



MAHATMA GANDHI UNIVERSITY
of
MEDICAL SCIENCES & TECHNOLOGY
SITAPURA, JAIPUR

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UAPGCC | SYLLABUS



MAHATMA GANDHI UNIVERSITY
of
MEDICAL SCIENCES & TECHNOLOGY
SITAPURA, JAIPUR



MGUMST

UAPGCC
REPRODUCTIVE
TECHNOLOGY (ART)
(Six Months Certificate Course)



MAHATMA GANDHI UNIVERSITY
of
MEDICAL SCIENCES & TECHNOLOGY
JAIPUR

Syllabus

UAPGCC
REPRODUCTIVE TECHNOLOGY(ART)
(Six Months Certificate Course)

UAPGCC
Reproductive Technology (ART)

NOTICE

1. Amendments made by the Board of Management of the University in Rules / Regulations of Post Graduate Medical Courses shall automatically apply to the Rules/ Regulations of the Mahatma Gandhi University of Medical Sciences & Technology.
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.

Six Months Certificate Course

UNIVERSITY ADVANCED POST GRADUATE CERTIFICATE COURSE IN REPRODUCTIVE TECHNOLOGY (WITH HANDS ON TRAINING) (7060)

SCHEME OF EXAMINATION

1. Theory:

- (a) There will be one Theory paper exam (of two sections) at the end of the course. It will be of 3 hours duration and of Maximum Marks 80.
- (b) The two sections (A and B) in the question paper will be set by two different internal examiners (paper setters). Each section shall be of 40 marks. The candidates will be required to write their answers in two separate answer books. Each section of the question paper shall be evaluated by the concerned internal examiner (paper setter).
- (c) The Paper Setter shall set the questions within the prescribed course of study of the concerned section (A or B) of the paper. There will be a set pattern of question papers duly approved by Academic Council. Model question paper for the examination is annexed herewith.
- (d) It is to be noted that the Internal Examiners (paper setters) shall be appointed by the President of the University in consultation with the Coordinator of the course. This exercise shall be conducted through the office of the Controller of the Examinations of the University.
- (e) **Internal Assessment:** Internal Assessment of the two sections shall be of 20 marks. Internal assessment of each section will be of 10 marks.
- (f) **Passing Marks:** A candidate will have to obtain at least 50% marks in the aggregate of all the two section of the Theory paper to pass. This means that he/she will have to score 50 marks out of 100 marks in the paper. This shall include the marks obtained in Theory paper of 80 marks and the marks obtained in the internal assessment of 20 marks (Marks obtained in both the sections A & B of the Theory paper + Marks obtained in internal assessment = the Total Marks obtained in the paper).

2. Practical and Viva-voce:

There shall be one practical and viva-voce examination. It shall be conducted after the Theory examination is over. The pattern shall be as follows:

- (a) The practical and Viva-voce examination shall be of 100 marks and it will be conducted by one External and two Internal examiners to be appointed by the President of the University in consultation with the coordinator of the course.
- (b) It shall be left to the examiners – Internals and the External, to examine and evaluate the students in practical in the way they wish and award the marks without giving any specific details. The total marks obtained by the candidate in the practical examination shall be the aggregate of the marks awarded by three practical examiners (2 Internals and 1 External) put together as one figure. This shall then be submitted to the University.

For example in case of "University Advanced Post Graduate Certificate Course in Advanced Reproductive Technology (with hands on training)" having three practical examiners, it shall be 25 (first examiner), 25 (second examiner), 25(third examiner) total $25+25+25 = 75$, which shall be submitted as one figure to the University. The award sheet shall be signed by all the practical examiners.

- (c) A student shall be required to obtain a minimum of 50% pass marks in the practical examination. This means 50 out of 100. A candidate who fails to obtain 50% marks shall be declared failed in the practical examination.

3. Result

A candidate will have to obtain at least 50% marks in the aggregate of all the two sections viz. A and B of the Theory paper and also a minimum of 50% marks in the practical examination for him/her to be declared pass.

