

Course Code	Course Name	Credits
26ZY612	REPRODUCTIVE BIOLOGY	04

Course Objectives

- To understand the structure and functions of reproductive systems in animals and humans.
- To study the process of gametogenesis, fertilization, and embryonic development.
- To gain knowledge about reproductive endocrinology and hormonal regulation.
- To understand reproductive health, infertility, and assisted reproductive technologies.
- To study population control measures and recent advances in reproductive biology.

Learning Outcomes

- Explain the anatomy and physiology of male and female reproductive systems.
- Describe the mechanisms of gamete formation and fertilization.
- Analyze the hormonal regulation of reproduction and reproductive cycles.
- Understand infertility problems and assisted reproductive techniques.
- Apply reproductive biology concepts in healthcare, population management, and research.

Unit I – Introduction to Reproductive Biology (12 Hrs.)

Scope and significance of reproductive biology. Types of reproduction – asexual and sexual reproduction. Structure and functions of male and female reproductive systems in vertebrates. Primary and secondary sexual characters. Puberty and reproductive maturity.

Unit II – Gametogenesis and Fertilization (12 Hrs.)

Spermatogenesis and oogenesis. Structure and physiology of sperm and ovum. Ovulation and menstrual cycle. Fertilization – process, mechanisms, and significance. Cleavage, blastulation, implantation, and placentation.

Unit III – Reproductive Endocrinology (12 Hrs.)

Hormonal regulation of reproduction. Hypothalamic–pituitary–gonadal axis. Role of gonadotropins and sex hormones in reproduction. Estrois and menstrual cycles. Pregnancy, parturition, and lactation. Hormonal disorders affecting reproduction.

Unit IV – Reproductive Health and Infertility (12 Hrs.)

Reproductive health and sexually transmitted diseases. Infertility in males and females – causes, diagnosis, and treatment. Family planning and contraceptive methods. Assisted reproductive technologies – IVF, embryo transfer, artificial insemination, and surrogacy.

Unit V – Applied Reproductive Biology (12 Hrs.)

Population explosion and birth control measures. Reproductive toxicology. Cryopreservation of gametes and embryos. Stem cells and reproductive cloning. Recent advances in reproductive biology and biotechnology. Ethical issues in reproductive technologies.

Reference Books:

1. Austin, C.R. and Short, R.V. (2017). Reproduction in Mammals. Cambridge University Press.
2. Gilbert, S.F. (2019). Developmental Biology. Sinauer Associates.
3. Knobil, E. and Neill, J.D. (2018). The Physiology of Reproduction. Academic Press.
4. Shadow, O.I. (2016). Textbook of Reproductive Biology. Wiley-Blackwell.
5. Carlson, B.M. (2019). Human Embryology and Developmental Biology. Elsevier.

Websites and eLearning Sources:

1. <http://www.biologydiscussion.com/reproductive-system>
2. <https://www.easybiologyclass.com/>
3. <https://byjus.com/biology/human-reproduction/>