



**MAHATMA GANDHI UNIVERSITY**  
*of*  
**MEDICAL SCIENCES & TECHNOLOGY**  
JAIPUR

# **Syllabus**

## **Fellowship in Foetal Medicine (One Year Program)**

**Edition 2020-21**

## **Notice**

1. Amendments made by the Board of Management of the University in Rules / Regulations of the Courses shall automatically apply.
2. The University reserves the right to make changes in the syllabus/books/ guidelines, fee structure or any other information at any time without prior notice. The decision of the University shall be binding on all.
3. The Jurisdiction of all court cases shall be Jaipur Bench of Hon'ble Rajasthan High Court only.

# **Syllabus**

## **Fellowship in Foetal Medicine (Code)**

(One Year Program)

### **Rules & Regulations**

#### **1. TITLE OF THE COURSE**

The title of the course shall be “Fellowship in Foetal Medicine”.

#### **2. DURATION OF COURSE/ TRAINING**

The course shall be of one-year duration from the date of commencement of academic session.

#### **3. ELIGIBILITY FOR ADMISSION:**

MS/DNB (Gynae)/MD (Paediatrics/Radiology).

Other Eligibility Condition: The candidate should be registered with either the National Medical Commission (NMC) or Medical Council of the domicile State.

#### **4. CRITERIA FOR ADMISSION**

Selection for Fellowship Programme shall be done by an Admission Board of the University strictly on merit. It will consist of two-step process –Written Entrance Examination followed by Counseling / Personal Interview (PI).

#### **5. RESERVATION POLICY**

Reservation shall be applicable as per policy of the State Government of Rajasthan.

#### **6. ENROLMENT AND REGISTRATION**

Every candidate who is admitted to Fellowship Programme in Mahatma Gandhi Medical College & Hospital shall be required to get himself/herself enrolled and registered with the Mahatma Gandhi University of Medical Sciences & Technology (MGUMST) after paying the prescribed eligibility and enrolment fees.

The candidate shall have to submit an application to the MGUMST through Principal of College for the enrolment/eligibility along with the requisite original documents and the prescribed fees within two months of his/her admission or up to November 30 of the year of admission whichever is later without late fees. Then after, student will have to pay applicable late fees as per prevailing University Rules.

No candidate shall be allowed to appear in University examination without his/her enrolment with the University.

#### **7. MIGRATION RULES**

No student, once admitted to the course and enrolled by the University, will be permitted to migrate to any other Course/ University.

#### **8. ATTENDANCE**

Minimum 80% attendance is mandatory, both, for theory and practical classes. Student with deficient attendance will not be permitted to appear in University examination.

## 9. ELIGIBILITY TO APPEAR FOR UNIVERSITY EXAMINATION

1. **Logbook:** Every candidate shall maintain a logbook for recording his/her participation in the Training Program conducted in the department. The record will include academic activities as well as the presentations and procedures carried out by the candidate. The log book shall be verified and certified by the Department Head and Principal of College.
2. The candidate before commencement of the University theory paper examination shall—
  - a. attend at least one the Conference
  - b. present at least one paper and one poster in a conference.
  - c. publish at least one article in a journal.

## 10. CONDUCTION OF THE UNIVERSITY EXAMINATION:

University examination shall be conducted twice in a year; that is Main and Supplementary Examination.

### **Supplementary Examination -**

There shall be a supplementary examination conducted by the University within 4-6 months of the Main Examination for those candidates who do not pass at the Main examination.

## 11. SCHEME OF EXAMINATION

The examination shall be held at the end of the Course. The examination shall consist of Theory and Clinical/Practical & Oral.

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

### (1) **Theory:**

There shall be two theory papers of 3 hours duration and 100 marks each. The theory examination shall be held in advance before the Clinical and Practical examination, so that the answer books can be assessed and evaluated before the commencement of the Clinical / Practical & Oral examination.