4. Supplementary Examination

- (a) Eligibility for the failed candidates to appear at the supplementary examination shall be as below –
 - i. Failed in Theory and failed in Practical – shall reappear in Theory and Practical examination.
 - ii. Failed in Theory and passed in Practical examination – shall reappear only in the Theory paper (i.e. in all the two sections A & B of the theory paper)
 - iii. Passed Theory but failed in Practical – shall reappear in the Theory paper and Practical Examination.
- (b) There shall be a supplementary examination within two months of the declaration of the result of the main examination. Internal assessment marks obtained in main examination in the Theory paper shall be carried forward for working the result of supplementary Theory paper examination. Such candidate who has secured less than 50% marks in the internal assessment will be allowed to improve his internal assessment marks in the repeat supplementary internal assessment examination.
- (c) Marks secured by the candidate in the main examination passed Theory paper and/or practical of the main examination, as the case may be, will be carried forward for working out his result.
- (d) **Result -**
 - i. A candidate obtaining at least 50% marks in the supplementary Theory paper and 50% marks in the practical examination shall be declared successful.
 - ii. A candidate who has failed in supplementary theory paper examination shall have to reappear only in the failed theory paper (both the sections) at the next main examination.
 - iii. A candidate who has failed in supplementary practical examination

shall have to reappear both in theory (both the sections) and practical at the next main examination.

- (e) **No revaluation** of answer books either of main or of the supplementary examination shall be permitted. However, the student can apply for scrutiny of the answer books.
- (f) The candidate will be allowed to avail maximum **four attempts** including supplementary (one main + one supplementary + one main + one supplementary) to pass the examination. After that he will have to leave the course. Non-appearance at an examination shall be counted an attempt.

5. Result-Division: Successful candidates will be categorized as under –

I.	Those, securing 50% and above but less than 60% in the aggregate marks	Pass
ii.	Those, securing 60% and above but less than 75% in the aggregate marks	Pass with I Division
iii.	Those, securing 75% and above in the aggregate marks	ss with Honors

**UNIVERSITY ADVANCED POST GRADUATE CERTIFICATE
COURSE IN REPRODUCTIVE TECHNOLOGY (WITHHANDS ON
TRAINING) (7060)**

1. DURATION OF COURSE: 6 months

2. ELIGIBILITY: MBBS/MD or MS

3. OBJECTIVE:

This course is meant for the gynaecologists and embryologists who are practicing basic infertility management and want to take the next step and explore the world of ART. It aims at providing detailed theoretical knowledge and extensive hands-on-training in all aspects of advances in assisted reproductive technology (ART).

4. SYLLABUS:

Subject Paper (7060)	Maximum Marks		
	Theory	I Ass.	Practical
Section A - Human Reproduction (Basic Sciences)	40	10	100
Section B - ART & Clinical Embryology	40	10	

4.1 Theory:

Section A: Human Reproduction (Basics Sciences)

- (1) Basics of male and female reproduction.
- (2) Anatomy of Female reproductive system
- (3) Anatomy of Male reproductive system
- (4) Development of male and female genital tract
- (5) Hypothalamo-pituitary-gonadal Axis
- (6) Physiology of Menstrual Cycle
- (7) Knowledge of oogenesis, spermatogenesis
- (8) Fertilization
- (9) Implantation
- (10) Luteal phase – normal physiology and LPD

Section B: ART & Clinical Embryology

- (1) Evaluation of infertile couples. Different diagnostic tests, their indications, contraindications, limitations, sources of errors and interpretation.
- (2) Etiology and management of female infertility, viz.
 - (a) PCOS
 - (b) Endometriosis
 - (c) Tubal factors & hydrosalpinx

- (d) Hyperprolactinemia and hypothyroidism
- (e) Primary and secondary amenorrhoea, premature ovarian failure
- (f) Fibroids & other uterine factors
- (g) Unexplained infertility
- (h) Recurrent pregnancy losses
- (i) Recurrent Implantation Failure
- (3) Etiology and management of male infertility.
- (4) Basic semen analysis and interpretation of results according to WHO manual (2010).
- (5) Different methods of semen preparation for artificial insemination (IUI) & ART (IVF, ICSI).
- (6) Different techniques of surgical sperm retrieval (PESA, TESA, TESE) – indications, contraindications and complications.
- (7) Genetic aspects of male infertility
- (8) Different types of ovulation inducing agents, their doses and regimens. The mechanism of action of:
 - (a) Clomiphene Citrate
 - (b) Gonadotropins
- (9) Training in ultrasonography, relevant to the management of infertile couples
- (10) Training in fertility enhancing endoscopic surgeries, including both laparoscopic and hysteroscopic procedures.
- (11) Proper patient selection for medical and surgical management of infertility and for assisted reproductive technology (ART).
- (12) Recent advances in luteal support.
- (13) Assisted Reproductive Technology (ART):
 - (a) Different techniques of ART - their indications and limitations
 - (b) Patient preparation & investigations required prior to ART.
 - (c) Different protocols of controlled ovarian stimulation and the use of GnRH analogues in assisted reproduction.
 - (d) Individualizing stimulation protocols according to the type of patient e.g. PCOS, poor responders, etc.
 - (e) Monitoring of IVF cycles – ultrasounds and serum hormone levels .
 - (f) Prevention, early detection and management of ovarian hyper stimulation syndrome (OHSS).
 - (g) Technique of oocyte retrieval and embryo transfer.
 - (h) Factors influencing the results of ART- recurrent implantation failure : etiology and management.
- (14) Understanding of third party reproduction – gamete and embryo donation.
 - (a) ICMR guidelines and regulations (2010)
 - (b) Synchronization of the donor and recipient in oocyte donation program by hormonal manipulation.
 - (c) Legal, ethical, and emotional aspects of gamete and embryo donation.
 - (d) Process of selection and counseling of potential oocyte and sperm donors.
- (15) Embryology:

