

**Dr. D.Y. Patil School of Allied Health Sciences**

**Dr. D. Y. Patil Vidyapeeth, Pune  
(Deemed to be University)**



**Programme Framework**

**Master of Science in Clinical  
Embryology  
(M.Sc. CE)**

# First Year First Semester

| Paper                             | Unit   | Course Title   | Credits   | Internal Marks | ExternalMark | Internal Practical Marks | External Practical Marks | Total Marks |
|-----------------------------------|--------|--|-----------|----------------|--------------|--------------------------|--------------------------|-------------|
| Paper 1                           | Unit 1 | Developmental Biology                                  | 2         | 5              | 25           | 4                        | 10                       | 46          |
|                                   | Unit 2 | Cell and Molecular Biology                             | 3         | 5              | 25           | 4                        | 10                       | 47          |
|                                   | Unit 3 | Biochemistry   | 3         | 5              | 25           | 5                        | 10                       | 48          |
|                                   | Unit 4 | Semen Analysis- Microscopic and macroscopic evaluation | 2         | 8              | 25           | 7                        | 10                       | 52          |
| Paper 2                           | Unit 1 | Male Reproductive Anatomy & Physiology                 | 3         | 8              | 25           | 4                        | 10                       | 50          |
|                                   | Unit 2 | Concept of ART OT and Laboratory                       | 2         | 8              | 25           | 5                        | 10                       | 50          |
|                                   | Unit 3 | Female Reproductive Anatomy & Physiology               | 3         | 8              | 25           | 4                        | 10                       | 50          |
|                                   | Unit 4 | Microbial Contamination and it's control in ART        | 2         | 3              | 25           | 7                        | 10                       | 47          |
| <b>Seminars and presentations</b> |        |  |           |                |              | 10                       |                          | 10          |
| <b>Record book submission</b>     |        |  |           |                |              |                          | 10                       | 10          |
| <b>Viva voce</b>                  |        |  |           |                |              |                          | 10                       | 10          |
| <b>Total</b>                      |        |  | <b>20</b> | <b>50</b>      | <b>200</b>   | <b>50</b>                | <b>100</b>               | <b>420</b>  |

# Second Semester

| Paper                             | Unit   | Course Title  | Credits   | Internal Marks | External Mark | Internal Practical Marks | External Practical Marks | Total Marks |
|-----------------------------------|--------|---|-----------|----------------|---------------|--------------------------|--------------------------|-------------|
| Paper 1                           | Unit 1 | Human Reproduction and it's endocrine control   | 3         | 5              | 25            | 4                        | 10                       | 47          |
|                                   | Unit 2 | Etiology and treatment in infertility   | 2         | 3              | 25            | 4                        | 10                       | 44          |
|                                   | Unit 3 | Assisted reproductive techniques, instrumentation in ART and Embryology                                       | 3         | 8              | 25            | 7                        | 10                       | 53          |
|                                   | Unit 4 | Ovarian stimulation, Oocyte retrieval, Embryo transfer and related procedures,                                | 3         | 8              | 25            | 5                        | 10                       | 51          |
| Paper 2                           | Unit 1 | Sperm preparation procedures  | 2         | 5              | 25            | 7                        | 10                       | 49          |
|                                   | Unit 2 | Fertilization assessment, Embryo development, Cleavage, and blastocyst grading, culture conditions in IVF lab | 3         | 8              | 25            | 5                        | 10                       | 51          |
|                                   | Unit 3 | Early embryonic developments, Implantation and Invasion of the embryo, late embryonic development             | 2         | 8              | 25            | 4                        | 10                       | 49          |
|                                   | Unit 4 | Genetics, and gene expression   | 2         | 5              | 25            | 4                        | 10                       | 46          |
| <b>Seminars and presentations</b> |        |   |           |                |               | 10                       |                          | 10          |
| <b>Record book submission</b>     |        |   |           |                |               |                          | 10                       | 10          |
| <b>Viva voce</b>                  |        |   |           |                |               |                          | 10                       | 10          |
| <b>Total</b>                      |        |   | <b>20</b> | <b>50</b>      | <b>200</b>    | <b>50</b>                | <b>100</b>               | <b>420</b>  |

