



**Department of Genetics, Immunology and Biochemistry  
Maharashtra University of Health Sciences.**

## **INFORMATION BROCHURE**

**For**

**CERTIFICATE COURSE  
IN  
"REPRODUCTIVE GENETICS"**

**Pune Regional Centre,  
3<sup>rd</sup> Floor, ESIS Hospital Building,  
Aundh, Pune – 411 027.  
Telefax: 020-2728 0454, 020 2728 5695  
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# **IMPORTANT INFORMATION AT A GLANCE**

1. Six-month weekend course – **Lectures on Sundays.**
2. Last date of submission of forms is **31<sup>st</sup> December, 2008.**
3. Course commences in January 2009.
4. Seats limited to 30 participants.
5. Comprehensive coverage of the theory in Reproductive Genetics.
6. Lectures by a panel of faculty members, expert in Genetics, Reproductive Genetics and Molecular Biology.
7. Clinical case studies and discussion included.
8. Project Work
9. Periodic Assessment
10. Successful candidates will be awarded a certificate from Maharashtra University of Health Sciences.

## **CERTIFICATE COURSE IN REPRODUCTIVE GENETICS**

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# MAHARASHTRA UNIVERSITY OF HEALTH SCIENCES

## DEPARTMENT OF GENETICS, IMMUNOLOGY AND BIOCHEMISTRY

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### **1. Introduction**

It is the dream of every couple to have at least one perfect child and it is the duty of the medical fraternity to help in fulfilling this dream. As the small family size is the norm, nowadays Obstetricians and Gynaecologists should ensure the one child that the family is going to opt for, is normal.

Obstetrics and Gynaecology is taught in detail in the regular medical curriculum. However, genetics forms a very small and insignificant part of this curriculum. Reproductive Genetics is a rapidly advancing science, which commences in the pre-conception period. The pace of the progress is extremely rapid. If the benefits of this progress are to reach the common man the medical fraternity has to keep abreast the newly emerging knowledge. Subject of reproductive genetics is a totally novel subject to the medical curricula. To fill this lacuna the Department of Genetics, Immunology and Biochemistry, Maharashtra University of Health Sciences will be starting a certificate course in Reproductive Genetics. This course will arm the doctors and the technical people involved in care of patients and families with reproductive disorders with the knowledge ranging from basics of reproductive genetics to the latest Assisted Reproduction Techniques.

### **2. Aims**

The course is designed as a primer course both for medical practitioners in the field of gynaecology as well as students pursuing postgraduate degree. The course is going to be useful for clinicians who are dealing with patients and families with reproductive genetic disorders in their practice. The course will also serve as the first step to postgraduates of gynaecology, laboratory and basic sciences and other health science disciplines who wish to pursue Reproductive Genetics as a career. The course will also serve as a preparation for competitive exams like GRE, FMG or PLAB

### **3. Objectives**

On the completion of this certificate course the participants will be able to :

1. Understand the basics of genetics and molecular biology with specific reference to reproductive genetics
2. Equipped with the knowledge of latest developments in human reproduction and reproductive techniques like Assisted Reproduction Techniques (ARTs).

3. Identify, diagnose and manage the various common reproductive conditions with a genetic etiology.
4. Devise diagnostic strategies for diagnosing reproductive genetic conditions by using the latest techniques in prenatal diagnosis
5. Undertake research projects in the field of Reproductive Genetics at the National and International level.

#### **4. Eligibility**

This course shall be open to students as follows:

- MD (Gynecology and Obstetrics)/DGO
- Bachelor Degree from Medicine (Allopathy, Ayurveda, Homeopathy, Unani and others) practising gynaecology and obstetrics with experience and/or interest in reproductive genetics.
- Bachelor degree in nursing with specialty in obstetrics and gynaecology.
- Bachelor degree in Life Sciences with experience and/or interest in reproductive genetics
- Bachelor degree in medical laboratory sciences with experience and/or interest in reproductive genetics

#### **5. Duration of the course**

- a. Six months.

