**

1. Mycobacterium tuberculosis and other mycobacteria
2. Laboratory diagnosis of tuberculosis (including staining, culture and immunological techniques)
3. Virulence and pathogenicity of mycobacteria
4. Bacteria causing respiratory diseases
5. Mycoplasma and respiratory tract infection
6. Anaerobes in pleuropulmonary infections
7. Laboratory diagnosis of nontubercular infections of respiratory tract
8. Respiratory viruses
9. Human Immunodeficiency virus
10. Respiratory fungi: i. Classification of fungal diseases of lung, candidiasis, Actinomycosis, Nocardiosis, Aspergillosis, Blastomycosis etc. ii. Laboratory diagnostic procedures in respiratory mycosis caused by yeast like and Filamentous fungi

11. Opportunistic infections in immunosuppressed host
12. Respiratory parasitic infections

#### **D. Pathology**

1. Acute and chronic inflammation
2. Tuberculosis
3. Pneumonias and bronchopulmonary suppuration
4. Chronic bronchitis and emphysema, asthma
5. Occupational lung diseases and pneumoconioses
6. Interstitial Lung Diseases
7. Tumours of the lung, mediastinum and pleura
8. Various mechanisms of hypersensitivity reactions seen in respiratory diseases
9. Diagnostic tests in Allergic diseases of lung – in vitro and in vivo tests, bronchial provocation test
10. Immunology of Tuberculosis

#### **E. Epidemiology**

1. Epidemiological terms and their definitions
2. Epidemiological techniques – tuberculin test, surveys
3. Epidemiology of Tuberculosis, pneumoconioses, asthma, COPD and lung cancer
4. National Tuberculosis Control Programme and RNTCP
5. BCG and prevention of TB
6. Research methods and study designs

#### **F. Pharmacology**

1. Antimicrobial drugs
2. Antitubercular drugs
3. Antineoplastic drugs
4. Corticosteroids
5. Anti-asthma drugs



6. Drugs used in microbial viral, fungal and parasitic infections
7. Pharmacokinetics and drugs interaction for commonly used drugs in respiratory diseases

## **2. Clinical Sciences**

### **A. Infections**

#### **a. Tuberculosis**

1. Etiopathogenesis
2. Diagnostic methods
3. Differential diagnosis
4. Management of pulmonary tuberculosis including drug resistant TB
5. Complications in Tuberculosis
6. Tuberculosis in children
7. Geriatric tuberculosis
8. Pleural and pericardial effusion and Empyema
9. Mycobacterial other than mycobacterial infections
10. Extrapulmonary tuberculosis
11. HIV and tuberculosis

#### **b. Non-Tuberculous infections of the lungs**

- Upper respiratory tract infections
- Approach to the patient with pulmonary infections
- Community Acquired pneumonia
- Nosocomial pneumonias
- Unusual and atypical pneumonias including bacterial, viral, fungal and parasitic rickellial
- Bronchiectasis and lung abscess
- Acquired immunodeficiency syndrome and opportunistic infections in immuno-compromised host
- Bronchitis and bronchiolitis

## B. Non-infectious Lung Diseases

### 1. Interstitial Lung Disorders

1. Immune defense mechanisms of the lung
2. Sarcoidosis
3. Hypersensitivity pneumonias
4. Lung involvement in collagen-vascular diseases
5. Eosinophilic pneumonias and tropical eosinophilia
6. Pulmonary vasculitides
7. Reactions of the interstitial space to injury
8. Pulmonary fibrosis
9. Occupational pulmonary diseases
10. Interstitial diseases of other aetiologies
11. Drug induced pulmonary diseases
12. Aspiration and inhalational (non-occupational) diseases of the lung

### 2. Pulmonary Circulatory disorders

- Pulmonary edema
- Pulmonary Hypertension and cor pulmonale
- Pulmonary Thromboembolic Diseases
- Cardiac problems in Pulmonary patient and pulmonary diseases produced by cardiac diseases

### 3. Obstructive Diseases of the Lungs

- Asthma
- Chronic obstructive lung disease
- Pulmonary rehabilitation

### 4. Cancer of the Lungs

- Epidemiology, pathology, natural history and clinical picture and staging of the carcinoma of lungs and other tumour
- Approach to diagnosis of pulmonary nodule, cell lungs cancer

- Medical management and surgical treatment of lung cancer and paraneoplastic syndrome
  - Radiation therapy in the management of the carcinoma of the lungs
  - Paraneoplastic syndromes
5. Diseases of the Mediastinum
- Benign and malignant tumours
  - Non-neoplastic disorders
6. Disorders of the pleura
- Pleural dynamics and effusions
  - Non-neoplastic and neoplastic pleural diseases
  - Pneumothorax
  - Pyothorax and broncho-pleural fistula and its complications
7. Sleep related breathing disorders
8. Obesity hypoventilation disease
9. High altitude
10. Drug induced
11. Disorders of diaphragm
12. Respiratory failure
- Acute Respiratory Distress Syndrome: Pathology, pathogenesis diagnosis and management
  - Respiratory failure in the patient with obstructive airway disease
  - Respiratory muscle fatigue
  - Respiratory and haemodynamic monitoring in acute respiratory failure
  - Mechanical ventilation (indications, modes, complications and weaning)
  - Principles of critical care
13. Respiratory Care
- Oxygen therapy

- Inhalational therapy
- Bronchial hygiene

### **C. Surgical aspects of Chest Medicine**

- Pre and post-operative evaluation and management of thoracic surgical patient
- Post operative pulmonary complication
- Chest Trauma/trauma related lung dysfunction

### **D. Investigative/Therapeutic procedures**

- Pulmonary function test and its interpretations in determining the disability
- Spirometry, compliance, resistance, lung volume, diffusions
- Bronchoscopy, thoracoscopy and other endoscopic procedures
- Chest Imaging – x-ray chest, ultrasound, CT, Bronchography
- Pulmonary parasitic disease
- Environmental pollution – Indoor/outdoor; Tobacco smoking
- Blood gas analysis
- Cardiopulmonary exercise testing
- Bronchoprovocation tests
- Pulmonary angiography
- ECG and ECHO

### **E. Research and Clinical Epidemiology**

- Research Methodology, study designs (cohort, case control, randomized clinical trials, observative and cross sectional studies)
- Common statistical methods for analysis of research
- Sources of bias

### **F. Critical Care and Assisted Ventilation**

1. Respiratory Failure: Pathogenesis, causes, diagnosis and management
2. Resuscitation of the critically ill including multiple organ failure
3. Cardiopulmonary mechanics

4. Ventilatory principals, application, assessment and monitoring
5. Ventilatory care and support: Nutritional support; Infection control; complications
6. Weaning
7. Comprehensive care of the comatose
8. ICU designing

#### **G. Paediatric pulmonology**

1. Respiratory problems in children
2. Infective pneumonias
3. Childhood tuberculosis
4. Respiratory distress syndrome of the newborn
5. Bronchopulmonary dysplasias
6. Congenital malformations
7. Bronchial asthma
8. Cystic fibrosis
9. Special management problems in children

#### **H. Pulmonary Radiology and Imaging**

1. Interpretation of plain radiography, contract studies, CT scan, M.R.I. and ultrasound examination.
2. Interpretation of ventilation/perfusion scans

#### **1. Respiratory rehabilitation**

#### **J. Ethical, legal, economic and other related issues involved in respiratory and critical care**

1. Prioritization
2. Withholding and withdrawing mechanical ventilation
3. Legal consent
4. Brain death – certification
5. Palliative care

## **2. Clinical skills**

1. Clinical history taking and examination; ability to analyse different clinical symptoms and signs; interpret their significance and reach a diagnosis
2. Interpretation of laboratory data
3. Interpretation of pulmonary function tests, ECG, ECHO and other investigations
4. Interpretation of chest roentgenography
5. Pulmonary histopathology and cytology
6. Oxygen therapy
7. Nebulization therapy
8. Mechanical ventilation – indications and applications

## **3. Practical skills**

### **A. Microbiological**

1. Sputum smear staining: Gram's AFB staining
2. Mantoux testing
3. BCG vaccination
4. Skin sensitivity tests

### **B. Pulmonary Function Tests**

1. Spirometry
2. Bronchoprovocation tests
3. Body plethysmography
4. Respiratory Sleep monitoring
5. Exercise testing

### **C. Diagnostic procedures**

1. Fine needle biopsy of lymph nodes, lung and mediastinal masses
2. Biopsy of pleural and lung masses

3. Fiberoptic bronchoendoscopic examination and related procedures including bronchial and transbronchial lung biopsy, bronchoalveolar lavage and fine needle aspiration (At least 50 procedures)

#### **D. Therapeutic**

1. Aspiration of pleural and pericardial effusion
2. Tube thoracostomy
3. Respiratory muscle exercising
4. Medical Emergency management
  - i. Cardiopulmonary resuscitation
  - ii. Management of acute emergencies
    - . Acute respiratory failure
    - . Acute asthma
    - . Pneumothorax
    - . Haemoptysis
    - . Pulmonary thromboembolism
    - . Multiple organ failure
5. Mechanical Ventilation: On hand training in providing both short and long term mechanical ventilatory support
  - i. Invasive
    - . Endotracheal intubation
    - . Ventilatory settings
    - . Care and maintenance
    - . Monitoring
    - . Weaning
  - ii. Non-invasive ventilation including domiciliary respiratory support

**At the end of three years of training programme, a post graduate of DM Pulmonary Medicine should at least possess following skills**

**2.11 No: of hours per subject**

Not applicable as the course is a Residency programme

**2.12 Practical training given**

**Total duration of training program                      3 Years**

**YEAR I**

Introduction and preliminary posting in the Pulmonary Medicine	3 months
Respiratory Intensive Care Unit	3 month
General Medicine / Medical Intensive Care Unit	3months
Cardiology	2 months
Anaesthesiology	1 month

**YEAR II**

Pulmonary Medicine	3 months
Intensive Respiratory Care Unit	3 month
Paediatrics / PICU	2 months
Emergency Dept	2 months
Community Medicine	1 month
Cardiothoracic Surgery	1 month

**YEAR III**

Pulmonary Medicine	6 months
Pulmonary Critical care	6month
Final Examination in D M Pulmonary Medicine	



### **2.13 Records**

Present in clause 2.21

### **2.14 Dissertation: As per Dissertation Regulations of KUHS**

Thesis is an absolute requirement for D.M course and the candidate has to register the thesis synopsis in the University through proper channel within 6 months of admission. Thesis has to be submitted to the University for Evaluation at least 6 months prior to the conduct of final examination. Modifications and resubmission should be done before writing the examination. Even if the guide is transferred/ retired, the thesis has to be continued under his/her guidance or entrust to another guide in case the original person is not willing to continue. In extra ordinary situations change of guide and change of thesis topic is permissible with prior permission from the University. Only after accepting the thesis, the candidate will be eligible for writing the examination. In addition to this, the student has to present at least one paper/poster in a regional /national / international conference of the concerned speciality during his three year course or at least one publication in a peer reviewed journal. Research paper should be approved by the Institutional Review Board/ Institutional Ethical Committee.

#### **Evaluation of Thesis**

The thesis shall be evaluated by a minimum of three experts; one internal and two external experts, who shall not be the examiners for the Theory and Clinical examination of the concerned candidates and it may be accepted/ accepted with modifications/rejected. Only on the acceptance of the thesis by two experts out of three, the candidate shall be permitted to appear for the University examination. If the thesis is not accepted on evaluation by at least two experts, it shall be resubmitted with suggested modifications along with prescribed fees within the prescribed time stipulated by the University from time to time and it shall be re-evaluated by the same experts. If thesis is rejected by two experts, the candidate will lose first chance for appearing in the University examination and has to redo a fresh thesis for further evaluation.

### **2.15 Speciality training if any**

Present in clause “Content of each subject in each year “ of the curriculum

#### **2.16 Project work to be done if any**

As stipulated by the Head of Department.

#### **2.17 Any other requirements [CME, Paper Publishing etc.]**

- Should have attended minimum of two International/ National/ Zonal/State conferences or workshops concerned with the area of specialization.
- Should have presented at least one paper/poster in International/ National/ Zonal/State conferences concerned with the area of specialization.(as per MCI norms)

OR

- At least one publication in a peer reviewed journal or at least two research papers or original works should be submitted for publication in peer reviewed journals (as per MCI norms).

#### **2.18 Prescribed/recommended textbooks for each subject**

As stipulated by the Head of Department.

#### **2.19 Reference books**

1. Respiratory diseases- John Crofton
2. Pulmonary Diseases and disorders- Frazer & Pare
3. Text Book of Pulmonary & critical care Medicine( 2 volumes)- SK Jindal
4. NCCP text book of Respiratory medicine- D Behera
5. Tuberculosis( 2 volumes) – Roth & Gare
6. Toman's tuberculosis
7. Paediatric Respiratory Illnesses- R Chetambath

#### **2.20 Journals**

- a. Americal Journal of respiratory & critical care medicine
- b. European Respiratory Jounrnal
- c. Chest
- d. Thorax
- e. International Journal of Tuberculosis and Lung Diseases
- f. Lung India
- g. Indian Journal of Tuberculosis

h. India Journal of critical care medicine

### **2.21 Logbook**

A log book is mandatory and has to be maintained by all students and this has to be reviewed by HOD / Unit Chief of the department regularly (at least quarterly). Minimum number of each of the academic activities to be performed by the candidate should be outlined for each speciality. Model check list for journal review/seminars/topic presentation/ teaching skill etc: - is shown in the appendix. Periodic formative assessment has also to be done in the department by the super speciality teachers. Log book will be evaluated during the University examination by all the four examiners with a maximum total mark of 20 in the viva component (*Check Lists appended*).

## **3.EXAMINATIONS**

### **3.1 Eligibility to appear for exams**

The examinations shall be organised on the basis of marking system to evaluate and certify candidate's level of knowledge, skill and competence at the end of the training.

A candidate should appear for all the theory examinations and obtaining a minimum aggregate of 50% marks in theory part and practical part (Practical & Viva) separately shall be mandatory for passing the whole examination.