## Second Year Third Semester

| Paper                             | Unit   | Course Title   | Credits   | Internal Marks | External Mark | Internal Practical Marks | External Practical Marks | Total Marks |
|-----------------------------------|--------|--|-----------|----------------|---------------|--------------------------|--------------------------|-------------|
| Paper 1                           | Unit 1 | Principle of cryobiology, freezing of gametes and embryos and its maintenance                    | 3         | 8              | 25            | 7                        | 10                       | 53          |
|                                   | Unit 2 | Safety aspects of an ART Center, Handling emergencies, adverse events, and backup strategies     | 2         | 5              | 25            | 4                        | 10                       | 46          |
|                                   | Unit 3 | Mosaicism in human embryos, Epigenetics, PGS and PGD, understanding third party reproduction     | 2         | 5              | 25            | 5                        | 10                       | 47          |
|                                   | Unit 4 | Research Methodology, and biostatistics.   | 3         | 3              | 25            | 4                        | 10                       | 45          |
| Paper 2                           | Unit 1 | Micromanipulation of gametes   | 3         | 8              | 25            | 7                        | 10                       | 53          |
|                                   | Unit 2 | Time lapse imaging, assisted hatching, poloscopy, artificial intelligence                        | 2         | 8              | 25            | 5                        | 10                       | 50          |
|                                   | Unit 3 | Reproductive and genetic disorders and infertility   | 2         | 5              | 25            | 4                        | 10                       | 46          |
|                                   | Unit 4 | Proteomics, Quality control and Quality management in ART Center, Trouble shooting in ART Center | 3         | 8              | 25            | 4                        | 10                       | 50          |
| <b>Seminars and presentations</b> |        |  |           |                |               | 10                       |                          | <b>10</b>   |
| <b>Record book submission</b>     |        |  |           |                |               |                          | 10                       | <b>10</b>   |
| <b>Viva voce</b>                  |        |  |           |                |               |                          | 10                       | <b>10</b>   |
| <b>Total</b>                      |        |  | <b>20</b> | <b>50</b>      | <b>200</b>    | <b>50</b>                | <b>100</b>               | <b>420</b>  |

## Fourth Semester

| Paper                                  | Unit   | Course Title                                  | Credits   | Internal Marks | External Mark | Internal Practical Marks | External Practical Marks | Total Marks |
|--|--------|---|-----------|----------------|---------------|--------------------------|--------------------------|-------------|
| Paper 1                                | Unit 1 | Regulation and accreditation                  | 3         | 0              | 50            | 0                        | 0                        | 53          |
|  | Unit 2 | Handling Ethical, religious, and legal issues | 3         | 0              | 50            | 0                        | 0                        | 53          |
|  |        | On Job Training                               | 3         | 25             | 0             | 0                        | 0                        | 28          |
| Paper 2                                | Unit 1 | Counselling in infertility                    | 3         | 0              | 50            | 0                        | 0                        | 53          |
|  | Unit 2 | Recent advances in ART & Embryology           | 3         | 0              | 50            | 0                        | 0                        | 53          |
| <b>Article &amp; Case Presentation</b> |        |   | 2         | 25             | 0             | 0                        | 0                        | 27          |
| <b>Dissertation</b>                    |        |   | 3         | 0              | 0             | 0                        | 100                      | 103         |
| <b>Viva voce</b>                       |        |   | 0         | 0              | 0             | 0                        | 50                       | 50          |
| <b>Total</b>                           |        |   | <b>20</b> | <b>50</b>      | <b>200</b>    | <b>0</b>                 | <b>150</b>               | <b>420</b>  |