- (a) Setting up of IVF laboratory, design and positioning of the equipments.
- (b) Knowledge of different culture media and disposables.
- (c) Quality control and quality assurance.
- (d) Basics of embryo culture & grading of oocytes and embryos
- (e) Micromanipulation techniques (ICSI, Assisted Hatching)
- (f) Cryopreservation of gametes and embryos.
- (g) Pre- Implantation Genetic Testing (PGD & PGS)
- (16) Appreciation of psychological, emotional, sexual, ethical, health economics and social aspects of infertility.

4.2 Practical

- (1) OPD (2 months) – History taking, understanding the basics of human reproduction, relevant investigations and different protocols, Transvaginal scan (TVS)
- (2) OT (1 month) – Fertility enhancing endoscopic surgeries (including Laparoscopy and Hysteroscopy), oocyte Retrieval, Intrauterine Insemination, Embryo transfer
- (3) Embryology lab(1 month) – semen preparation, oocyte & embryo identification, lab setting
- (4) Deptt. of Obs & Gynae (MGMC) (1 month)
- (5) Last month (1 month) - Weekly Rotation of the above postings, revision and preparation for Examinations

University Advanced Post Graduate Certificate
Course in Reproductive Technology (with
hands on Training)
(Main) Examination Month Year
Theory Paper
(Section A & B)
Time: Three Hours
Maximum Marks: 80

(Use separate answer books for each section)

SECTION – A
Human Reproduction (Basic Sciences)

Marks: 40

- | | | |
|--------|------------------------------------|----|
| Q.No.1 | Modified Essay Type Question | 10 |
| Q.No.2 | Modified Essay Type question | 10 |
| Q.No.3 | Short Notes (Any four out of five) | 20 |

SECTION – B
ART & Clinical Embryology

Marks: 40

- | | | |
|--------|------------------------------------|----|
| Q.No.1 | Modified Essay Type Question | 10 |
| Q.No.2 | Modified Essay Type question | 10 |
| Q.No.3 | Short Notes (Any four out of five) | 20 |

University Advanced Post Graduate Certificate
Course in Reproductive Technology (with
hands on Training) (Main) Examination
Month Year
Theory Paper
(Section A & B)
Time: Three Hours
Maximum Marks: 80

(Use separate answer books for each section)

SECTION – A
Human Reproduction (Basic Sciences)

Marks: 40

- | | | |
|--------|---|----|
| Q.No.1 | Describe Ovarian Steroidogenesis. What are the effects of estrogen and progesterone on reproductive system? | 10 |
| Q.No.2 | Classify Mullerian anomalies according to ASRM classification? What are the clinical problems associated with them and how will you manage them? | 10 |
| Q.No.3 | Write short notes (Any four out of five)
(a) Define Luteal phase defect and write a note on Clinical correlation
(b) Development of Ovary
(c) Endocrinal control of Spermatogenesis
(d) Luteal phase defect and write a note on its clinical Correlation. | 20 |

SECTION – B
ART & Clinical Embryology

Marks 40

- | | | |
|--------|---|----|
| Q.No.1 | What are the causes of male infertility, recent guidelines for Semen analysis and give brief note on semen preparation. | 10 |
| Q.No.2 | Write down the causes of recurrent implantation failure and how to manage it. | 10 |
| Q.No.3 | Write short notes (Any four out of five)
(a) Management of OAT
(b) Stages of Embryo development
(c) Embryonic stem cells
(d) PCOS
(e) Semen preservation | 20 |