#### ***ELIGIBILITY FOR APPEARING IN FINAL EXAMINATION***

1. A minimum of 80% attendance during each year of the course separately.
2. Successful Submission of completed Logbook.
3. Submission of Dissertation and its approval by the University.
4. Should have attended minimum of two International/ National/ Zonal/State conferences or workshops concerned with the area of specialization.
5. Should have presented at least one paper/poster in International/ National/ Zonal/State conferences concerned with the area of specialization.(as per MCI norms).

or

At least one publication in a peer reviewed journal or at least two research papers or original works should be submitted for publication in peer reviewed journals (as per MCI norms).

vi. The prescribed form (annexure 3) for each candidate should be filled up by concerned department and sent to KUHS for issuing hall ticket for the candidate to appear for the examination. If the candidate fails to meet the criteria, he will not be permitted to appear for the examination.

### 3.2 Schedule of Regular/Supplementary exams

Generally there shall be two university examinations in a year, one regular and one supplementary examinations with a usual gap of six months.

### 3.3 Scheme of examination showing maximum marks and minimum marks

There shall be theory, practical examination including viva voce at the end of the three year course. Theory examination shall consist of four papers (3 hours duration) including one on recent advances and each paper will carry a maximum of 100 marks. Each question paper shall consist of one essay question of 20 marks and 8 short essays of 10 marks each. There shall be a multiple evaluation of theory papers by two internal examiners and two external examiners and the average mark for each paper is taken as the final marks.

Sl.No.	Subject	Theory		Theory Group		Practical				Practical Group		Total	
		University				University		Viva					
		Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
1	Paper I	100	-	400	200	300		100		400	200	800	400
2	Paper II	100	-										
3	Paper III	100	-										
4	Paper IV	100	-										

### 3.4 Papers in each year

Not applicable

### 3.5 Details of theory exams

As per clause 3.3

- |         |  |
|---------|--|
| Paper 1 | Applied basic sciences in relation to General Medicine & Pulmonary Medicine                                  |
| Paper 2 | Non infectious Respiratory Diseases including those affecting Respiratory centre, Chest wall and Mediastinum |
| Paper 3 | Respiratory Infections including tuberculosis  |
| Paper 4 | Respiratory Critical Care and recent advances in Pulmonary Medicine  |

### 3.6 Model question paper for each subject with question paper pattern

#### Paper I

**Applied basic sciences in relation to General Medicine & Pulmonary Medicine**

**-- 100marks**

1) What is acquired immunodeficiency? Discuss the different pulmonary problems in an immunosuppressed patient. 1 x 20 = 20

**2) Write short essays on** 8 x 10 = 80

- a) Thoracic outlet syndrome
- b) Role of diaphragm in Respiration
- c) Dynamic compliance
- d) Delayed type hypersensitivity
- e) Line probe assay
- f) Role of ultrasound in Pulmonary Medicine
- g) Pressure support ventilation
- h) Sepsis syndrome

\*\*\*\*\*

## Paper II

### Non infectious Respiratory Diseases including those affecting Respiratory centre, Chest wall and Mediastinum

-- 100marks

- 1) Discuss in detail the relationship between sleep disordered breathing and Hypertension and review relevant studies. 1 x 20 = 20
- 2) **Write short essays on** 8 x 10 = 80
  - a) Chylothorax
  - b) Asthma mimics
  - c) Tiotropium
  - d) Congenital cystic adenomatoid malformations
  - e) Honey comb lung
  - f) LVRS
  - g) Tracheal stenosis
  - h) Primary pulmonary hypertension

\*\*\*\*\*

## Paper III

### Respiratory Infections including tuberculosis

-- 100marks

- 1) What is pneumonia severity index? Discuss the management of community acquired pneumonia 1 x 20 = 20
- 2) **Write short essays on** 8 x 10 = 80
  - a) Mycobacterium growth index tube
  - b) Acinetobacter

- c) XDR TB
- d) Exudative effusion
- e) Hospital infection control policy
- F) Viral Pandemics
- g) Haemoptysis
- h) Hydatid Cyst

\*\*\*\*\*

#### **Paper IV**

#### **Respiratory Critical Care and recent advances in Pulmonary Medicine**

**-- 100marks**

##### **Model Questions**

1) How will you manage a case of ARDS with multiorgan failure 1 x 20 = 20

**2) Write short essays on** **8 x 10 = 80**

- a) Pulmonary AV fistula
- b) DLCo
- c) Indacaterol
- d) Bronchial artery embolization
- e) LVEF
- f) Toxic gas inhalation
- g) Diagnosis of Pulmonary thromboembolism
- h) Lupus pneumonia

\*\*\*\*\*

### **3.7 Internal assessment component**

Not applicable.

### **3.8 Details of practical/clinical practicum exams**

***Practical/Clinical examination shall consist of:***

- i. 1 long case –100 marks
- ii. 2 short cases –80 marks each = 160 marks
- iii. Ward rounds – 40 marks

Viva voce –80 marks

Log Book 20 marks

Total 100 marks

**Total Marks Practicals & Viva Voce –400 marks**

Long case discussion may take a maximum of 1 hr, short cases (total cases 2) - maximum 1 hr, ward rounds – maximum 30 minutes and Viva voce maximum of 1 hr. Maximum number of candidates that can be examined per day may be restricted to 3.

**3.9 Number of examiners needed (Internal & External) and their qualifications**

***Examiners***

1. All Examiners shall be a recognised super speciality teacher as per MCI norms. There shall be two internal examiners (from affiliated colleges of KUHS) and two external examiners (exclusively from outside the state). In departments where there are more than 2 professors, the head of the department preferably be a constant member of the board of examiners, and the other professors shall be posted as internal examiners on rotation basis.

2. Under exceptional circumstances, examinations may be held with 3 (three) examiners provided at least two of them is an external examiner subject to the ratification of the pass board.

3. In the event of there being more than one centre in one city, the external examiners at all the centres in that city shall be the same. Where there is more than one centre of examination, the University shall appoint a Co-ordinator/Convenor to coordinate the examination on its behalf.

**3.10 Details of viva:**

Viva voce	:80 Marks
<b>Log book</b>	<b>:20 Marks</b>
<b>Total</b>	<b>:100 Marks</b>



#### 4.INTERNSHIP

Not applicable for Medical Superspeciality degree courses.

#### 5.ANNEXURES

##### 5.1 Check Lists for Monitoring: Log Book, Seminar Assessment etc.

##### ANNEXURE - 1

##### CHECK LIST 1 - EVALUATION OF CLINICAL WORK

Name of the Trainee:

Date:

Name of the Faculty:

Sl.No.	Items for observation during evaluation	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Regularity of attendance					
2.	Punctuality					
3.	Interaction with colleagues and supportive staff					

4.	Maintenance of case records					
5.	Presentation of cases					
6.	Investigations work -up					
7.	Bed - side manners					
8.	Rapport with patients					
9.	Counseling patients relatives for interventional procedures					
10.	Overall quality of clinical work					
	Total score					

## ANNEXURE - 2

### CHECK LIST 2 EVALUATION OF CLINICAL CASE PRESENTATION

Name of the Trainee:

Date:

Name of the faculty:

Sl.No	Items for observation during presentation	Poor	Below Average	Average	Good	Very Good
		0	1	2	3	4
1.	Completeness of history					
2.	Whether all relevant points					

	elicited					
3.	Clarity of presentation					
4.	Logical order					
5.	Mentioned all positive and negative points of importance					
6.	Accuracy of general physical examination					
7.	Whether all physical signs elicited correctly					
8.	Diagnosis: whether it follows logically					
9.	Investigations required In Relevant order					
10	Interpretation of Investigations					
11	Ability to discuss differential diagnosis.					
12	Discussion on management					
	Grand Total					

### ANNEXURE 3

#### CHECK LIST 3

#### EVALUATION OF SEMINAR PRESENTATION

Name of the Trainee:

Date:

Name of the Faculty:

Sl no	Items for observation during presentation	Poor	Below Average	Average	Good	Very Good
		0	1	2	3	4
1	<b>Whether other relevant publications consulted</b>					
2	<b>Whether cross - references have been consulted</b>					
3	<b>Completeness of Preparation</b>					
4	<b>Clarity of Presentation</b>					
5	<b>Understanding of subject</b>					
6	<b>Ability to answer the questions</b>					
7	<b>Time scheduling</b>					
8	<b>Appropriate use of Audio - Visual aids</b>					

9	<b>Overall performance</b>					
10	<b>Any other observation</b>					
	<i>Total score</i>					

#### ANNEXURE - 4

##### CHECK LIST 4

##### EVALUATION OF JOURNAL REVIEW PRESENTATIONS

**Name of the Trainee:**

**Date:**

**Name of the Faculty:**

Sl. No	Items for observation during presentation	<i>Poor</i>	<i>Below Average</i>	<i>Average</i>	<i>Good</i>	<i>Very Good</i>
		0	1	2	3	4
1.	<i>Article chosen</i>					
2.	<i>Extent of understanding of scope &amp; objectives of the paper by the candidate</i>					
3.	<i>Whether cross-references have been consulted</i>					
4.	<i>Whether other relevant publications consulted</i>					
5.	<i>Ability to respond to questions on the paper/ subject</i>					
6.	<i>Audio - Visual aids used</i>					
7.	<i>Ability to discuss the paper</i>					
8.	<i>Clarity of presentation</i>					

9.	<i>Any other observation</i>					
	<i>Total Score</i>					

## ANNEXURE - 5

### CHECK LIST 5

#### EVALUATION OF TEACHING SKILL

Name of the Trainee:

Date:

Name of the faculty:

Sl. No.	Items for observation	Strong Points	Weak Points
1.	<i>Communication of the purpose of the talk</i>		
2.	<i>Evokes audience interest in the subject</i>		
3.	<i>The introduction</i>		
4.	<i>The sequence of ideas</i>		
5.	<i>The use of practical examples and / or illustrations</i>		
6.	<i>Speaking style (enjoyable, monotonous, etc. Specify)</i>		
7.	<i>Attempts audience participation</i>		
8.	<i>Summary of the main points at the end</i>		
9.	<i>Ask questions</i>		
10.	<i>Answer questions asked by the audience</i>		
11.	<i>Rapport of speaker with his audience</i>		

12.	<i>Effectiveness of the talk</i>		
13.	<i>Uses AV aids appropriately</i>		

## ANNEXURE - 6

### CHECK LIST 6

#### EVALUATION OF DISSERTATION PRESENTATION

Name of the Trainee:

Date:

Name of the faculty / Observer:

Sl.No	Points to be considered	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	<i>Interest shown in selecting topic</i>					
2.	<i>Appropriate review</i>					
3.	<i>Discussion with guide and other faculty</i>					
4.	<i>Quality of protocol</i>					
5.	<i>Preparation of Proforma</i>					
	<b>Total Score</b>					

## ANNEXURE - 7

### CHECK LIST 7

#### CONTINUOUS EVALUATION OF DISSERTATION WORK

Name of the Trainee:

Date

Name of the Faculty:

Sl. No.	Items for observation during presentation	Poor	Below Average	Average	Good	Very Good
		0	1	2	3	4
1.	Periodic consultation with guide / co- guide					
2.	Regular collection of case material					
3.	Depth of Analysis / Discussion					
4.	Department presentation of findings					
5.	Quality of final output					
6.	Others					
	<b>Total score</b>					



# ANNEXURE - 8

## CHECK LIST 8

### OVERALL ASSESSMENT SHEET

Name of the College:

Date:

<b>Check list no</b>	<b>Particulars</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>1</b>	<b><i>Clinical work</i></b>					
<b>2</b>	<b><i>Clinical presentation</i></b>					
<b>3</b>	<b><i>Seminars</i></b>					
<b>4</b>	<b><i>Journal review</i></b>					
<b>5</b>	<b><i>Teaching skill</i></b>					
<b>6</b>	<b><i>Dissertation work</i></b>					
	<b><i>TOTAL</i></b>					

0- Poor 1- Below average 2- Average 3- Good 4- Very good

Signature of HOD

Signature of Principal

## ANNEXURE - 9

TABLE 1

### ACADEMIC ACTIVITIES ATTENDED

Name:

Admission Year:

College:

Date	Type of activity - Specify Seminar, Journal club, Presentation, UG teaching	Particulars

--	--	--

## LOG BOOK

TABLE 2

### ACADEMIC PRESENTATIONS MADE BY THE TRAINEE

Name :

Admission Year:

College:

Date	Topic	Type of activity - Specify Seminar, Journal club, Presentation, UG teaching

## LOG BOOK

**TABLE 3**

### DIAGNOSTIC AND OPERATIVE PROCEDURES PERFORMED

**Name**

<i>Date</i>	<i>Name</i>	<i>OP No.</i>	<i>Procedure</i>	<i>Category O, A, PA, PI</i>

**Key:**

**O - OBSERVED**

**A - ASSISTED A MORE SENIOR SURGEON**

**PA - PERFORMED PROCEDURE UNDER SUPERVISION**

**PI - PERFORMED INDEPENDENTLY**

#### APPENDIX 111 - FINAL EXAMINATION ELIGIBILITY FORM

(To be filled up the candidate)

Name of the candidate :

Date of Joining :

Identification number or  
registration number

of university :

Course :

Institution :

Eligibility criteria :

Sl No	Parameter	Details	Proof enclosure
1.	Attendance	1 <sup>st</sup> year (minimum 80%) 2 <sup>nd</sup> year(minimum 80%) 3 <sup>rd</sup> year(minimum 80%)	
2.	Thesis	Approved/Not Approved by the University	
3.	Log book	Successfully completed and submitted	
5.	Conferences attended	Number and category : Number of presentations:	
6.	Publications	Number published: Number submitted:	

All the informations provided above are true to the best of my knowledge and if found contrary, I am clearly aware that strict disciplinary actions will be initiated including debarring from examination.

Date Signature of the candidate :

Place Name of the candidate :

Countersigned by:

Faculty as guide:



Name:

Designation:

APPROVAL OF HEAD OF THE DEPARTMENT

I, Dr....., herewith approve that the above candidate is eligible to appear for the final examination as per the documentary evidences provided and best of the knowledge and documents of the department.

