

DEPARTMENT OF BIOTECHNOLOGY				CLASS: II B.Sc. Biotechnology				
Sem	Course Type	Course Code	Course Title	Credits	Contact Hours/week	CIA	Ext	Total
III	<i>Add on</i>	21U3LAD1	Reproductive Biology	2	2	50	50	100

Course Objectives

1.	To learn the fundamental developmental processes
2.	To understand the fertilization and cleavage processes
3.	To acquire knowledge about Assisted Reproductive Technology

Unit	Description	Hours
I	Gametogenesis General introduction to reproductive biology, Spermatogenesis, Oogenesis, Egg membranes and organization of egg - yolk, pigments, egg cortex, Maturation of egg, Polarity and Symmetry.	6
II	Fertilization & activation Types of eggs - Polarity - Mechanism of fertilization-Monospermy and Polyspermy, Activation of egg and metabolism, Parthenogenesis.	6
III	Cleavage and Gastrulation Types of cleavage, Factors affecting cleavage, Blastulation, Gastrulation - Mechanism of morphogenetic movement, Metabolic and molecular changes during gastrulation; Cell motility and Differential cell affinity; Fate maps construction. Concept of organizer.	6
IV	Embryonic and postembryonic development Placenta – types and physiology, Metamorphosis and regeneration, Nucleo-cytoplasmic interactions, teratogenesis-causative agents.	6
V	Experimental embryology Concept of Assisted Reproductive Technology (ART) – Monitoring of ovulation phase, Super-ovulation and Cryopreservation, Sperm banking, Artificial insemination, IVF, Embryo transfer and Test tube babies.	6

Books for Study

1. Balinsky, BI. 2012. An introduction to Embryology. 5th Edition. Thomson Asia Pvt. Ltd.,Singapore
2. Jain, PC. 1994. Elements of Developmental Biology. Vishal Publications, Jalandhar, NewDelhi.
3. Verma, PS and Agarwal, VK. 2006. Chordate Embryology. S. Chand & Company Ltd., NewDelhi.