#### **6. Language of Course**

English

#### **7. Total number of Seats**

Seats for this course will be limited to 30 only.

#### **8. Nature of Course**

Interdisciplinary, weekend course.

## **9. Fee structure**

Application processing fees Rs. 500/-

Total Fees For Certificate Course in Medical Genetics are Rs: 20,000/- only.

❖ Students will have to pay examination fees and any other fees applicable as per the latest changes made by MUHS.

## **10. Refund of fees**

- Within 1 week of course commencement – Fees paid less Rs.5000/-
- Within 1 month of course commencement – Fees paid less Rs. 10,000/-

## **11. Application Form & Information Brochure**

- Information Brochure along with blank application form is available on the University website ([www.muhsnashik.com](http://www.muhsnashik.com)).
- The candidates are requested to download the application form and send it along with a D.D. of Rs. 500/- in favor of "Registrar, MUHS, Nashik". D.D. should be drawn on any Branch of Nationalized bank payable at Nashik.
- The envelope should be superscripted with “Certificate Course in Reproductive Genetics”.
- The application form must be filled by the candidate in his / her own handwriting using black ball point pen and submit it on or before last date of submission of the application forms on the following address:

Department of Genetics, Immunology and Biochemistry,  
Maharashtra University of Health Sciences,  
3<sup>rd</sup> Floor, ESIS Hospital Building,  
Aundh, Pune – 411 027.

➤ Following attested photocopies are required to be submitted along with the application form:

1. SSC Board Certificate (Certificate of age)
2. HSC Mark sheet
3. Equivalence Certificate from A.I.U. for NRI (if applicable)
4. Degree Certificate / Passing Certificate.
5. P.G. Degree Mark sheet (Mandatory in case of candidates having P.G. Degree).
6. Certificate of additional Qualifications.
7. Affidavit for change of Name (Marriage Certificate/ Copy of Govt. Gazette, if applicable).
8. Brief resume of the candidate.

**Letter of intent as to why the candidate wants to join the course.**

**Note :** An incomplete application form will be rejected.

## **12. Selection Process**

- Eligibility of candidate will be finalized after verification of all original documents.
- The candidate is required to take admission within one week of issuing a letter of selection by paying the fees as outlined in point no.9.
- Decision of selection committee shall be final.
- Selection to the successful candidate will be communicated to the candidate.
- No other communication in this regard will be entertained.

### 13. Disqualification for Admission

- Selected candidates who have cancelled their admission or do not take admission within the stipulated period will be disqualified from the admission process.
- These candidates will have to go through the process of application in the next batch of the course.
- Any false information provided will result in disqualification of the candidate.

### 14. Attendance

- 80% attendance is compulsory failing which students will not be allowed to appear for the examinations.
- A valid medical certificate is necessary if absence is due to illness.

### 15. Accommodation

- Students have to make their own residential arrangements.

### 16. Certificate

- The successful candidates will be awarded certificate by the Maharashtra University of Health Sciences (MUHS).

### 17. Academic Calendar of the Course

- This is a six months weekend course, with **lectures on Sunday**.
- The teaching schedule of the course will begin from **January 2009**.
- Duration of project work is 4 months. Each student will complete a project of his/her choice during this period.
- Final examination will be conducted at the end of the course.