Date

Signature :

Place

Name :

Designation :

## **SYLLABUS**

**For Courses affiliated to the**

**Kerala University of Health Sciences**

**Thrissur 680596**



**SUPER SPECIALITY COURSE IN MEDICINE**

**DM Paediatric Oncology**

**Course Code 292**

**(2016-17 Academic year onwards)**

**2016**

## **2. COURSE CONTENT**

### **2.1 Title of course:**

DM Paediatric Oncology

### **2.2 Objectives of course**

#### **Aims & Objectives**

The aim of the curriculum is to equip trainees in the speciality of paediatric oncology with knowledge , skills and attitudes necessary for efficient , independent and safe practice as paediatric oncology specialists . BY the end of training in paediatric oncology , trainees should have acquired knowledge , skills and attitudes in the following areas.

1. Epidemiology of childhood cancer and the etiological background of childhood cancer.  
They should have clear concepts regarding the genetic basis of malignant disease , normal and abnormal cellular growth control and biology of childhood cancer.
2. The clinical features and presentations of different childhood malignancy , the role of biological factors as diagnostics and prognostic aids , indications & techniques of biopsy and optimal methods for tissue handling and biological studies.
3. The principles and strategies of various modalities of treatment for all stages of solid tumors and haematological malignancies that affect children . This include principles of chemotherapy and the rationale of combination chemotherapy regimens , applications and bone marrow transplantation in various childhood malignancies.
4. Management of individual cancers and their associated complications.
5. Effective supportive care including judicious use of blood components, management of infectious complication etc.
6. The acute toxicities of cancer treatment and the late side effects and consequences of therapy including effect on learning , endocrine consequences , major organ toxicities.

### **2.3 Medium of instruction:**

The medium of instruction for the course shall be English.



## **2.4 Course outline**

Hematological and solid malignancies occurring during infancy, childhood and adolescence are not uncommon and require a highly sophisticated approach to diagnosis and treatment based on molecular and cellular biology, epidemiology and other academic disciplines. The rapid and impressive progress in the field in recent decades requires the speciality to be practiced in a milieu in which teaching & research are actively conducted. Outcome of childhood cancers is one of the most impressive among all cancers put together provided these cancers are treated early, diagnosed properly and treated appropriately by trained paediatric oncologists. A dedicated paediatric hematology /oncology team in a teaching milieu with post graduate trainees has been shown to have best patient outcomes worldwide. The paediatric oncology program is designed to provide a diversified organized educational environment that will allow the candidate to develop both the clinical and research skills necessary to become an academic paediatric oncologist.

## **2.5 Duration**

Every candidate seeking admission to the training programme to qualify for the degree of D.M in the subjects shall pursue a regular course as a full time student, in the concerned Department under the guidance of a recognized super speciality teacher for a period of three years. The course commences from 1<sup>st</sup> August in each year.

## **2.6 Syllabus**

Present in clause “Content of each subject in each year of the curriculum”.

## **2.7 Total number of hours**

As given under clause “Content of each subject in each year of the curriculum”.

## **2.8 Branches if any with definition**

Not applicable.

## **2.9 Teaching learning methods**

### **TRAINING PROGRAM**

The training program will aim to give the candidate a sound training of cardiac diagnosis and management. During the period of training they shall take part in all the activities of the department including ward rounds, lectures, seminars, teaching assignments, laboratory studies, surgical session and other duties assigned to them by the Head of the Department.

- All candidates shall work as full time residents during the period of training.
- The training program shall be updated as and when required. The training shall include:-
- Active involvement in the diagnosis and management of patients both in the outpatient, coronary care unit and the wards.
- Participation in lectures, seminars, journal clubs, clinical group discussions etc.
- Exposure to basic and advanced diagnostic, therapeutic and laboratory techniques.
- Exposure to biomedical statistics as applicable to basic research methodology
- Post graduate students shall maintain log books of the work carried out by them. The log books shall be checked and assessed every 6 months by the faculty members, with a view to assure the progress the candidate has made and spot the inadequacies if any.

#### **Out station training**

Outstation training may be given if required. It should not exceed 2 months, the duration, center etc: - will be at the discretion of the Head of the department.

#### **Proposed training program**

##### **I. Inpatient Service**

- a) The candidate will learn the management of various haematological and solid tumors of childhood and their early diagnosis as well as interpretation of various tests and procedures for optimal outcome. All trainees will work as residents and they must fulfil all the residents jobs defined by supervisors.
- b) Throughout the three years of training the candidate will maintain a weekly continuity clinic that provides the opportunity to care for patient longitudinally and to continually improve clinical skills. Candidates establish an ongoing relationship with patients &

their families under the guidance of a faculty member in paediatric hemato-oncology . Trainees will be responsible for supervised admission of patients from the outpatient department or emergency and completion of documents like complete history and physical examination form , investigation requests , reporting and documenting the result of investigations , writing plan of management after consultation & approval from supervisors , daily progress notes, discharge summaries etc.

- c) They would perform specialized diagnostic & therapeutic procedure like bone marrow aspiration and trephine biopsy , FNAC , trucut biopsy , insertion of PICC line , administration of intrathecal chemotherapy , stem cell harvest etc. Where ever indicated.

## **II . Outpatient Service**

The trainee should attend various paediatric oncology outpatient clinic & clinics related to the rotation in radiotherapy , nuclear medicine & surgical oncology . They should participate in different patient interviews and share in the management under supervision.

## **III .Clinical and Academic Activities**

Trainees must attend & participate in the mandatory academic and clinical activities of the department. This include daily morning patient rounds and meetings , clinical round & staff round presentation , journal club meeting , indepartmental meeting , morbidity amd mortality meetings , grand rounds etc.

### **Intended Skills**

1. Full and focused clinical history and perform complete physical examination of children with various malignancies.
2. Request appropriate diagnostic studies and formulate a rational differential diagnosis.
3. Interpret the results of investigations correctly and modify the differential diagnosis accordingly.
4. Timely recognize and manage various oncological emergencies such as septic shock , tumor lysis syndrome, superior venal caval obstruction, spinal cord compression & raised intra cranial pressure.
5. Perform independently specialized diagnostics and therapeutic procedures like bone

marrow aspiration and trephine biopsy , FNAC , tru-cut biopsy , use and care of central venous catheters , lumbar puncture , pleurocentesis , peritoneocentesis etc wherever indicated and learn the use & maintenance of various equipment used for patient care.

6. Administer safely intrathecal drugs.
7. Handle and administer chemotherapy safely.
8. Recognize and manage acute drug reaction to chemotherapy and manage the extravasation of chemotherapy agents appropriately.
9. Manage fever with neutropenia including management after the first line antibiotic therapy
10. Organize and participate in long term follow –up program for children with various malignancies.
11. Participate as a team member in surveillance of survivors using national guidelines.
12. Manage pain related to cancer appropriately and recognize the different patterns of pain and their different therapeutic interventions including non pharmaceutical approaches.
13. Perform complete nutritional assessment for children with cancer and prescribe appropriate nutritional support during & after chemotherapy.
14. Able to give psychosocial support for the child and his family-
15. Trainee should know the concept of good clinical practice.
16. Communicate effectively and empathetically with children and families and be able to convey bad news in appropriate manner.
17. Able to discuss with patients & caregivers various treatment options and gain informed consent for treatment.
18. Educate families and patients about fertility preservation techniques for adolescents who will receive treatment that may impair fertility in the long term.

Work within multidisciplinary teams to manage various oncological problems

#### Teaching

All D.M/M Ch students should take part in the teaching of the post graduate degree students of related subjects, undergraduate medical students and paramedical students and allied health science students posted in the department by rotation.

## Teaching Program

1. In addition to the daily instruction that candidate receive from faculty on inpatient services, there will be daily clinical/academic activities designed to enhance the candidate learning experience for which they will maintain a log book to be submitted at the time of final examinations.
2. The candidate would participate in all teaching activities both intradepartmental as well as inter departmental like:
  - a) Morning in-patient rounds
  - b) Clinico-pathological conferences
  - c) Mortality & morbidity meetings
  - d) Case presentations
  - e) Ward grand rounds
  - f) Radiology rounds
  - g) Journal clubs
  - h) Seminars
3. The division of Paediatric oncology will also organize its academic program for the candidate as follows.
  - a) Clinical case discussion
  - b) Paediatric oncology inpatient grand rounds –weekly
  - c) Neuro- oncology tumor board - biweekly
  - d) Paediatric oncology solid tumor board –weekly
  - e) Radiology club- biweekly
  - f) Journal club-weekly
  - g) Seminar-weekly

## Teaching Experience:

The candidate will be involved in the teaching of postgraduate medical students of paediatric & Radiation oncology , nurses / nursing students . Their teaching skills be assessed & shall form part of the internal assessment.

Internal assessment – This will be done on a continuous basis by the faculty with respect to

overall objectives of the course and will include theory , practical & evaluation of skills

## **2.10 Content of each subject in each year**

### **I BIOLOGICAL BASIS OF CHILDHOOD CANCER**

- Epidemiology of childhood cancer
- Childhood Cancer and Heredity
- Molecular and Genetic Basis of Childhood Cancer
- Biology of Childhood Cancer
- Tumor immunology and Pediatric Cancer

### **II DIAGNOSIS AND EVALUATION OF THE CHILD WITH CANCER**

- Clinical Assessment and Differential Diagnosis of the Child with Suspected Cancer
- Pathology and Molecular Diagnosis of Leukemias and Lymphomas
- Diagnostic Pathology of Pediatric Malignancies

### **III PRINCIPLES OF MULTIMODAL THERAPY**

- General Principles of Chemotherapy
- General Principles of surgery
- Principles of Radiation Oncology
- Infants and Adolescents with Cancer: Special Considerations
- Hematopoietic Stem Cell Transplantation in Pediatric Oncology
- Cancer Clinical Trials: Design, Conduct, Analysis, and Reporting
- Regulating Patient Safety in Cancer Treatment
- Cell and Gene Therapies – Role in pediatric oncology
- Evolving Molecularly Targeted Therapies and biotherapeutics

### **IV MANAGEMENT OF COMMON CANCERS OF CHILDHOOD**

- Acute lymphoblastic leukemia
- Acute Myelogenous leukemia
- Chronic Leukemias of childhood
- Myeloproliferative and Myelodysplastic Disorders
- Hodgkin lymphoma
- Malignant Non-Hodgkin Lymphomas in children

- Lymphoproliferative Disorders and Malignancies Related to Immunodeficiencies
- The Histiocytoses
- Tumors of the Central Nervous System
- Retinoblastoma
- Tumors of the liver
- Renal tumors
- Neuroblastoma
- Rhabdomyosarcoma and the Undifferentiated Sarcomas
- Ewing Sarcoma Family of Tumors: Ewing Sarcoma of Bone and Soft Tissue and the Peripheral primitive Neuroectodermal Tumors
- Nonrhabdomyosarcomatous Soft tissue sarcomas
- Osteosarcoma
- Germ cell tumors
- Endocrine tumors
- Management Of Infrequent Cancers of Childhood

#### **V SUPPORTIVE CARE OF CHILDREN WITH CANCER**

- Oncologic Emergencies
- Tumour Lysis Syndrome
- Hematologic Supportive care for Children with Cancer
- Infectious Complications in Pediatric Cancer patients
- Nutritional Supportive care
- Symptom Management in Supportive care
- Nursing Support of the Child with cancer
- Rehabilitation of the Child with cancer
- Psychiatric and Psychosocial Support for the Child and Family
- The other side of the Bed: What Caregivers can Learn from Listening to Patients and their families
- Ethical Considerations in Pediatric Oncology

## **VI. OTHER ISSUES ARISING AT DIAGNOSIS, DURING TREATMENT, AND AFTER CESSATION OF THERAPY**

- Late effects of Childhood Cancer and Its Treatment
- Educational Issues for Children with cancer
- Palliative Care for the Child with Advanced Cancer
- Financial Issues in Pediatric Cancer
- Pediatric Cancer: Advocacy, Insurance, Education and Employment
- Complementary and Alternative Medical Therapies in Pediatric Oncology
- Pediatric Oncology in Countries with Limited Resources
- Preventing Cancer in Adulthood: Advice for the Pediatrician
- Resources for Children with Cancer, Their families, and Physicians
- Role of Telemedicine in Pediatric Cancer care

### **2.11 No: of hours per subject**

Not applicable as the course is a Residency programme

### **2.12 Practical training**

#### **Proposed time Schedule:**

Sl No.	Rotation(Clinical)	Duration
1	Paediatric Oncology(hematology+solid tumors)	25 months
2	Bone marrow transplantation	4 months
3	Laboratory hematology-oncology	4 months*
4	Research & Elective	3 months*
5	Outstation posting to another cancer centre(optional)	1 month

\*Rotations in Transfusion medicine , Hematopathology , Molecular cytogenetics , cytopathology , histopathology and Immunopathology.

\*\*Rotations of 2-3 weeks in various specialities associated with paediatric hematology



&oncology such as radiation oncology , paediatric oncosurgery, imageology ,catheter clinic, palliative clinic etc.

The first year of the program is an intensive clinical experience designed to allow the candidate to develop cognitive and psychomotor skills in the diagnosis and management of paediatric hematology oncology problems. During the 2nd year the candidate will pursue independent clinical & laboratory based research . In addition the candidate will take course in biostatistics & clinical trial design offered by faculty , enhance the skills related to allied specialities such as laboratpry oncology , imaging and molecular diagnostics . Candidate will spent major part of the last year in the paediatric oncology department.

### **2.13 Records**

As given in clause 2.21.

### **2.14 Dissertation: Ás per Dissertation Regulations of KUHS**

Thesis is an absolute requirement for D.M. course and the candidate has to register the thesis synopsis in the University through proper channel within 6 months of admission. Thesis has to be submitted to the University for Evaluation at least 6 months prior to the conduct of final examination. Modifications and resubmission should be done before writing the examination. Even if the guide is transferred/ retired, the thesis has to be continued under his/her guidance or entrust to another guide in case the original person is not willing to continue. In extra ordinary situations change of guide and change of thesis topic is permissible with prior permission from the University. Only after accepting the thesis, the candidate will be eligible for writing the examination. In addition to this, the student has to present at least one paper/poster in a regional /national / international conference of the concerned speciality during his three year course or at least one publication in a peer reviewed journal. Research paper should be approved by the Institutional Review Board/ Institutional Ethical Committee.

**Research-** The candidate would be introduced to research methodologies and would be expected to complete an independent research project under the supervision & guidance of faculty. He/She would be expected to publish the results of his/her work in reputed journals.

