

Minutes of the Board of Studies Meeting

8

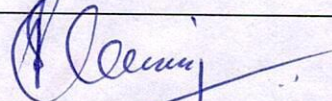
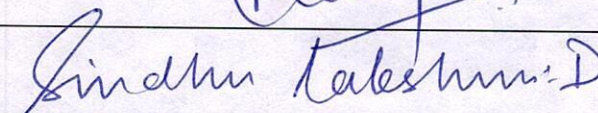
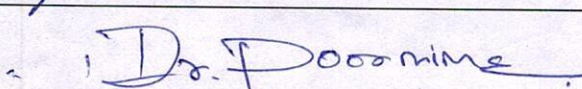
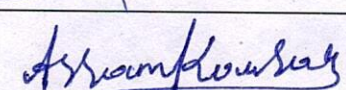
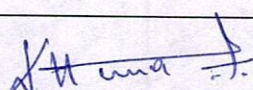
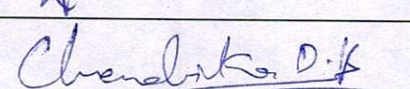
Department: M.Sc. Clinical Embryology

A meeting of the Board of Studies for the M.Sc. [Clinical Embryology] program was held on 03rd June 2025 at 03:00 PM in the Board Room of Rathna College of Science and Business Management, Mysore.

Chairperson:

Dr. Kemparaju K Chairman – Board of Studies RCSBM

Members Present:

1. Dr. Kemparaju K	
2. Dr. Sindhu Lakshmi D	
3. Dr Poornima	
4. Dr. Asma Kausar	
5. DR Syed Zamer Ahmed	
6. Hema k	
7. Chandrika	

Agenda:

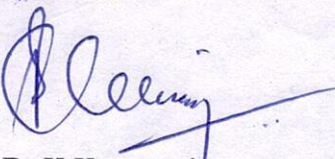
Review and approval of the existing syllabus.

Recommendations for curriculum enhancement for the academic year 2025–2026.

Resolutions Passed:

The syllabus for M.Sc. [Clinical Embryology] was reviewed and approved.

The meeting concluded with a vote of thanks by the Chairperson.

~~Chairman~~Dr.K Kemparaju
Chairman BoS

Rathna College of Science and Business Management



Programme

M.Sc. [Clinical Embryology]

Four Semester Choice Based Credit Based Scheme
&
Continuous Assessment of Grading Pattern System
(CBCS CAGP SYSTEM)

SYLLABUS

**RATHNA COLLEGE OF SCIENCE AND
BUSINESS MANAGEMENT
(JEEVAN DHARAN TRUST)**

#J.P/2, 2ND Floor , Bandanthathmma complex , new kantharaja urs road.
"J" Block Kuvempunagar Mysuru Karnataka India

2025-2026

Annexure -1
RATHNA COLLEGE OF SCIENCE AND BUSINESS MANAGEMENT
Specialised programme by University of Mysore
Credit Pattern (2025-2026)
M.Sc. [Clinical Embryology]

Regulation and syllabus

Regulations

The credit pattern for Clinical Embryology is similar to the University's choice based credit system. However, the syllabus does not have soft core and open elective papers. All subjects are mandatory. The total credit for course is same as that of PG programme of the University.

Following shall be the minimum and maximum credits per semester.

The credit pattern is lecture (L); Tutorial (T); Practical (P); (L:T:P) Pattern.

Lecture: One hour session of theory class per week in a semester is 1 credit.

Tutorial and practical: Two hour session of tutorial or practical per week in a semester is 1 credit .

One semester period : 16 weeks of teaching and learning.

Duration of semester: 20 weeks that includes semester end examinations.

- A Candidate can enroll for a minimum of 16 credits per semester and maximum of 20 credits per semester.
- A Candidate has to earn a minimum of 76 credits for successful completion of a master Degree.

Continuous assessment pattern:

Continuous assessment	Time duration	Marks		Minimum 30% and an aggregate of 40% to declare pass
		Max	Min	
C1	1 week to 8 weeks	15	4.5	
C2	9 weeks to 16 weeks	15	4.5	
C3	Complete 16 weeks	70	21	

Eligibility for admission: students of Bachelor of Science Degree from any UGC recognized Universities/MBBS/BDS/BAMS/BHMS/BEMS/All Ayush Degrees, Pharmacy, Nursing, Para Medical Courses and Engineering with sciences (Biotechnology and life science related) Students from foreign national are also eligible subjected to Norms of University of Mysore.

