

MASTER OF SCIENCE IN ECHOCARDIOGRAPHY

1. PREAMBLE:

Echocardiography field has shown tremendous growth during last decade and has developed as a subspecialty of cardiology. It is difficult to learn all aspects of Echocardiogram during B.Sc. in Cardiac Technology or during MBBS course. This course gives an opportunity to master the subject. These graduates can independently do and interpret Echo and run the Echo units independently in the rural and urban areas. Thus the public will be benefited.

2. OBJECTS:

To develop fully trained manpower to assist the cardiologist in the patient care

- 1) To obtain full knowledge of Echocardiograms.
- 2) To obtain full knowledge of the subject so as to become Tutors for B.Sc students.
- 3) To train the graduates to start Echo units independently.
- 4) Should be able to do and interpret all Echocardiograms.

3. ELIGIBILITY FOR ADMISSION :

Candidate must be a M.B.B. S. or B.Sc. in Cardiac Technology degree holder.

4. DURATION OF THE COURSE:

Two years

5. MEDIUM OF INSTRUCTION :

English

6. ATTENDANCE:

As per University norms.

7. COURSE CONTENTS :

A) Syllabus : Basics of Echocardiogram (Paper I)

1. Basics of CVS

- a) Functional Anatomy of the Heart
- b) Normal Physiology of CVS

2. Patient Evaluation

- a) Clinical Diagnosis
- b) Electrocardiogram
- c) Chest Roentgenogram

3. Basic Clinical Cardiology

- a) Coronary artery disease
- b) Hypertension
- c) Valvular Heart disease
- d) Congenital Heart Diseases
- e) Cardiomyopathy
- f) Pericardial disease
- g) Cardiac arrest

4. Echocardiogram –Basic

- a) Principles and applications
- b) M-Mode Echocardiogram
- c) Two Dimensional Echocardiogram
- d) Three Dimensional Echocardiogram
- e) Doppler Echocardiogram
- f) Color flow

Echo in Common Practice (Paper II)

- 1) Echo in Aortic valve disease
- 2) Echo in Mitral valve disease
- 3) Echo in pulmonary and tricuspid valve disease
- 4) Echo in pulmonary hypertension
- 5) Echo in prosthetic valve
- 6) Echo in Infective endocarditis
- 7) Echo in Coronary Artery Disease
- 8) Echo in Cardiomyopathy
- 9) Echo in Congenital Heart Disease
- 10) Echo in cardiac masses, thrombi and tumors
- 11) Echo in pericardial disease
- 12) Echo assessment of LV and RV function
- 13) Stress Echo
- 14) Echo in pacing
- 15) Echo in Aortic disease
- 16) Echo in Post op follow up

Echo in special situations and Recent Advances in Echo (Paper III)

- 1) Transoesophageal Echocardiogram
- 2) Contrast Echocardiogram
- 3) Echo in Paediatric Cases
- 4) Echo in Neonatal cases.
- 5) Echo in Peripheral vascular diseases
- 6) Abdominal Ultrasound
- 7) Fetal Echocardiogram
- 8) Echo in cardiac surgery Preoperative and perioperative

9) Recent Advances in Echocardiogram:

- a) Myocardial Contrast Echo
- b) Conventional Tissue Doppler imaging
- c) Strain Imaging
- d) Speckle tracking
- e) Tissue Synchronization imaging
- f) Other Recent advances in the field of Echocardiogram

10) Criteria for selection of Echo machine

At the end of one year there will be internal assessment and at the end of two years there will be final University Examination.

8) Research activities :

a) Project work/ Dissertation : The candidate should select a subject for project work/ dissertation, in consultation with the head of the department. The work should be continued under the guidance of one of the professor and it should be completed six months prior to the examination.

OR

b) Candidate should publish a scientific paper in the national journal.

OR

c) Candidate should present a scientific paper in the National Cardiology conference.

9) Teaching Hours

- a) Theory 300 Hours
- b) Practicals 1000 hours

10) Scheme of Examination :

a) Theory :

- Paper I:** (Basics of Echocardiogram) 3 Hours 80 marks
- Paper II:** (Echo in common Practice) 3 Hours 80 marks
- Paper III:** (Echo in special situations and Recent Advances) 3 Hours 80 marks

b) Practicals : **80 marks**

i) Echo recording and interpretation in two cases 20x2= 40 marks

ii) Spotters 8x5= 40 marks

c) Oral Examination : **50 marks**

Examination	University	Internal Evaluation	Total
Paper I	80	60	100
Paper II	80		100
Paper III	80		100
Practicals	80	20	100
Oral Exam	50		50
Total			450

Viva marks will be added to practicals

Each theory paper will be of three hours duration. Each paper consists of

a) Two Essay Type Questions (15 marks each)

b) Five short Essay questions (10 marks each)

There will be one external and one internal examiners. All examiners will have to be DM/DNB qualified teachers of DM Cardiology or M.Sc in Echocardiography.

11) Declaration of results :

a) **Passing criteria :** A candidate having appeared in all the subjects in the same examination and passed that examination in the first attempt and secure 75% of marks or more of grand total marks prescribed will be declared to have passed the examination with **Distinction**.

b) **Declaration of class :**50% and above Pass, 65% and above First Class, 75% and above Distinction.

c) A candidate who fails will have to appear for reexamination after 4 to 6 months in the following academic year without repeating the course or courses of instruction.

12) Reference Books: (Latest Edition) :

Sl. No	Name of the Book & Title	Author	Publisher Name & Place of Publication
1	Heart disease	Braunwald Zipes, Libby	WB Saunder's company Philadelphia USA
2	The Heart	Hurst	Mc Grow Hill Company USA
3	Clinical Recognition of Congenital Heart Disease	Joseph K. perloff	Saunder's company Philadelphia USA
4.	Atlas of TEE	Navin C. Nanda	Williams & Wilkins
5	Echocardiography	Harvey Feigonbaum	Lea & Febgo USA
6	Echocardiography	Navin C. Nanda	Williams & Wilkins
7.	Echocardiography update Volume I,II, III , IV & V	P.C. Manoria	Dr. P.C. Manoria Bhopal

13) Recommended Journals :

- 1) Indian Heart Journal
- 2) Journal of Indian College of Cardiology
- 3) Journal of Indian Academy of Echocardiography
- 4) American Journal of Echocardiography
- 5) American Heart Journal
- 6) British Heart Journal