Paper-I and Paper-II will be set by two different external examiners from outside of the state.

Each theory paper shall consist of –

|                |          |           |
|----------------|----------|-----------|
| 2 Essays       | 2 x 20 = | 40 Marks  |
| 10 Short Notes | 10 x 6 = | 60 Marks  |
| Total          |          | 100 Marks |

The external examiner, who is paper setter for Paper-I shall evaluate the answer books of Paper-I. The answer books of Paper-II shall be evaluated by the Head of the Department.

### **Nomenclature of Papers:**

- Paper-I Basics of ultrasound, embryology, teratogenesis, prenatal genetics, diagnostic and therapy
- Paper-II Fetal malformations and management, multiple pregnancy, fetal growth and doppler

### **(2) Clinical / Practical and Oral:**

Clinical/Practical examination shall be conducted by one External and one Internal Examiner to test / aimed at assessing the knowledge and competence of the candidate for undertaking independent work as a specialist / teacher. Practical examination shall consist of carrying out special investigative techniques for Diagnosis and Therapy. Candidates shall also be examined in procedures in surgical disciplines. Oral examination may be comprehensive enough to test the candidate's overall knowledge and competence about the subject, investigative procedures, therapeutic technique and other aspects of the specialty, which shall form a part of the examination.

|                  |          |           |
|------------------|----------|-----------|
| One Long Case    |          | 70 Marks  |
| Two Short Cases  | 2 x 40 = | 80 Marks  |
| Oral Examination |          | 50 Marks  |
| Total            |          | 200 Marks |

### **12. RESULT:**

For passing Fellowship Examination, a candidate will be required to obtain at least 40% marks in each theory paper, 50% marks in the aggregate of both the theory papers and 50% marks in the aggregate of Clinical / Practical and Oral examination separately. A candidate failing in any theory paper or in the aggregate of theory papers or Clinical / Practical & Oral examination shall have to repeat the whole Fellowship examination.

### **13 APPOINTMENT OF EXAMINER& PAPER SETTER**

- All the examiners, paper setters, theory examination answer books evaluators, Internal and External Examiners for Practical examinations shall be appointed by the President of the University out of the panel submitted by the Head of the department through the Dean of the concerned Faculty
- Qualification of the Paper Setter/External Examiner:  
P.G. in Broad Specialty (MD/MS/DNB) / Super specialty (DM/MCh) in the concerned subject with 5 years of PG Teaching experience.
- Qualification of the Internal Examiner:  
P.G. in Broad Specialty (MD/MS/DNB) / Super specialty (DM/MCh) in the concerned subject with 3 years of PG Teaching experience.
- Paper setter can be an examiner

### **13. GRACE MARKS**

No grace marks will be provided in Fellowship Program examinations

#### **14. REVALUATION / SCRUTINY**

No Revaluation shall be permitted in the Fellowship Programs examinations. However, the student can apply for scrutiny of the answer books as per University Rules.

**CURRICULUM**  
**FELLOWSHIP IN FOETAL MEDICINE**  
**(One Year Program)**

**GOALS**

This Fellowship is aimed at preparing the candidate for practice of Fetal Medicine as a subspecialty. This subspecialty is a rapidly growing field in India and there is huge scope for young trained Fetal Medicine specialists. To practice Fetal Medicine, there must be knowledge in high-risk Obstetrics, maternal-fetal medicine, obstetric USG, as well as advanced aspects of radiology

**AIMS AND OBJECTIVES**

- To be able to use the ultrasound scan machine effectively.
- To understand normal and abnormal development in a fetus.
- To be able to interpret findings on a scan and reach a reasonable diagnosis.
- To be able to manage common abnormalities integrating the various modalities of investigation for perinatal diagnosis.
- To be able to liaise with the appropriate departments as dictated by the case and make effective use of the current knowledge and technology available.
- To be able to provide appropriate pre-pregnancy and perinatal advice to prospective parents.
- To be able to critically assess available literature and interpret current papers to suit the needs of the patient and the population.
- To be able to integrate oneself and work as a team showing due respect to colleagues and contribute effectively to the team.
- To attempt publication of case reports and other review/research articles.