SEMESTER I

(20)CREDITS

SL NO	CODE	TITLE OF THE PAPER	CREDIT PATTERN			TOTAL CREDITS
			L	T	P	
1		Human Reproductive Physiology & Endocrinology	2	0	0	2
2		Cell Biology & Genetics	2	0	0	2
3		Basic Laboratory Techniques	0	0	8	8
4		Semen Analysis & Sperm Preparation	0	0	8	8
			4	0	16	20

SEMESTER II

(20)CREDITS

SL NO	CODE	TITLE OF THE PAPER	CREDIT PATTERN			TOTAL CREDITS
			L	T	P	
1		General & Clinical Embryology	2	0	0	2
2		ART Techniques I	2	0	0	2
3		Oocyte Retrieval & Handling	0	0	8	8
4		IVF & ICSI Procedures	0	0	8	8
			4	0	16	20

SEMESTER III**(20) CREDITS**

SL NO	CODE	TITLE OF THE PAPER	CREDIT PATTERN			TOTAL CREDITS
			L	T	P	
1		Advanced ART	2	0	0	2
2		Lab Management & Quality Control	2	0	0	2
3		Embryo Culture & Grading	0	0	8	8
4		Cryopreservation Techniques	0	0	8	8
			4	0	16	20

SEMESTER IV**(20) CREDITS**

SL NO	CODE	TITLE OF THE PAPER	CREDIT PATTERN			TOTAL CREDITS
			L	T	P	
1		Infertility, Ethics & Reproductive Immunology	2	0	0	2
2		Research Methodology & Biostatistics	2	0	0	2
3		Case Studies & Counseling	0	2	0	2
4		Dissertation / Project Work	0	0	10	10
			4	4	10	16

Theory Paper 1: Human Reproductive Physiology & Endocrinology (20) CREDITS

1. **Reproductive Anatomy:** Structure of male and female reproductive organs.
2. **Hormonal Regulation:** HPG axis, gonadotropins, and steroid hormones.
3. **Ovarian and Menstrual Cycle:** Phases, hormonal changes.
4. **Spermatogenesis & Oogenesis:** Gamete formation and regulation.
5. **Puberty & Menopause:** Hormonal changes and physiological effects.

Theory Paper 2: Cell Biology & Genetics

1. **Cell Structure & Organelles:** Functions and cell types.
2. **Cell Cycle & Apoptosis:** Regulation and checkpoints.
3. **DNA Replication & Repair:** Enzymes and mechanisms.
4. **Mendelian Genetics:** Laws of inheritance.
5. **Chromosomal Disorders:** Down's syndrome, Turner syndrome.
6. **Genetic Testing:** Karyotyping, PCR, microarray.

Practical Paper 1: Basic Laboratory Techniques

1. **Microscopy & Staining:** Handling compound and phase contrast microscopes.
2. **Buffer Preparation:** pH, osmolarity, and media components.
3. **Sterilization Techniques:** Autoclaving, filtration.
4. **Handling Biological Samples:** Semen, oocytes (mock).

Practical Paper 2: Semen Analysis & Sperm Preparation

1. **Semen Collection:** Protocols and patient instructions.
2. **Macroscopic Evaluation:** Volume, color, viscosity.
3. **Microscopic Evaluation:** Motility, morphology, concentration.
4. **Sperm Processing:** Swim-up, density gradient methods.
5. **Staining Techniques:** Vital stain, hypo-osmotic swelling test.

Theory Paper 1: General & Clinical Embryology (20) CREDITS

1. **Fertilization:** Sperm-oocyte interaction and activation.
2. **Cleavage & Morula Formation:** Cell division stages.
3. **Blastocyst Formation:** Structure and implantation.
4. **Placentation:** Development and functions.
5. **Congenital Malformations:** Causes, diagnosis.
6. **Teratogens:** Effects of drugs, chemicals on development.

Theory Paper 2: ART Techniques I

1. **Overview of ART:** History, IVF, IUI, ICSI.
2. **Ovarian Stimulation:** Protocols, drugs used.
3. **Oocyte Retrieval:** Procedure and complications.
4. **Embryo Transfer:** Techniques and timing.
5. **Ethical & Legal Aspects:** ICMR guidelines, consent, surrogacy.

Practical Paper 1: Oocyte Retrieval & Handling

1. **TVS Monitoring:** Follicular growth.
2. **Oocyte Identification:** COC assessment.
3. **Oocyte Grading:** Morphology-based.
4. **Denudation:** Hyaluronidase use and pipetting.