## **Evaluation of Thesis**

The thesis shall be evaluated by a minimum of three experts; one internal and two external experts, who shall not be the examiners for the Theory and Clinical examination of the concerned candidates and it may be accepted/ accepted with modifications/rejected. Only on the acceptance of the thesis by two experts out of three, the candidate shall be permitted to appear for the University examination. If the thesis is not accepted on evaluation by at least two experts, it shall be resubmitted with suggested modifications along with prescribed fees within the prescribed time stipulated by the University from time to time and it shall be re-evaluated by the same experts. If thesis is rejected by two experts, the candidate will lose first chance for appearing in the University examination and has to redo a fresh thesis for further evaluation.

### **2.15 Speciality training if any**

As given in clause “ Content of each subject in each year of the curriculum”

### **2.16 Project work to be done if any**

As stipulated by the Head of the Department

### **2.17 Any other requirements [CME, Paper Publishing etc.]**

- Should have attended minimum of two International/ National/ Zonal/State conferences or workshops concerned with the area of specialization.
- Should have presented at least one paper/poster in International/ National/ Zonal/State conferences concerned with the area of specialization.(as per MCI norms)

OR

- At least one publication in a peer reviewed journal or at least two research papers or original works should be submitted for publication in peer reviewed journals (as per MCI norms).

### **2.18 Prescribed/recommended textbooks for each subject**

1. Pizzo, Philip A., ed. ; Poplack, David G. ed.Principles and practice of pediatric oncology 6TH Philadelphia : Lippincott Williams & Wilkins, 2011
2. Perry, Michael C. ed. The chemotherapy source book. 4th ed. Philadelphia : Lippincott Williams & Wilkins, 2008

3. Nathan, David G ed.; Orkin, Stuart H ed. Nathan and Oski's hematology of infancy and childhood. 5th ed. Philadelphia : W.B.Saunders,
4. Sutow , Wataru W ; Vietti , Teresa J ; Fernbach , Donald J. Clinical pediatric oncology. St. Louis : C.V. Mosby.
5. Pinkerton, C.R. ed. ; Plowman, P.N. ed. Paediatric oncology: Clinical practice and controversies. London : Chapman & Hall Medical.
6. Halperin, Edward C., ed. Pediatric radiation oncology. New York : Raven Press

## **2.19 Reference books**

As stipulated by the Head of Department.

## **2.20 Journals**

1. Annals of Oncology
2. Blood
3. British Journal of Hematology
4. Cancer
5. Clinical Cancer Research
6. Current Opinion in Hematology
7. Current Opinion in Oncology
8. Indian Journal of Cancer
9. Indian Journal of Medical and Pediatric Oncology
10. Journal of Cancer Research and Therapeutics
11. Journal of Clinical Oncology
12. Journal of Pediatric Hematology Oncology
13. Lancet Oncology
14. Leukemia and Lymphoma
15. Pediatric Blood and Cancer
16. Pediatric Hematology / Oncology
17. Hematology / Oncology Clinics of North America

## 2.21 Logbook

A log book is mandatory and has to be maintained by all students and this has to be reviewed by HOD / Unit Chief of the department regularly (at least quarterly). Minimum number of each of the academic activities to be performed by the candidate should be outlined for each speciality. Model check list for journal review/seminars/topic presentation/ teaching skill etc: - is shown in the appendix. Periodic formative assessment has also to be done in the department by the super speciality teachers. Log book will be evaluated during the University examination by all the four examiners with a maximum total mark of 20 in the viva component (*Check Lists appended*).

## 3.EXAMINATIONS

### 3.1 ligibility to appear for exams

The examinations shall be organised on the basis of marking system to evaluate and certify candidate's level of knowledge, skill and competence at the end of the training.

A candidate should appear for all the theory examinations and obtaining a minimum aggregate of 50% marks in theory part and practical part (Practical & Viva) separately shall be mandatory for passing the whole examination.

#### *ELIGIBILITY FOR APPEARING IN FINAL EXAMINATION*

- i. A minimum of 80% attendance during each year of the course separately.
- ii. Successful Submission of completed Logbook.
- iii. Submission of Dissertation and its approval by the University.
- iv. Should have attended minimum of two International/ National/ Zonal/State conferences or workshops concerned with the area of specialization.
- v. Should have presented at least one paper/poster in International/ National/ Zonal/State conferences concerned with the area of specialization.(as per MCI norms).

or

At least one publication in a peer reviewed journal or at least two research papers or original works should be submitted for publication in peer reviewed journals (as per MCI norms).

vi. The prescribed form (annexure 3) for each candidate should be filled up by concerned department and sent to KUHS for issuing hall ticket for the candidate to appear for the examination. If the candidate fails to meet the criteria, he will not be permitted to appear for the examination.

### 3.2 Schedule, ie, approximate months of Regular/Supplementary exams

Generally there shall be two university examinations in a year, one regular and one supplementary examinations with a usual gap of six months.

### 3.3 Scheme of examination showing maximum marks and minimum marks

There shall be theory, practical examination including viva voce at the end of the three year course. Theory examination shall consist of four papers (3 hours duration) including one on recent advances and each paper will carry a maximum of 100 marks. Each question paper shall consist of one essay question of 20 marks and 8 short essays of 10 marks each. There shall be a multiple evaluation of theory papers by two internal examiners and two external examiners and the average mark for each paper is taken as the final marks.

Sl.No.	Subject	Theory		Theory Group		Practical				Practical Group		Total	
		University				University		Viva					
		Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
1	Paper I	100	-	400	200	300		100		400	200	800	400
2	Paper II	100	-										
3	Paper III	100	-										
4	Paper IV	100	-										

### 3.4 Papers in each year

Not applicable.

### 3.5 Details of theory exams

As per clause 3.3

- Paper I – Basic Science as Applied to Paediatric Oncology
- Paper II – Hematological Malignancies & Supportive care
- Paper III – Solid Tumors, Late effects and Palliative care
- Paper IV – Recent Advances in Medical Oncology & Palliative Care

### 3.6 Model question paper for each subject with question paper pattern

QP Code:

Reg.No:

**D.M. (Paediatric Oncology) Degree Examinations  
(Model Question Paper)**

**Paper I – Basic Science as Applied to Paediatric Oncology**

**Time: 3 hrs Max marks:100**

- Answer all questions
- Draw diagrams wherever necessary

**Essays: (20)**

1. Discuss the application of immuno histochemistry in paediatric solid tumours

**Short essays: (8x10=80)**

2. Neurofibromatosis – type I gene
3. Dendritic cells
4. Immune surveillance
5. Programmed cell death
6. Radiation interaction with chemotherapeutic agents
7. Genomic imprinting
8. Single nucleotide polymorphism
9. Hematopoietic stem cells

\*\*\*\*\*

QP Code:

Reg.No:

**D.M. (Paediatric Oncology) Degree Examinations**

**(Model Question Paper)**

**Paper II – Hematological Malignancies & Supportive care**

**Time: 3 hrs Max marks:100**

- Answer all questions
- Draw diagrams wherever necessary

**Essays: (20)**

1. Describe the various chromosomal abnormalities and its prognostic significance in acute lymphoblastic leukaemia in children

**Short essays: (8x10=80)**

2. Minimal residual disease
3. Drug resistance mechanism in acute myeloid leukaemia
4. Juvenile myelomonocytic leukaemia
5. Chemotherapy of Hodgkin's lymphoma
6. Pathology of non Hodgkin lymphoma
7. Management of superior mediastinal syndrome
8. Aetiology and pathophysiology of cancer related anaemia in children
9. Describe platelet refractoriness and alloimmunisation

\*\*\*\*\*

**QP Code:**

**Reg.No:**

**D.M. (Paediatric Oncology) Degree Examinations  
(Model Question Paper)**

**Paper III – Solid Tumors, Late effects and Palliative care**

**Time: 3 hrs Max marks:100**

- Answer all questions
- Draw diagrams wherever necessary

**Essays: (20)**

1. Describe in detail the prognostic factors of neuroblastoma

**Short essays: (8x10=80)**

2. Ameloblastoma
3. Sacrococcygeal teratoma
4. Infantile fibrosarcoma
5. Radiotherapy in Ewing's sarcoma
6. Prognostic factors in osteosarcoma
7. Screening for Wilm's tumor
8. Auditory complications of cancer treatment
9. Management of group E retinoblastoma

\*\*\*\*\*



QP Code:

Reg.No:

**D.M. (Paediatric Oncology) Degree Examinations  
(Model Question Paper)**

**Paper IV – Recent Advances in Medical Oncology & Palliative Care**

**Time: 3 hrs Max marks:100**

- Answer all questions
- Draw diagrams wherever necessary

**Essays: (20)**

1. Discuss the recent trends in the management of acute promyelocytic leukaemia in children

**Short essays: (8x10=80)**

2. Rasburicase
3. Platelet growth factors
4. Role of retinoids in paediatric malignancies
5. Partial nephrectomy in Wilm's tumor
6. Tyrosin kinase inhibitors in the management of Ph+Acute lymphoblastic leukaemia in children
7. Importance of fusion gene in the diagnosis of childhood tumors
8. MYCN amplification in neuroblastoma
9. Adjuvant non drug therapies for the management of pain in children

\*\*\*\*\*

**3.7 Internal assessment component**

Not applicable.

**3.8 Details of practical/clinical practicum exams**

***Practical/Clinical examination shall consist of:***

- i. 1 long case –100 marks
- ii. 2 short cases –80 marks each = 160 marks
- iii. Ward rounds – 40 marks

Viva voce –80 marks

Log Book 20 marks

Total 100 marks

**Total Marks Practicals & Viva Voce –400 marks**

Long case discussion may take a maximum of 1 hr, short cases (total cases 2) - maximum 1 hr, ward rounds – maximum 30 minutes and Viva voce maximum of 1 hr. Maximum number of candidates that can be examined per day may be restricted to 3.

**3.9 Number of examiners needed (Internal & External) and their qualifications**

***Examiners***

1. All Examiners shall be a recognised super speciality teacher as per MCI norms. There shall be two internal examiners (from affiliated colleges of KUHS) and two external examiners (exclusively from outside the state). In departments where there are more than 2 professors, the head of the department preferably be a constant member of the board of examiners, and the other professors shall be posted as internal examiners on rotation basis.

2. Under exceptional circumstances, examinations may be held with 3 (three) examiners provided at least two of them is an external examiner subject to the ratification of the pass board.

3. In the event of there being more than one centre in one city, the external examiners at all the centres in that city shall be the same. Where there is more than one centre of examination, the University shall appoint a Co-ordinator/Convenor to coordinate the examination on its behalf.

**3.10 Details of viva:**

Viva Voce	: 80 marks
<b>Log book</b>	<b>:20 Marks</b>
<b>Total</b>	<b>:100 Marks</b>

Viva voce shall include skiagrams, spots, clinical problems, investigative data, procedures etc.  
The candidate is also required to submit the log book, Thesis / Research work.

#### 4.INTERNSHIP

Not applicable for Medical Superspeciality degree courses.

#### 5.ANNEXURES

##### 5.1 Check Lists for Monitoring: Log Book, Seminar Assessment etc.

##### ANNEXURE - 1

##### CHECK LIST 1 - EVALUATION OF CLINICAL WORK

Name of the Trainee:

Date:

Name of the Faculty:

Sl.No.	Items for observation during evaluation	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Regularity of attendance					
2.	Punctuality					
3.	Interaction with colleagues and supportive staff					
4.	Maintenance of case records					

5.	Presentation of cases					
6.	Investigations work -up					
7.	Bed - side manners					
8.	Rapport with patients					
9.	Counseling patients relatives for interventional procedures					
10.	Overall quality of clinical work					
	Total score					

## ANNEXURE - 2

### CHECK LIST 2 EVALUATION OF CLINICAL CASE PRESENTATION

Name of the Trainee:

Date:

Name of the faculty:

Sl.No	Items for observation during presentation	Poor	Below Average	Average	Good	Very Good
		0	1	2	3	4
1.	Completeness of history					
2.	Whether all relevant points elicited					
3.	Clarity of presentation					
4.	Logical order					

5.	Mentioned all positive and negative points of importance					
6.	Accuracy of general physical examination					
7.	Whether all physical signs elicited correctly					
8.	Diagnosis: whether it follows logically					
9.	Investigations required  In Relevant order					
10	Interpretation of Investigations					
11	Ability to discuss differential diagnosis.					
12	Discussion on management					
	Grand Total					

# ANNEXURE 3

## CHECK LIST 3

### EVALUATION OF SEMINAR PRESENTATION

Name of the Trainee:

Date:

Name of the Faculty:

Sl no	Items for observation during presentation	Poor	Below Average	Average	Good	Very Good
		0	1	2	3	4
1	<b>Whether other relevant publications consulted</b>					
2	<b>Whether cross - references have been consulted</b>					
3	<b>Completeness of Preparation</b>					
4	<b>Clarity of Presentation</b>					
5	<b>Understanding of subject</b>					
6	<b>Ability to answer the questions</b>					
7	<b>Time scheduling</b>					
8	<b>Appropriate use of Audio - Visual aids</b>					
9	<b>Overall performance</b>					
10	<b>Any other observation</b>					
	<b>Total score</b>					

**ANNEXURE - 4****CHECK LIST 4****EVALUATION OF JOURNAL REVIEW PRESENTATIONS****Name of the Trainee:****Date:****Name of the Faculty:**

Sl. No	Items for observation during presentation	Poor	Below Average	Average	Good	Very Good
		0	1	2	3	4
1.	Article chosen					
2.	Extent of understanding of scope & objectives of the paper by the candidate					
3.	Whether cross-references have been consulted					
4.	Whether other relevant publications consulted					
5.	Ability to respond to questions on the paper/ subject					
6.	Audio - Visual aids used					
7.	Ability to discuss the paper					
8.	Clarity of presentation					
9.	Any other observation					
	Total Score					

## ANNEXURE - 5

### CHECK LIST 5

#### EVALUATION OF TEACHING SKILL

Name of the Trainee:

Date:

Name of the faculty:

Sl. No.	Items for observation	Strong Points	Weak Points
1.	<i>Communication of the purpose of the talk</i>		
2.	<i>Evokes audience interest in the subject</i>		
3.	<i>The introduction</i>		
4.	<i>The sequence of ideas</i>		
5.	<i>The use of practical examples and / or illustrations</i>		
6.	<i>Speaking style (enjoyable, monotonous, etc. Specify)</i>		
7.	<i>Attempts audience participation</i>		
8.	<i>Summary of the main points at the end</i>		
9.	<i>Ask questions</i>		
10.	<i>Answer questions asked by the audience</i>		
11.	<i>Rapport of speaker with his audience</i>		
12.	<i>Effectiveness of the talk</i>		
13.	<i>Uses AV aids appropriately</i>		



## ANNEXURE - 6

### CHECK LIST 6

#### EVALUATION OF DISSERTATION PRESENTATION

Name of the Trainee:

Date:

Name of the faculty / Observer:

Sl.No	Points to be considered	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Interest shown in selecting topic					
2.	Appropriate review					
3.	Discussion with guide and other faculty					
4.	Quality of protocol					
5.	Preparation of Proforma					
	<b>Total Score</b>					

## ANNEXURE - 7

### CHECK LIST 7

#### CONTINUOUS EVALUATION OF DISSERTATION WORK

Name of the Trainee:

Date

Name of the Faculty:

Sl. No.	Items for observation during presentation	Poor	Below Average	Average	Good	Very Good
		0	1	2	3	4
1.	Periodic consultation with guide / co- guide					
2.	Regular collection of case material					
3.	Depth of Analysis / Discussion					
4.	Department presentation of findings					
5.	Quality of final output					
6.	Others					
	<b>Total score</b>					

## ANNEXURE - 8

### CHECK LIST 8

#### OVERALL ASSESSMENT SHEET

Name of the College:

Date:

<b>Check list no</b>	<b>Particulars</b>	<b>0 Poor</b>	<b>1 Below average</b>	<b>2 Average</b>	<b>3 Good</b>	<b>4 Very good</b>
<b>1</b>	<b>Clinical work</b>					
<b>2</b>	<b>Clinical presentation</b>					
<b>3</b>	<b>Seminars</b>					
<b>4</b>	<b>Journal review</b>					
<b>5</b>	<b>Teaching skill</b>					
<b>6</b>	<b>Dissertation work</b>					
	<b>TOTAL</b>					

Signature of HOD

Signature of Principal

The above overall assessment sheet used along with the logbook should form the basis for certifying satisfactory completion of course of study, in addition to the attendance requirement.

Key: Mean score: Is the sum of all the scores of checklists 1 to 7

A, B,.....: Name of trainees

**ANNEXURE - 9**

**LOG BOOK**

*TABLE 1*

*ACADEMIC ACTIVITIES ATTENDED*

**Name:**

**Admission Year:**

**College:**

Date	Type of activity - Specify Seminar, Journal club, Presentation, UG teaching	Particulars

सर्वं भवन्तु सुखिनः

## LOG BOOK

TABLE 2

### ACADEMIC PRESENTATIONS MADE BY THE TRAINEE

Name :

Admission Year:

College:

Date	Topic	Type of activity - Specify Seminar, Journal club, Presentation, UG teaching

## LOG BOOK

**TABLE 3**

### DIAGNOSTIC AND OPERATIVE PROCEDURES PERFORMED

Name

<i>Date</i>	<i>Name</i>	<i>OP No.</i>	<i>Procedure</i>	<i>Category</i> <i>O, A, PA, PI</i>

**Key:**

**O - OBSERVED**

**A - ASSISTED A MORE SENIOR SURGEON**

**PA - PERFORMED PROCEDURE UNDER SUPERVISION**

**PI - PERFORMED INDEPENDENTLY**

### FINAL EXAMINATION ELIGIBILITY FORM

(To be filled up the candidate)

Name of the candidate :

Date of Joining :



Identification number or

registration number

of university :

Course :

Institution :

Eligibility criteria :

Sl No	Parameter	Details	Proof enclosure
1.	Attendance	1 <sup>st</sup> year (minimum 80%) 2 <sup>nd</sup> year(minimum 80%) 3 <sup>rd</sup> year(minimum 80%)	
2.	Thesis	Approved/Not Approved by the University	
3.	Log book	Successfully completed and submitted	
5.	Conferences attended	Number and category : Number of presentations:	
6.	Publications	Number published: Number submitted:	

All the informations provided above are true to the best of my knowledge and if found contrary, I am clearly aware that strict disciplinary actions will be initiated including debarring from examination.

Date Signature of the candidate :

Place Name of the candidate :

Countersigned by: सर्व भयन्तु मुग्धनः

Faculty as guide:

Name:

Designation:

APPROVAL OF HEAD OF THE DEPARTMENT

I, Dr....., herewith approve that the above candidate is eligible to appear for the final examination as per the documentary evidences provided and best of the knowledge and documents of the department.

Date

Signature :

Place

Name :

Designation :





## **SYLLABUS**

**For Courses affiliated to the  
Kerala University of Health Sciences  
Thrissur 680596**



**SUPER SPECIALITY COURSE IN MEDICINE**

**DM NEONATOLOGY**

**Course Code: 293**

**(2016-17 Academic year onwards)**

**2016**

## 2. COURSE CONTENT

### 2.1 Title of course:

DM Neonatology

### 2.2 Objectives of course

#### 1. AIM

The aim of the DM Programme is to impart advanced training in Neonatology to produce competent super-specialists who are able to provide clinical care of the highest order to newborn infants, and serve as future teachers, trainers, researchers and leaders in the field of Neonatology.

#### 2. LEARNING OBJECTIVES

*After completing the DM (Neonatology) course, the student should be able to :*

1. Analyse neonatal health problems scientifically, taking into account the biological basis as well as the socio-behavioural epidemiology of perinatal-neonatal disease, and advise and implement strategies aimed at prevention of neonatal morbidity and mortality.
2. Provide evidence-based care to newborn infants using advanced therapeutic and supportive modalities and skills.
3. Exhibit communication skills of a high order and demonstrate humane and compassionate attributes befitting a caring neonatologist.
4. Implement a comprehensive follow up and early intervention programme for the 'at risk' newborn infant, and plan, counsel and advise rehabilitation of the neurodevelopmentally challenged infant.
5. Take rational decisions in the face of ethical dilemmas in neonatal-perinatal practice.
6. Recognize the role of pain management, supportive care and palliation in the treatment of neonatal disease.

7. Familiarize with the the pharmacodynamics, pharmacokinetics and pharmacoeconomics of drugs in neonatal care. Rationalize antibiotics usage and drug utilization based on the appropriate clinical situations.
8. Plan and carry out research in neonatal health in clinical, community and laboratory settings.
9. Teach newborn care to the medical and the nursing students as well as other paramedical / community health functionaries, and develop learning resource materials for them.
10. Plan, establish and manage level II and level III neonatal units independently.
11. Contribute toward development and adaptation of neonatal care technologies.
12. Organize newborn care in the community and at the secondary level of health system, and play the assigned role in the national programmes aimed at the health of mothers and their infants.
13. Work as a focal point for a multi-disciplinary endeavor for clinical care, education, research and community action with other stakeholders and partners.
14. Seek and analyze new literature and information on neonatology, update concepts, and practise evidence-based neonatology.

### **2.3 Medium of instruction:**

The medium of instruction for the course shall be English.

### **2.4 Course outline**

As given under clause 2.10 of the curriculum.

### **2.5 Duration**

Every candidate seeking admission to the training programme to qualify for the degree of D.M in the subjects shall pursue a regular course as a full time student, in the concerned Department under the guidance of a recognized super speciality teacher for a period of three years. The course commences from 1<sup>st</sup> August in each year.

## 2.6 Syllabus -

As given under clause 2.10 of the curriculum.

## 2.7 Total number of hours

As given under clause 2.10 of the curriculum.

## 2.8 Branches if any with definition

Not applicable.

## 2.9 Teaching learning methods

### TRAINING PROGRAM

#### a. Overview

The total period of DM course is 36 months. Of this, 30 months would be exclusively in clinical Neonatology . The remaining 6 months would be used for essential rotation and research activity.

#### b. Newborn services

The candidates will have at least 30 months of posting in the newborn services. The candidates must get adequate exposure to neonatal follow up, neonatal emergencies, delivery room care of neonates and acquisition of practical skills (specified below).

#### c. Essential Rotations : (6 months)

- Perinatology – Obstetrics (Dept. of Obstetrics-Gynecology) : 1 month
- Neonatal surgery\* : 1 month  
(Candidate should have been directly associated with the management of atleast 10 neonatal surgical patients. He/ She should have observed the operative procedures and the post operative management of all these patients. These cases must be documented in the log book.)
- Community Neonatology \*; Ophthalmology \*; Child development / rehabilitation; \*  
: 6 weeks

*(Ophthalmology: Candidate should have observed at least 50 ROP evaluations and assisted the ophthalmologist during these procedures and viewed ROP stages thru the “observation ophthalmoscope” whenever feasible. Any other neonatalophthalmological problems seen should be appropriately documented.)*

*(Community Neonatology should be done in association with the field visits of the community medicine program)*

*(Child development attachment would involve observing developmental evaluation and intervention therapy --- and assisting the developmental therapist during these sessions. Follow-up and evaluation of 15 high risk Neonates till the age of 1 year must be documented in conjunction with the developmental therapist and the activities of the Dept. of Developmental Pediatrics)*

- Radiology\*,Cardiology\* : 2 weeks
- Research # :2 months

\* The rotation could be done as designated physician for specific rotations while continuing to work in the Neonatal ICU.

# This period would be used for research work. The candidate would be doing once a week NICU duties during this period and exempted from all other routine clinical work. Exposure to biomedical statistics as applicable to basic research methodology would be an essential during this phase.

Log book entries are necessary for essential rotation. The maintenance of Log-Book is a Mandatory Requirement

The tenure of the course and the elective postings should be utilized by the candidates to familiarize themselves through consultation and self learning, the essentials of genetics, perinatal pathology, anesthesiology, epidemiology/ biostatistics, basic sciences, informatics and education technology etc.

## LEARNING OPPORTUNITIES

- Learning in DM neonatology will essentially be self-directed and will take place while working in various areas and through interactions in the rounds.
- Participation in the following minimum formal sessions are recommended in order to facilitate and supplement learning process
  - Journal club (once a week)
  - Perinatal round (once a week)
  - Seminar (once a week)

- Clinical case discussion (once a week)
- Perinatal audit (once a month)
- Research review (once a month)
- Neonatal surgery (once a month)

- In addition, sessions on imaging, pathology, microbiology, biostatistics/epidemiology as well as interdepartmental seminars may be undertaken.
- Candidates will be required to follow up and document long-term (1 year or more) course of at least 15 babies during the DM course.

All candidates shall work as full time residents during the period of training.

The training program shall be updated as and when required.

### **Teaching**

All D.M students should take part in the teaching of the post graduate degree students of related subjects, undergraduate medical students and paramedical students and allied health science students posted in the department by rotation.

## **2.10 Contents of each subject in each year**

### **Content For DM Neonatology Course**

#### **LIST OF SKILLS**

#### **CLINICAL**

- Neonatal examination, anthropometry
- Developmental assessment
- Early stimulation and intervention
- Neonatal resuscitation
- Neonatal ventilation : CPAP, IMV; newer modes of ventilation
- Blood sampling : Capillary, venous, arterial
- Insertion of peripheral venous, umbilical venous and umbilical arterial catheters
- Monitoring : invasive, non-invasive
- Bedside ultrasonography.
- Enteral feeding (cup ,spoon, gavage, breast)
- Kangaroo mother care
- Lactation management
- Parenteral nutrition
- Lumbar puncture and ventricular tap
- Chest Physiotherapy
- Placing of 'chest tube'

- Exchange transfusion
- Peritoneal dialysis
- Bed side tests: shake test, sepsis screen, hematocrit, urine examination, CSF examination, Kleihauer technique, Apt test etc.
- Neonatal drug therapy
- Nursery house keeping routines and asepsis procedures
- Universal precautions
- Handling, effective utilization and trouble shooting of neonatal equipment.
- Maintaining records / database , preparing patient reports

#### COMMUNICATION

- Communication with parents, families and communities

#### **EDUCATION/TRAINING**

- Teaching skills : lectures, tutorials
- Participatory and small group learning skill
- Principles of educational objectives, assessment and media
- Preparing learning resource material
- Use of audio-visual aids

#### SELF-DIRECTED LEARNING

- Learning needs assessment, literature search, evaluating evidence

#### RESEARCH METHOD

- Framing of research question, designing and conducting study, analyzing and interpreting data and writing a paper.

#### **Theory**

#### **BASIC SCIENCES**

- Basic genetics
- Fetal and neonatal immunology
- Mechanism of disease/s
- Applied anatomy and embryology
- Feto-placental physiology
- Neonatal adaptation
- Thermo-regulation
- Development and maturation of lungs, respiratory control, lung functions, ventilation, gas exchange, ventilation perfusion.
- Physiology and development of cardiovascular system, developmental defects, physiology and hemodynamics of congenital heart disease.
- Fetal and intrauterine growth.
- Development and maturation of nervous system, cerebral blood flow, blood brain barrier, special senses.

- Fetal and neonatal endocrine physiology
- Developmental pharmacology
- Developmental hematology,
- Development of liver functions and bilirubin metabolism
- Renal physiology
- Physiology of gastrointestinal tract, sucking, swallowing, digestion, absorption.
- Fluid and Electrolyte balance
- Metabolic pathways pertaining to glucose, calcium and magnesium
- Biochemical basis of inborn errors of metabolism

#### **GENERAL TOPICS**

- Research methodology
- Biostatistics
- Ethics in perinatology/neonatology
- Principles of education (objectives, curriculum, assessment and use of media)
- Computer, informations technology, internet

#### **PERINATOLOGY**

- Perinatal and neonatal mortality, morbidity, epidemiology.
- High risk pregnancy: detection, monitoring and management.
- Fetal monitoring, clinical, electronic; invasive, and non-invasive
- Intrapartum monitoring and procedures
- Assessment of fetal risk, and decision for termination of pregnancy
- Diagnosis and management of fetal diseases
- Medical diseases affecting pregnancy and fetus, psychological and ethical considerations
- Fetal interventions.
- Fetal origin of adult disease

#### **NEONATAL RESUSCITATION**

#### **NEONATAL VENTILATION**

#### **BLOOD GAS AND ACID BASE DISORDERS**

#### **NEONATAL ASSESSMENT AND FOLLOW UP**

- Assessment of gestation, neonatal behaviour, neonatal reflexes
- Developmental assessment, detection of neuromotor delay, stimulation techniques
- Growth monitoring
- Immunization



## **CARE OF LOW BIRTH WEIGHT BABIES**

### **BODY SYSTEMS**

#### **i) RESPIRATORY SYSTEM**

- Neonatal airways: physiology, pathology; management
- Pulmonary diseases: Hyaline membrane disease, transient tachypnea, aspiration pneumonia, pulmonary air leak syndromes, pulmonary hemorrhage, developmental defects
- Oxygen therapy and its monitoring
- Pulmonary infections
- Miscellaneous pulmonary disorders.