**COURSE OF STUDY**

Course contents-

**Paper-I** : Basics of ultrasound, embryology, teratogenesis, prenatal genetics, diagnostic and therapy

- Relevant Physics of Ultrasound
- Embryology and fetal development
- Perinatal Genetics
- Prenatal Diagnostics and therapy
- Perinatal Infectious Diseases

**Paper-II** : Fetal malformations and management, multiple pregnancy, fetal growth and doppler

- Fetal abnormalities and its management
- Perinatal Pathology

- Multiple Pregnancies
- Fetal growth and doppler

### **ASSESSMENT**

- Periodical internal assessment every four month both in theory and clinical will be made for every candidate.
- Internal assessment will be made on day to day work of the trainee.

### **POSTINGS IN VARIOUS UNITS**

The trainee will undergo a clinical rotation in different subspecialty as follows.

- Maternal Medicine - - 1 month
- Radiology - 1 month
- Paediatric surgery - 2 week
- Neonatology - 2 week
- Developmental pediatrics - 1 month

### **TEACHING AND TRAINING METHOD**

**This will be conducted in three module.**

#### **First Module :**

1. Orientation and Knobology
2. Acquire basic scanning planes across all gestations
3. Perform NT scans, anomaly scans and growth scans under supervision and register with the Fetal Medicine Foundation for submission of images.
4. Prepare seminars in obstetric ultrasound and present
5. Discuss and decide on Research project and obtain necessary approval
6. Participate in counselling in complex clinical scenarios
7. Attend Genetic and other counselling clinics as observer
8. RITA – Rigorous In Training Assessment at the end of 4 months

#### **Second Module during the next four months**

1. Further training in advanced radiological aspects of obstetric scans.
2. Develop to learn 3D/4D ultrasound imaging and its application in clinical practice
3. Participate in joint multidisciplinary clinical meeting to present and discuss complex case scenarios
4. Obtain certifications of competency from the Fetal Medicine Foundation.
5. Participate in Genetic counselling, Perinatal mortality meetings in joint association with other centres
6. Present interim results from the research project with aim to present data in national or international conferences
7. RITA – Rigorous internal training assessment at end eight month - to assess if the candidate has successfully completed the competencies as laid in the curriculum and promote next four month of training



### Third Module

1. Able to independently perform ultrasound scans across all gestations with additional emphasis on fetal echocardiography
2. Observe and assist simple fetal interventions like amniocentesis and Chorionic villus sampling
3. Attend special clinics like Maternal Medicine, Paediatric surgery, Neonatology, Paediatric and radiology to be signed by respective consultants for achieving necessary competencies as part of the curriculum
4. Conduct weekly multidisciplinary meetings between the centres to gain knowledge and experience

### REFERENCE BOOK & JOURNALS

#### TEXT BOOKS :

1. Callens Textbook of USG in Obstetrics and Gynecology
2. Fetology, a textbook on Fetal Abnormalities
3. Creisy and Resnik's Textbook on Maternal Fetal Medicine
4. Textbook on Fetal Cardiology – Abuhamad et al
5. Textbook on Fetal CNS Imaging – Dr B S Ramamoorthy

#### JOURNALS:

- Ultrasound in Obstetrics and Gynecology
- Prenatal Diagnosis
- Journal of Ultrasound in Medicine
- Fetal Diagnosis and therapy

### LOG BOOK (FORMAT)

Twenty case summaries of interesting cases attended by candidate

| Serial number | Date | Case summary | investigations | Final diagnosis | Management and Counseling |
|---------------|------|--------------|----------------|-----------------|---------------------------|
|               |      |              |                |                 |                           |
|               |      |              |                |                 |                           |