Practical Paper 2: IVF & ICSI Procedures

1. **Sperm Preparation for IVF/ICSI.**
2. **Insemination Techniques:** Conventional IVF.
3. **ICSI:** Micromanipulator operation, mock injection.
4. **Embryo Culture:** Early stages.
5. **Embryo Grading:** Day 2, 3 scoring.

Theory Paper 1: Advanced ART (20) CREDITS

1. **Blastocyst Culture:** Media and conditions.
2. **Time-Lapse Imaging:** Embryoscope.
3. **PGT (A/M/SR):** Indications and methods.
4. **CASA :** Uses of CASA

Theory Paper 2: Lab Management & Quality Control

1. **IVF Lab Design:** Equipment and air quality.
2. **Culture Media:** Composition and preparation.
3. **Quality Control:** KPIs, environmental monitoring.
4. **Documentation:** Logs, reports, SOPs.
5. **Risk Management:** Troubleshooting lab errors.

Practical Paper 1: Embryo Culture & Grading

1. **Media Handling:** Single vs. sequential.
2. **Embryo Observation:** Pronuclear to blastocyst.
3. **Scoring Systems:** Morphological and AI-based.
4. **Culture Dishes:** Preparation and loading.

Practical Paper 2: Cryopreservation Techniques

1. **Vitrification of Oocytes/Embryos.**
2. **Thawing Protocols:** Stepwise warming.
3. **Post-thaw Evaluation:** Rehydration and grading.
4. **Cryopreservation:** Vitrification and slow-freeze.
5. **Cryo-storage:** Liquid nitrogen handling and documentation.

Theory Paper 1: Infertility, Ethics & Reproductive Immunology (20) CREDITS

1. **Causes of Infertility:** Tubal, male factor, endometriosis.
2. **Reproductive Immunology:** Immune tolerance, alloimmunity.
3. **ART Ethics:** Third-party reproduction, embryo rights.
4. **Regulatory Frameworks:** ICMR, ASRM, ESHRE.

Theory Paper 2: Research Methodology & Biostatistics

1. **Study Designs:** Case-control, cohort.
2. **Data Collection:** Sampling methods.
3. **Statistical Analysis:** t-test, chi-square, ANOVA.
4. **SPSS Basics:** Data entry, result interpretation.
5. **Scientific Writing:** Thesis format, plagiarism.

Practical Paper 1: Case Studies & Counseling (16) CREDITS

1. **Case Presentations:** Infertility types.
2. **Treatment Planning:** ART cycle design.
3. **Patient Counseling:** Communication and empathy.
4. **Consent Process:** Legal and ethical considerations.

Practical Paper 2: Dissertation / Project Work

1. **Proposal Writing:** Topic selection and objectives.
2. **Methodology Execution:** Data collection and analysis.
3. **Thesis Submission:** Format and structure.
4. **Viva Voce:** Presentation and defense.

Four copies of the project prepared. Shall be submitted to the department/university before the final examination date notified.

RECOMMENDED READING BOOKS

Sl.no.	Name of the book
1	1. Human Embryology
2	Author: Inderbir Singh & G.P. Pal
3	<ul style="list-style-type: none">• Why it's useful: Widely used in medical and paramedical courses, this book provides a detailed explanation of human development with excellent illustrations.
4	<ul style="list-style-type: none">• Covers: Gametogenesis, fertilization, early development, organogenesis, and congenital anomalies.
5	2. Essentials of Human Embryology
6	Author: B. D. Chaurasia
7	<ul style="list-style-type: none">• Why it's useful: Concise and exam-friendly, this book is great for quick revisions and understanding clinical correlations.
8	<ul style="list-style-type: none">• Covers: Basic to advanced embryological concepts with clinical notes.
9	3. Developmental Biology
10	Author: P.S. Verma & V.K. Agarwal
11	<ul style="list-style-type: none">• Why it's useful: A solid foundation in classical developmental biology and comparative embryology. Good for understanding animal models used in research.
12	4. Clinical Embryology: A Practical Guide
13	Author: Nayana Patel (Editor)
14	<ul style="list-style-type: none">• Why it's useful: A newer book with contributions from Indian ART practitioners. Focuses on practical aspects of embryology labs, IVF, and clinical cases.
15	5. Textbook of Assisted Reproductive Techniques
16	Editor: Kamini Rao