#### **ii) Cardiovascular system**

- Fetal circulation, transition from fetal to neonatal physiology
- Examination and interpretation of cardiovascular signs and symptoms
- Special tests and procedures (Echocardiography, angiography)
- Diagnosis and management of congenital heart diseases
- Rhythm disturbances
- Hypertension in neonates
- Shock: pathophysiology, monitoring, management.

#### **iii) Gastrointestinal system**

- Disorders of liver and biliary system.
- Bilirubin metabolism
- Neonatal jaundice: diagnosis, monitoring, management, phototherapy, exchange transfusion.
- Kernicterus
- Prolonged hyperbilirubinemia
- Congenital malformations
- Necrotising enterocolitis

#### **iv) Nutrition**

- Fetal nutrition
- Physiology of lactation
- Breast feeding
- Lactation management, breast milk banking, maternal medications and nursing
- Feeding of Low Birth Weight
- Parenteral nutrition
- Vitamins and micronutrients in newborn health

**v) Renal system**

- Developmental disorders
- Renal functions
- Fluid and electrolyte management
- Acute renal failure (diagnosis, monitoring, management).

**vi) Endocrine and metabolism**

- Glucose metabolism, hypoglycemia, hyperglycemia
- **Calcium disorders**
- Magnesium disorders
- Thyroid disorders
- Adrenal disorders
- Ambiguous genitalia
- Inborn errors of metabolism

**vii) Hematology**

- Physiology
- Anemia
- Polycythemia
- Bleeding and coagulation disorders
- Rh hemolytic disease

**viii) Neurology**

- Clinical neurological assessment
- Neonatal seizures
- Intracranial hemorrhage
- Neuro-physiology, EEG, BERA etc.
- Brain imaging
- Hypoxic ischemic encephalopathy
- Neuro-muscular disorders
- Degenerative diseases
- CNS malformation

**ix) Surgery and orthopedics**

- Diagnosis of neonatal surgical conditions
- Pre and post operative care
- Neonatal anesthesia
- Metabolic changes during anesthesia and surgery
- Orthopedic problems

**x) Neonatal infections**

- Intrauterine infections
- Superficial infections
- Diarrhea
- Septicemia

- Meningitis
- Osteomyelitis and arthritis
- Pneumonias
- Perinatal HIV
- Miscellaneous infective disorders including HBV and Candidemia

**xi) Neonatal Imaging**

- X-rays, ultrasound, MRI, CT Scan etc.

**xii) Neonatal ophthalmology**

- Developmental aspects
- Retinopathy of prematurity
- Sequelae of perinatal infections

**xiii) Neonatal ENT disorders**

**xiv) Neonatal dermatology**

**Transport of neonates**

**Neonatal procedures**

**L) Organization of neonatal care**

**M) Community neonatology**

- Vital statistics, health system;
- Causes of neonatal, perinatal death
- Neonatal care priorities and National programmes
- Neonatal care at primary and secondary levels
- Role of different health functionaries

**N) Other topics of contemporary importance**

**2.11 No: of hours per subject**

Not applicable as the course is a Residency programme

**2.12 Practical training**

As given in clause 2.10 of the curriculum.

**2.13 Records**

As given in clause 2.21

## **2.14 Dissertation: As per Dissertation Regulations of KUHS**

Thesis is an absolute requirement for D.M course and the candidate has to register the thesis synopsis in the University through proper channel within 6 months of admission. Thesis has to be submitted to the University for Evaluation at least 6 months prior to the conduct of final examination. Modifications and resubmission should be done before writing the examination. Even if the guide is transferred/retired, the thesis has to be continued under his/her guidance or entrust to another guide in case the original person is not willing to continue. In extra ordinary situations change of guide and change of thesis topic is permissible with prior permission from the University. Only after accepting the thesis, the candidate will be eligible for writing the examination. In addition to this, the student has to present at least one paper/poster in a regional /national / international conference of the concerned speciality during his three year course or at least one publication in a peer reviewed journal. Research paper should be approved by the Institutional Review Board/ Institutional Ethical Committee.

### **Evaluation of Thesis**

The thesis shall be evaluated by a minimum of three experts; one internal and two external experts, who shall not be the examiners for the Theory and Clinical examination of the concerned candidates and it may be accepted/ accepted with modifications/rejected. Only on the acceptance of the thesis by two experts out of three, the candidate shall be permitted to appear for the University examination. If the thesis is not accepted on evaluation by at least two experts, it shall be resubmitted with suggested modifications along with prescribed fees within the prescribed time stipulated by the University from time to time and it shall be re-evaluated by the same experts. If thesis is rejected by two experts, the candidate will lose first chance for appearing in the University examination and has to redo a fresh thesis for further evaluation.

## **2.15 Speciality training if any**

As given in clause 2.10 of the curriculum

## **2.16 Project work to be done if any**

As stipulated by the Head of the Department.

## **2.17 Any other requirements [CME, Paper Publishing etc.]**

- Should have attended minimum of two International/ National/ Zonal/State conferences or workshops concerned with the area of specialization.

- Should have presented at least one paper/poster in International/ National/ Zonal/State conferences concerned with the area of specialization.(as per MCI norms)

OR

- At least one publication in a peer reviewed journal or at least two research papers or original works should be submitted for publication in peer reviewed journals (as per MCI norms).

#### **2.18 Prescribed/recommended textbooks for each subject**

As stipulated by the Head of Department.

#### **2.19 Reference books**

As stipulated by the Head of Department.

#### **2.20 Journals**

As stipulated by the Head of Department.

#### **2.21 Logbook**

A log book is mandatory and has to be maintained by all students and this has to be reviewed by HOD / Unit Chief of the department regularly (at least quarterly). Minimum number of each of the academic activities to be performed by the candidate should be outlined for each speciality. Model check list for journal review/seminars/topic presentation/ teaching skill etc: - is shown in the appendix. Periodic formative assessment has also to be done in the department by the super speciality teachers. Log book will be evaluated during the University examination by all the four examiners with a maximum total mark of 20 in the viva component (*Check Lists appended*).

### **3. EXAMINATIONS**

#### **3.1 Eligibility to appear for exams**

The examinations shall be organised on the basis of marking system to evaluate and certify candidate's level of knowledge, skill and competence at the end of the training.

A candidate should appear for all the theory examinations and obtaining a minimum aggregate of 50% marks in theory part and practical part (Practical & Viva) separately shall be mandatory for passing the whole examination.

#### **ELIGIBILITY FOR APPEARING IN FINAL EXAMINATION**

- A minimum of 80% attendance during each year of the course separately.
- Successful Submission of completed Logbook.
- Submission of Dissertation and its approval by the University.
- Should have attended minimum of two International/ National/ Zonal/State conferences or workshops concerned with the area of specialization.

v. Should have presented at least one paper/poster in International/ National/ Zonal/State conferences concerned with the area of specialization.(as per MCI norms).

or

At least one publication in a peer reviewed journal or at least two research papers or original works should be submitted for publication in peer reviewed journals (as per MCI norms).

vi. The prescribed form (annexure 3) for each candidate should be filled up by concerned department and sent to KUHS for issuing hall ticket for the candidate to appear for the examination. If the candidate fails to meet the criteria, he will not be permitted to appear for the examination.

### 3.2 Schedule of Regular/Supplementary exams

Generally there shall be two university examinations in a year, one regular and one supplementary examinations with a usual gap of six months.

### 3.3 Scheme of examination showing maximum marks and minimum marks

There shall be theory, practical examination including viva voce at the end of the three year course. Theory examination shall consist of four papers (3 hours duration) including one on recent advances and each paper will carry a maximum of 100 marks. Each question paper shall consist of one essay question of 20 marks and 8 short essays of 10 marks each. There shall be a multiple evaluation of theory papers by two internal examiners and two external examiners and the average mark for each paper is taken as the final marks.

Sl.No.	Subject	Theory		Theory Group		Practical				Practical Group		Total	
		University				University		Viva					
		Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
1	Paper I	100	-	400	200	300		100		400	200	800	400
2	Paper II	100	-										
3	Paper III	100	-										
4	Paper IV	100	-										

### 3.4 Papers in each year

Not applicable.

### 3.5 Details of theory exams

Duration: Three hours each

As per clause 3.3

Paper I Basic sciences, Perinatology, Resuscitation, Equipment in neonatal care, Research Methodology.

Paper II Community Neonatology & Essential Newborn Care

Paper III Clinical Neonatology

Paper IV Recent Advances,

Allied Disciplines (eg Pediatric Surgery), Neurodevelopmental follow-up, Rehabilitation etc.

### 3.6 Model question paper for each subject with question paper pattern

QP Code:

Reg No:

#### DM (NEONATOLOGY) DEGREE EXAMINATIONS (Model Question Paper)

Paper I - Basic Sciences, Perinatology, Resuscitation, Equipment in neonatal care

Time: 3hrs Max marks: 100

- Answer all questions
- Draw diagrams wherever necessary

Essay: (20)

1. Describe the salient features of the placenta in maternal and fetal disorders.

Short essays: (8X10 = 80)

2. Describe cardiorespiratory adjustments at birth.
3. Pulse oximetry in the neonatal ICU.
4. Assessment of fetal wellbeing during pregnancy.
5. Histopathological changes in the brain in kernicterus.
6. Delayed cord clamping – risks and benefits.
7. Principle and practice of patient triggered ventilation.
8. Development of structure and function of the skin through gestation.
9. Management of fetal tachycardia in pregnancy

\*\*\*\*\*

QP Code:

Reg No:

#### DM NEONATOLOGY DEGREE EXAMINATIONS (Model Question Paper)

Paper II – Community Neonatology & Essential Newborn Care

Time : 3hrs Max marks : 100

- Answer all questions
- Draw diagrams wherever necessary

Essay : (20)

1. What are the goals and guiding principles of INAP. What are the intervention packages designed to achieve these.

**Short essays: (8X10 = 80)**

2. Thermoregulation in a tribal area PHC.
3. What are the nutrient requirements of a term infant
4. What are NSSK and JSSK
5. What are the problems facing low birth weight infants and community based approach for dealing with them
6. What are the advantages and disadvantages of KMC
7. Initiation of breastfeeding – timing and challenges.
8. Delayed passage of meconium.

\*\*\*\*\*

**QP Code :**

**Reg No:**

**DM NEONATOLOGY DEGREE EXAMINATIONS  
(Model Question Paper)**

**Paper III – Clinical Neonatology**

**Time: 3hrs Max marks : 100**

- Answer all questions
- Draw diagrams wherever necessary

**Essay: (20)**

1. A 700gms 26 week pre term is delivered by vaginal delivery. Please outline the course of proposed diagnoses, treatment, complications and follow up.

**Short essays: (8X10 = 80)**

2. Diagnosis, treatment and follow up of neonatal meningitis.
3. Pierre Robin syndrome.
4. Approach to a well baby with thrombocytopenia.
5. Etiology and work up for a non immune hydrops baby.
6. Approach to newly born baby with ambiguous genitalia – medical and social aspects.
7. Treatment of refractory hypoglycemia in a two days old infant.
8. Transportation of a newborn with cyanotic heart disease.
9. Work up and diagnosis of apnea in a ten days old 32 week pre term.

\*\*\*\*\*

**QP Code :**

**Reg No:**

**DM (NEONATOLOGY) DEGREE EXAMINATIONS  
(Model Question Paper)**

**Paper IV – Recent Advances, Research Methodology, Allied Disciplines (eg Pediatric Surgery) Neurodevelopmental follow – up, Rehabilitation etc.**



**Time : 3hrs Max marks : 100**

• Answer all questions

• Draw diagrams wherever necessary

**Essay : (20)**

1. Therapeutic Hypothermia – recommendations and use as neuroprotective method in perinatal asphyxia. What are the long term results of such treatment

**Short essays : (8X10 = 80)**

2. Recent advances in management of retinopathy of prematurity.
3. Diagnosis and management of developmental dysplasia of the hip.
4. Newer drugs in neonatal shock.
5. Algorithm for postnatal workup of antenatal renal collecting system dilatation.
6. Newborn screening in India.
7. Sample size estimation.
8. NIDCAP.
9. Compare DDST, Bailey and DASII.

\*\*\*\*\*

**3.7 Internal assessment component**

Not applicable.

**3.8 Details of practical examination.**

***Practical examination shall consist of clinical practicals and viva voce.  
(Marks: clinical practicals 300 + Viva voce 100 = Total 400 marks):***

- i. 1 long case – 100
- ii. 2 short cases – (80 marks each) -160 marks
- iii. Ward rounds – 40 marks

iv. Viva voce – **80 marks**

Log book : 20 marks.

Long case discussion may take a maximum of 1 hr, short cases (total cases 2) - maximum 1 hr, ward rounds – maximum 30 minutes and Viva voce maximum of 1 hr. Maximum number of candidates that can be examined per day may be restricted to 3.

**3.9 Number of examiners needed (Internal & External) and their qualifications**

**Examiners**

1. All Examiners shall be a recognised super speciality teacher as per MCI norms. There shall be two internal examiners (from affiliated colleges of KUHS) and two external examiners (exclusively from outside the state). In departments where there

are more than 2 professors, the head of the department preferably be a constant member of the board of examiners, and the other professors shall be posted as internal examiners on rotation basis.

2. Under exceptional circumstances, examinations may be held with 3 (three) examiners provided at least two of them is an external examiner subject to the ratification of the pass board.