## 18. **Teaching staff**

SN	Name	Qualifications	Designation
1.	Dr. P.S. Gambhir	MD (Paediatrics)	Professor and Head
2.	Dr. Dakshayani Pandit	MD (Microbiology)	Professor in Immunology
3.	Dr. Mugdha Potnis-Lele	Ph.D. (Genetics)	Lecturer
4.	Dr. Pramila Menon	MD (Paediatrics)	Lecturer
5.	Mr. Rajendra Kulkarni	M.Sc. (Biochemistry)	Lecturer
6.	Smt. Savita Marathe	M.Sc. (Clinical Embryology, University of Leeds, UK)	Lecturer

## 19. **Detailed Syllabus**

### 1. Introduction and Orientation

- Modules
- Objectives
- Assessment

### 2. Basics of Genetics

- Principles of Mendelian Genetics
- Relevance to Humans Genetics: Construction of Pedigrees
- Patterns of inheritance of genetic disorders
- Structure of chromosomes, Cell division Meiosis and mitosis Chromosomal Abnormalities
- Common Autosomal disorders
- Common Disorders of Sex chromosomes
- Cytogenetic analysis methods
- Population Genetics, Genetic epidemiology
- Developmental Genetics
- Research Methodology and Biostatistics
- Congenital abnormalities and multifactorial inheritance
- Dysmorphology and approach to a dysmorphic child
- Genetics of Complex traits and adult onset diseases with a genetic predisposition
- Approach to a patient with genetic disorder
- Genetic counseling

### 3. Basics of Human Molecular Biology

- Molecular and biochemical basis of nucleic acids
- Replication, Transcription and Translation
- Human genome
- Mutations: classification and DNA repair

4. Applications of Genetics and Molecular Biology
  - Techniques in molecular biology
  - Prenatal diagnostics techniques
  - Newborn screening methods
  - Population screening methods
  - New approaches to treating genetic disease
  - Genetic testing: Principles and legal and ethical issues pertaining to community genetic services
5. Male and female reproductive systems
  - Gonads and differentiation of sexual characters
  - Hormonal regulation of sexual differentiation
6. Gametogenesis
  - Embryogenesis
  - Sex determination
7. Fertilization and Implantation
  - Genetics
  - Failure of implantation and repeated abortions
8. Pregnancy
  - Physiology and Endocrinology
  - High risk pregnancy
9. Infertility
  - Male factors
  - Female factors
10. Disorders of gonads, genital tracts and genitalia
  - Pseudohermaphroditism
  - True hermaphroditism
  - Gonadal dysgenesis
11. Epigenetics and ART-induced disorders of genomic imprinting
  - Cloning
  - Life-cycle of epigenetic information
  - Causes of epigenetic disruption by ART procedures
12. Technologies in reproductive assistance
  - Micro-manipulation and assisted conception
  - Manipulation of early development and associated ARTs
13. Overview of pre-implantation and prenatal genetic testing
14. Legal and ethical implications in reproductive assistance

❖ **Clinical case studies and discussion will be included in this module.**

❖ **Visit to research institutes working in the field of Reproductive Genetics will be organized as part of this course.**

## 20. Examination Scheme

Exam heads	Marks
Internal assessment	50
Theory exam	100
Project viva-voce	50

- 50% passing marks under each heading are required to succeed in the course.
- **Certificate in Reproductive Genetics** will be conferred to those participants who succeed in the University examination.

## 21. Future Prospects

This certificate course will have the following future prospects for participants –

- Help clinicians in the early diagnosis and intervention in reproductive genetic disorders
- Help participants in setting up a modern infertility clinic
- Knowledge would be of help in setting up a genetic clinic / Counseling cell
- Future opportunities in the field of Gene therapy, stem cell research and infertility.
- Basic knowledge of genetics will be useful in competitive exams like GRE, PLAB, ECFMG etc
- This course will be a major stepping stone to enter the field of research in genetics, biotechnology, infertility and obstetrics and gynaecology at the national and international level.

## 22. Future Plans of the Department

The Department of Genetics, Immunology and Biochemistry plans to start the following courses, for which this certificate course in medical genetics will be the starting point. :

- Certificate course in Medical Genetics (**2<sup>nd</sup> batch starting from January 2009**)
- Certificate course in Molecular Diagnosis (Laboratory oriented course)
- Research programmes designed for the degree of M.Phil. and Ph.D.