### List of total anomalies detected in candidate's tenure

| Serial No | Date | Name of procedure | Case No/ Initials | Indication | Findings | Outcome |
|-----------|------|-------------------|-------------------|------------|----------|---------|
|           |      |                   |                   |            |          |         |
|           |      |                   |                   |            |          |         |
|           |      |                   |                   |            |          |         |

### Anomaly scan /NT/NB scan /Growth scan/ Doppler scan

| Serial No | Date | Case no / Initials | Indication | Finding | Outcome |
|-----------|------|--------------------|------------|---------|---------|
|           |      |                    |            |         |         |
|           |      |                    |            |         |         |

**Protocols of NT/NB scan, Anomaly scan, fetal ECHO, Fetal well being, growth and Doppler scan**

**Protocols of diagnostic invasive procedure- Amniocentesis , Chorionic villous sampling, cordocentesis**

**Protocols of therapeutic diagnostic procedure: fetal reduction, Intrauterine transfusion, Amnioreduction, Amnioinfusion etc.**

**List of case presentation, seminars:**

| S/L | Date | Topic | Presenter |
|-----|------|-------|-----------|
|     |      |       |           |
|     |      |       |           |
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|     |      |       |           |

**List of case Report, conference, posters and publications :**

| Serial no | Date | Topic | Journal/Conference |
|-----------|------|-------|--------------------|
|           |      |       |                    |
|           |      |       |                    |

## MODEL PAPER

Code

Short Name

### Fellowship in Foetal Medicine Main -Examination Month, Year

Paper-I

#### Basics of ultrasound, embryology, teratogenesis, prenatal genetics, diagnostic and therapy

**Time : Three Hours**  
Maximum Marks :100

Draw diagrams wherever necessary  
**Attempt All Questions**

- Q.1. Elaborate on [2x20=40]
- i. Antenatal detection of down syndrome: soft markers, congenital malformation, serum screen tests
  - ii. Intrauterine fetal blood transfusion
- Q.2. Write Short Notes on (any ten) [10x6=60]
- i. As a general rule, a patient's first Rh D-sensitized pregnancy results in minimal fetal/neonatal disease, and subsequent pregnancies are associated with a worsening of disease. Please explain.
  - ii. Teratogenic effect of diabetes on pregnancy
  - iii. Amniocentesis
  - iv. Chorionic villous sampling
  - v. Teratogenic effect of warferin
  - vi. Signs of pedigree
  - vii. How is Doppler ultrasound used in the management of alloimmunization?
  - viii. Noninvasive prenatal diagnostic test(NIPT)
  - ix. Pre requisition of NT/NB scan in USG
  - x. Counselling of a woman with previous child with Down yndrome
  - xi. Counselling of pregnant women with previous child with thalassemia major
  - xii. Four chamber view of heart

**MODEL PAPER**

**Code**

**Short Name**

**Fellowship in Foetal Medicine**  
Main - Examination Month, Year

Paper-II

**Fetal malformation and management, multiple pregnancy, fetal growth and doppler**

**Time : Three Hours**  
Maximum Marks :100

Draw diagrams wherever necessary  
**Attempt All Questions**

- Q.1. Elaborate on [2x20=40]
- i. Etiology of ventriculomegaly in fetus, type and management
  - ii. Fetal reduction multifetal pregnancy
- Q.2. Write Short Notes on (any ten) [10x6=60]
- i. Cystic diseases of kidney
  - ii. Omphalocele
  - iii. Intrauterine growth restriction
  - iv. Disorders presenting with club hand
  - v. Investigations in nonimmune hydrops
  - vi. Neural tube defect
  - vii. Oligohydramnios
  - viii. Hyperechoic lungs
  - ix. Polyhydramnios
  - x. Doppler in pregnancy
  - xi. Aberrant right subclavian artery
  - xii. Etiology of recurrent spontaneous abortion