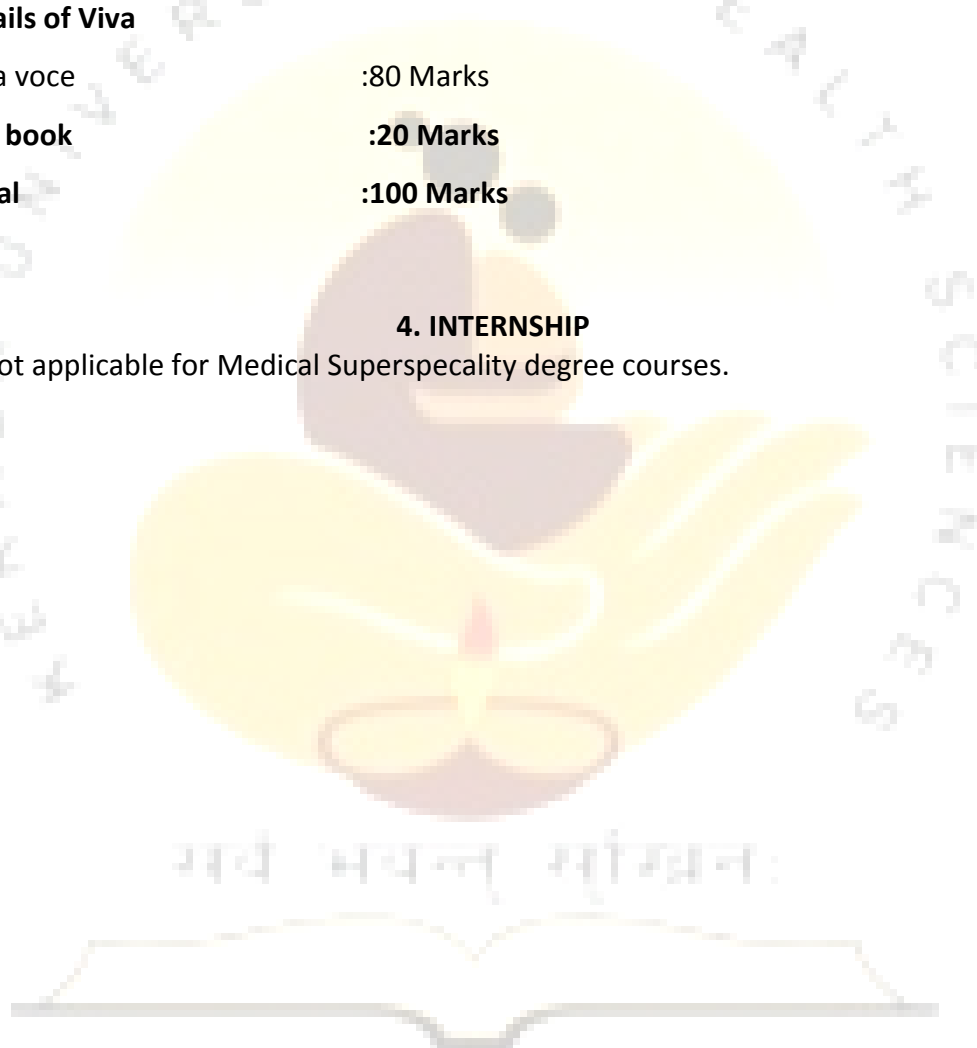
4. In the event of there being more than one centre in one city, the external examiners at all the centres in that city shall be the same. Where there is more than one centre of examination, the University shall appoint a Co-ordinator/Convenor to coordinate the examination on its behalf.

### 3.10 Details of Viva

Viva voce	:80 Marks
Log book	:20 Marks
Total	:100 Marks

### 4. INTERNSHIP

Not applicable for Medical Superspeciality degree courses.



## **5.ANNEXURES**

### **5.1 Check Lists for Monitoring: Log Book, Seminar Assessment etc.**

DM Neonatology Program,

(Kerala University of Health Sciences)

#### **RECORD OF TRAININGS**

##### **LOG BOOK**

Name of trainee:

Registration number

Tenure:

Institute and Place:

Head of department and supervising Specialist:

Signature of trainee

Signature of

Head of department

No	Date	Name	Age/ sex	Clinical I examn	Clinical Diagnosis	Lab Diagnosis	Final Diagnosis	Unventilat ed	Ventilated			Mangeme nt	Bedside/ long case	Remark s
									CPA P	I M V	Spec ial			
1														
2														
3														
4														
5														
6														
7														
8														
9														
10														

### Case Presentations and Bedside Discussions (NICU)

Year: First / Second / Third

Sl.No	CASES	Bed-side	Long-case	Total 1 <sup>st</sup> year
1.	HMD			
2.	MAS			
3	Neonatal jaundice			
4	PDA			
5	CHD- acynotic			
6	Cyanotic			
7	CCF			
8	Arrhythmias			
9	ARF			
10	Normal newborn			
11	Assessment of gestational age			
12	IUGR			
13	HIE			
14	Convulsions			
15	IVH			
16	Development assessment			
17	Polycythemia			
18	Anemia			
19	Sepsis with MODS			
20	NEC			
21	Birth trauma			
22	Floppy infant			

23	Hydrocephalus			
24	Shock			
25	HDN			
26	Hypothyroidism			
27	Ambiguous genitalia			
28	IDN			
29	TTNB			
30	Downs syndrome			
31	Neural tube defects			
32	Preterm baby			
33	Meningitis			
34	CDH			
35	GERD			
36	TEF			
37	CLD			
38	PPHN			
39	Hydrops fetalis			
40	Hypothermia			

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Sl.No	CASES	Bed-side	Long-case	Total 2 <sup>nd</sup> year
1.	HMD			
2.	MAS			
3	Neonatal jaundice			
4	PDA			

5	CHD- acynotic			
6	Cyanotic			
7	CCF			
8	Arrhythmias			
9	ARF			
10	Normal newborn			
11	Assessment of gestational age			
12	IUGR			
13	HIE			
14	Convulsions			
15	IVH			
16	Development assessment			
17	Polycythemia			
18	Anemia			
19	Sepsis with MODS			
20	NEC			
21	Birth trauma			
22	Floppy infant			
23	Hydrocephalus			
24	Shock			
25	HDN			
26	Hypothyroidism			
27	Ambiguous genitalia			
28	IDN			
29	TTNB			
30	Downs syndrome			
31	Neural tube defects			
32	Preterm baby			

33	Meningitis			
34	CDH			
35	GERD			
36	TEF			
37	CLD			
38	PPHN			
39	Hydrops fetalis			
40	Hypothermia			

Sl.No	CASES	Bed-side	Long-case	Total 3 <sup>rd</sup> year
1.	HMD			
2.	MAS			
3	Neonatal jaundice			
4	PDA			
5	CHD- acynotic			
6	Cyanotic			
7	CCF			
8	Arrhythmias			
9	ARF			
10	Normal newborn			
11	Assessment of gestational age			
12	IUGR			
13	HIE			



14	Convulsions			
15	IVH			
16	Development assessment			
17	Polycythemia			
18	Anemia			
19	Sepsis with MODS			
20	NEC			
21	Birth trauma			
22	Floppy infant			
23	Hydrocephalus			
24	Shock			
25	HDN			
26	Hypothyroidism			
27	Ambiguous genitalia			
28	IDN			
29	TTNB			
30	Downs syndrome			
31	Neural tube defects			
32	Preterm baby			
33	Meningitis			
34	CDH			
35	GERD			
36	TEF			
37	CLD			
38	PPHN			
39	Hydrops fetalis			
40	Hypothermia			

Peripheral Posting

(Radiology)

S. No	Date	Diagnosis	Radiological Investigation and Details	Consultant's remarks and Signature	Number Procedures
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					

# Peripheral Posting

## Cardiology

Sr No	Date	Name Of Patient	Age/ Sex	Hospital No	Clinical Details/ Diagnosis	Echocardiography/ Special Procedure	Management	Outcome	Consultant's remarks and Signature	Total Number of cases
1										
2										
3										
4										
5										
6										
7										
8										
9										

**Peripheral Posting SURGERY (Pediatric Surgery,)**

Sr No	Date	Name Of Patient	Age / Sex	Hospital No	Clinical Details/ Diagnosis	Procedure	Surgical management	Outcome	Consultant Remarks and Signature	Total Number of cases
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										

**Peripheral Posting**  
(Labor room/Postnatal Wards)

Sr No	Date	Name Of Patient	Age/ Sex	Hospital No	Clinical Details/ Diagnosis	Course	Management	Outcome	Consultant's remarks and Signature	Total Number of cases
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										

**Peripheral Posting**

**Ophthalmology**

Sr No	Date	Name Of Patient	Age/ Sex	Hospital No	Clinical Details/ Diagnosis	Procedure and Management	Outcome	Consultant's remarks and Signature	Total Number of Cases
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									

### Follow Up Clinics

Sr No	Name	Age/Sex	Hospital No	Diagnosis	Examination /Developmental Score	Interventional Therapy	Remarks
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							

Peripheral posting : Community medicine

Details of visits: ( Day Date and clinical features)

**JOURNAL CLUBS**

No.	Date	Topic	Remarks /Score Annexure 2	Consultant's Signature
1				
2				
3				
4				
5				
6				



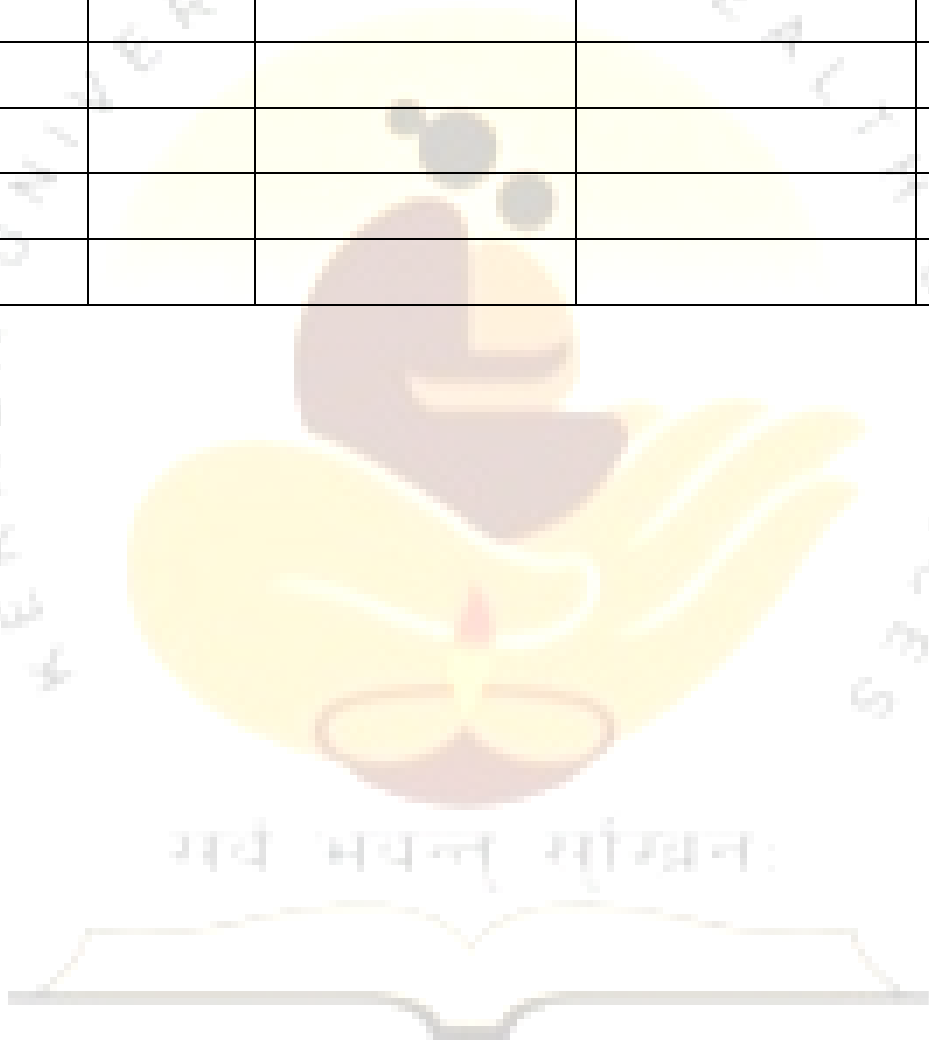
No.	Date	Topic	Remarks /Score Annexure 3	Consultant's Signature
1				
2				
3				
4				
5				
6				
7				
8				

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## SEMINARS

No.	Date	Hospital Number	Procedure	Indication/Diagnosis	Complication
1					
2					
3					
4					
5					
6					



## INVASIVE PROCEDURES

First Year

## INVASIVE PROCEDURES

Second Year

No.	Date	Hospital Number	Procedure	Indication/Diagnosis	Complication
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					

## INVASIVE PROCEDURES

Third Year

	FIRST YEAR		SECOND YEAR		THIRD YEAR	
	1 <sup>st</sup> 6 months	2 <sup>nd</sup> 6 months	1 <sup>st</sup> 6 months	2 <sup>nd</sup> 6 months	1 <sup>st</sup> 6 months	2 <sup>nd</sup> 6 months
Venous canulation						
Venous sampling						
Arterial sampling						
Peripheral Arterial cannulation						
Venous cut-down						
Intra-osseous infusion						
Central venous cannulation						

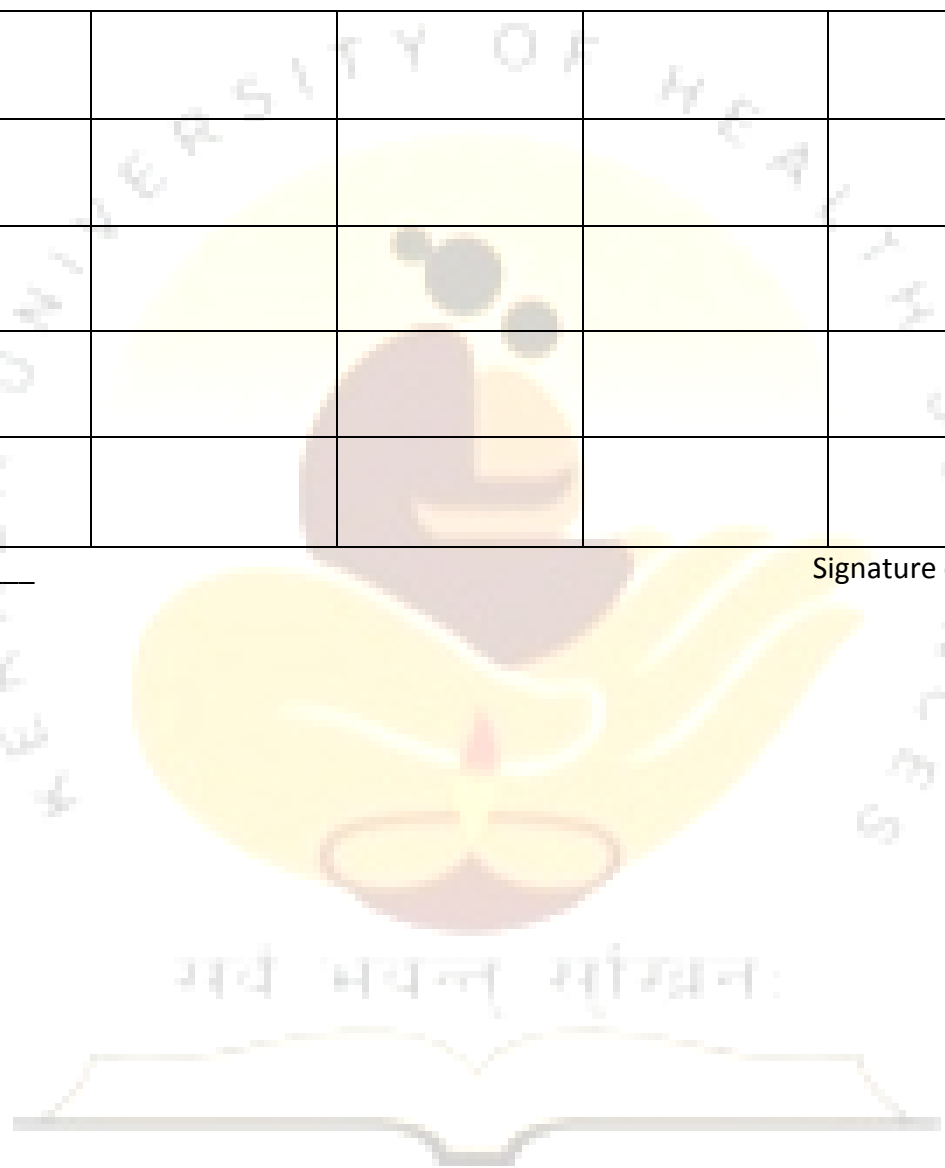
Umbilical vein catheterisation						
Umbilical arterial cannulation						
Exchange transfusion						
<b>ASPIRATIONS</b>						
Thoracocentesis / Intercostal drainage						
Bladder catheterisation						
Lumbar puncture						
<b>RESUSCITATION</b>						
Bag and mask						
Endotracheal intubation						

	FIRST YEAR		SECOND YEAR		THIRD YEAR	
	1 <sup>st</sup> 6 months	2 <sup>nd</sup> 6 months	1 <sup>st</sup> 6 months	2 <sup>nd</sup> 6 months	1 <sup>st</sup> 6 months	2 <sup>nd</sup> 6 months
VENTILLATION						
CPAP						
IMV						
Other special modes						
MISCELLANEOUS						

Breast feeding technique						
Kangaroo mother care						
Subdural puncture						
Ventricular tap						

Stipulated No of cases \_\_\_\_\_

Signature of consultant



## SIDE-LAB PROCEDURES

### First Year

No.	Date	Hospital Number	Procedure	Indication/Diagnosis
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				



## SIDE-LAB PROCEDURES

### Second Year

No.	Date	Hospital Number	Procedure	Indication/Diagnosis
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				

## SIDE-LAB PROCEDURES

### Third Year

No.	Date	Hospital Number	Procedure	Indication/Diagnosis
1				
2				
3				
4				
5				
6				
7				
8				
9				



# WARD SIDE PROCEDURES

	First year		Second year		Third year		
	1 <sup>st</sup> 6 months	2 <sup>nd</sup> 6 months	1 <sup>st</sup> 6 months	2 <sup>nd</sup> 6 months	1 <sup>st</sup> 6 months	2 <sup>nd</sup> 6 months	
BLOOD							
Haemoglobin							
Peripheral smear							
Micro ESR							

PCV/Hematocrit							
CRP							
URINE							
Microscopy							
Albumin							
Sugar							
Ketones							
Bile pigments							
Bile salts							
Urobilinogen							
Others (specify)							
BIOLOGICAL FLUIDS							
CSF							
Other body fluids							

### ANNEXURE I

#### EVALUATION SHEET –CLINICAL CASE PRESENTATION

Name : \_\_\_\_\_

Date: \_\_\_\_\_

Sl . No	Points to be considered	Scoring
	HISTORY	
1	Communication with relatives	
2	Sequence of presentation	
3	Comprehensive presentation	
4	Relevant negative history	
5	Major points missed	
	PHYSICAL EXAMINATION	
6	Completeness of examination	
7	Whether properly elicited	
	INVESTIGATIONS	
8	Logical Ennumeration	
9	Interpretation	
10	<b>Comprehensive diagnosis and discussion</b>	

Guidance for scoring:

0- Poor	1- Below average	2- Average	3- Above average	4- Very good

Sl . No	Faculty name	Mean score

ANNEXURE II  
EVALUATION SHEET –JOURNAL CLUB

Name : \_\_\_\_\_ Date : \_\_\_\_\_

Sl. No	Point to be considered	Scoring
1	Choice of article	
2	Clarity of preparation	
3	Whether he/she had understood the purpose of the article	
4	How well he/she defended the article	
5	Whether cross references	

	have been consulted	
6	Whether other relevant articles consulted	
7	His /her overall impression of the article. If good- reasons If poor- reasons	
8	Use of audio visual aids	
9	Response to questioning	
10	Overall performance	
11	Others	

Guidance for scoring:

0- Poor	1- Below average	2- Average	3- Above average	4- Very good
---------	------------------	------------	------------------	--------------

Sl . No	Faculty name	Mean score

### ANNEXURE III

#### EVALUATION SHEET –REVIEWS/SEMINAR

Name : \_\_\_\_\_

Date : \_\_\_\_\_

Sl. No	Point to be considered	Scoring
1	Presentation	
2	Completeness of preparation	
3	Clarity of preparation	
4	Use of audio visual aids	
5	Understanding the subject	
6	Ability to answer questions	
7	Time scheduling	
8	Consulted all relevant literature	
9	Overall performance	
10	Others	

Guidance for scoring:

0- Poor	1- Below average	2- Average	3- Above average	4- Very good
---------	------------------	------------	------------------	--------------

Sl . No	Faculty name	Mean score



## ANNEXURE - 1

### CHECK LIST 1 - EVALUATION OF CLINICAL WORK

Name of the Trainee:

Date:

Name of the Faculty:

Sl.No.	Items for observation during evaluation	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Regularity of attendance					
2.	Punctuality					
3.	Interaction with colleagues and supportive staff					
4.	Maintenance of case records					
5.	Presentation of cases					
6.	Investigations work -up					
7.	Bed - side manners					
8.	Rapport with patients					
9.	Counseling patients relatives for interventional procedures					
10.	Overall quality of clinical work					
	Total score					

## ANNEXURE - 2

### CHECK LIST 2 EVALUATION OF CLINICAL CASE PRESENTATION

Name of the Trainee:

Date:

Name of the faculty:

Sl.No	Items for observation during presentation	Poor	Below Average	Average	Good	Very Good
		0	1	2	3	4
1.	Completeness of history					
2.	Whether all relevant points elicited					
3.	Clarity of presentation					
4.	Logical order					
5.	Mentioned all positive and negative points of importance					
6.	Accuracy of general physical examination					
7.	Whether all physical signs elicited correctly					
8.	Diagnosis: whether it follows logically					
9.	Investigations required In Relevant order					
10	Interpretation of Investigations					
11	Ability to discuss differential diagnosis.					
12	Discussion on management					
	Grand Total					

**ANNEXURE 3**  
**CHECK LIST 3**  
**EVALUATION OF SEMINAR PRESENTATION**

**Name of the Trainee:**

**Date:**

**Name of the Faculty:**

Sl no	Items for observation during presentation	<i>Poor</i>	<i>Below Average</i>	<i>Average</i>	<i>Good</i>	<i>Very Good</i>
		0	1	2	3	4
1	<b><i>Whether other relevant publications consulted</i></b>					
2	<b><i>Whether cross - references have been consulted</i></b>					
3	<b><i>Completeness of Preparation</i></b>					
4	<b><i>Clarity of Presentation</i></b>					
5	<b><i>Understanding of subject</i></b>					
6	<b><i>Ability to answer the questions</i></b>					
7	<b><i>Time scheduling</i></b>					
8	<b><i>Appropriate use of Audio - Visual aids</i></b>					
9	<b><i>Overall performance</i></b>					
10	<b><i>Any other observation</i></b>					
	<b><i>Total score</i></b>					

**ANNEXURE - 4****CHECK LIST 4****EVALUATION OF JOURNAL REVIEW PRESENTATIONS****Name of the Trainee:****Date:****Name of the Faculty:**

Sl. No	Items for observation during presentation	Poor	Below Average	Average	Good	Very Good
		0	1	2	3	4
1.	Article chosen					
2.	Extent of understanding of scope & objectives of the paper by the candidate					
3.	Whether cross-references have been consulted					
4.	Whether other relevant publications consulted					
5.	Ability to respond to questions on the paper/ subject					
6.	Audio - Visual aids used					
7.	Ability to discuss the paper					
8.	Clarity of presentation					
9.	Any other observation					
	Total Score					

**ANNEXURE - 5**  
**CHECK LIST 5**

*EVALUATION OF TEACHING SKILL*

Name of the Trainee:

Date:

Name of the faculty:

<b>Sl. No.</b>	<b>Items for observation</b>	<b>Strong Points</b>	<b>Weak Points</b>
1.	<i>Communication of the purpose of the talk</i>		
2.	<i>Evokes audience interest in the subject</i>		
3.	<i>The introduction</i>		
4.	<i>The sequence of ideas</i>		
5.	<i>The use of practical examples and / or illustrations</i>		
6.	<i>Speaking style (enjoyable, monotonous, etc. Specify)</i>		
7.	<i>Attempts audience participation</i>		
8.	<i>Summary of the main points at the end</i>		
9.	<i>Ask questions</i>		
10.	<i>Answer questions asked by the audience</i>		
11.	<i>Rapport of speaker with his audience</i>		
12.	<i>Effectiveness of the talk</i>		
13.	<i>Uses AV aids appropriately</i>		

**ANNEXURE - 6**  
CHECK LIST 6  
EVALUATION OF DISSERTATION PRESENTATION

Name of the Trainee:

Date:

Name of the faculty / Observer:

Sl.No	Points to be considered	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Interest shown in selecting topic					
2.	Appropriate review					
3.	Discussion with guide and other faculty					
4.	Quality of protocol					
5.	Preparation of Proforma					
	<b>Total Score</b>					

**ANNEXURE - 7**  
CHECK LIST 7  
CONTINUOUS EVALUATION OF DISSERTATION WORK

Name of the Trainee:

Date

Name of the Faculty:

Sl. No.	Items for observation during presentation	Poor	Below Average	Average	Good	Very Good
		0	1	2	3	4
1.	Periodic consultation with guide / co- guide					

2.	Regular collection of case material					
3.	Depth of Analysis / Discussion					
4.	Department presentation of findings					
5.	Quality of final output					
6.	Others					
	<b>Total score</b>					

### ANNEXURE - 8

#### CHECK LIST 8

#### OVERALL ASSESSMENT SHEET

Name of the College:

Date:

Check list no	Particulars	0	1	2	3	4
1	Clinical work					
2	Clinical presentation					
3	Seminars					
4	Journal review					
5	Teaching skill					
6	Dissertation work					
	<b>TOTAL</b>					

0- Poor 1- Below average 2- Average 3- Good 4- Very good

Signature of HOD

Signature of Principal

## ANNEXURE - 9

TABLE 1

### ACADEMIC ACTIVITIES ATTENDED

**Name:**

Admission Year:

**College:**

[illegible]



**LOG BOOK  
TABLE 2**

**ACADEMIC PRESENTATIONS MADE BY THE TRAINEE**

**Name :**

**Admission Year:**

**College:**

Date	Topic	Type of activity - Specify Seminar, Journal club, Presentation, UG teaching

## LOG BOOK

**TABLE 3**

### DIAGNOSTIC AND OPERATIVE PROCEDURES PERFORMED

Name

<i>Date</i>	<i>Name</i>	<i>OP No.</i>	<i>Procedure</i>	<i>Category O, A, PA, PI</i>

**Key:**

- O - OBSERVED**
- A - ASSISTED A MORE SENIOR SURGEON**
- PA - PERFORMED PROCEDURE UNDER SUPERVISION**
- PI - PERFORMED INDEPENDENTLY**

APPENDIX 111 - FINAL EXAMINATION ELIGIBILITY FORM

(To be filled up the candidate)

Name of the candidate :

Date of Joining :

Identification number or  
registration number

of university :

Course :

Institution :

Eligibility criteria :

Sl No	Parameter	Details	Proof enclosure
1.	Attendance	1 <sup>st</sup> year (minimum 80%) 2 <sup>nd</sup> year(minimum 80%) 3 <sup>rd</sup> year(minimum 80%)	
2.	Thesis	Approved/Not Approved by the University	
3.	Log book	Successfully completed and submitted	
5.	Conferences attended	Number and category : Number of presentations:	
6.	Publications	Number published: Number submitted:	

All the informations provided above are true to the best of my knowledge and if found contrary, I am clearly aware that strict disciplinary actions will be initiated including debarring from examination.

Date

Signature of the candidate :

Place

Name of the candidate :

Countersigned by:

Faculty as guide:

Name:

Designation:

APPROVAL OF HEAD OF THE DEPARTMENT

I, Dr....., herewith approve that the above candidate is eligible to appear for the final examination as per the documentary evidences provided and best of the knowledge and documents of the department.

Date

Signature :

Place

Name :

Designation :

सर्वे भवन्तु सुखिनः