

SEMESTER V
UCZOG20 - DEVELOPMENTAL BIOLOGY

Year	SEM	Course code	Title of the Course	Course Type	Course Category	H/W	Credits	Marks
III	V	UCZOG20	Developmental Biology	Theory	Core	5	5	100

Objectives:

- To study the process of development from germ cell to individual.
- To study the recent advancements in the reproductive biology.

Course Outcomes:

On completion of the course the student will be able to...

CO1:Discuss gametogenesis and types of eggs and egg membranes.

CO2:Explain the mechanism and physiology of Fertilization, parthenogenesis and cleavage.

CO3:Explain gastrulation and organogenesis in mammals.

CO4:Discuss human reproduction

CO5:Discuss Assisted Reproductive Technologies.

CO/PSO	PSO					
	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	H	H	L	M	L	L
CO2	H	H	L	M	L	L
CO3	H	H	L	M	L	L
CO4	H	H	L	M	L	L
CO5	H	H	H	H	H	L

CO/PO	PO					
	PO1	PO2	PO3	PO4	PO5	PO6
CO1	H	M	H	M	L	M
CO2	H	M	H	M	L	M
CO3	H	M	H	M	L	M
CO4	H	M	H	M	L	M
CO5	H	M	H	L	M	M

Unit 1:(15 Hours)

1.1: Introduction and history of Developmental Biology. (K1, K2, K3)

1.2: Spermatogenesis. (K1, K2, K3)

1.3: Oogenesis. (K1, K2, K3)

1.4: Eggs-Types of eggs. (K1, K2, K3)

1.5: Polarity and symmetry of eggs. (K1, K2, K3)

1.6: Egg membranes- Extra embryonic membranes in Chick. (K1, K2, K3)

Unit 2:(15 Hours)

2.1: Fertilization – Mechanism. (K1, K2, K3)

2.2: Physiology of Fertilization. (K1, K2, K3)

2.3: Theories of Fertilization. (K1, K2, K3)

2.4: Experimental works of Spemann and Mangold. (K1, K2, K3)

2.5: Parthenogenesis. (K1, K2, K3)

2.6: Cleavage. (K1, K2, K3)

Unit 3:(15 Hours)

- 3.1: Fate map. (K1, K2, K3,K4)
- 3.2: Morphogenetic movements and Gastrulation in Mammals. (K1, K2, K3)
- 3.3: Organogenesis in Mammal – Development of eye. (K1, K2, K3)
- 3.4: Development of Ear. (K1, K2, K3)
- 3.5: Development of Brain. (K1, K2, K3)
- 3.6: Development of Heart. (K1, K2, K3)

Unit 4:(15 Hours)

- 4.1: Human reproduction - Puberty, Menstrual cycle and Menopause. (K1, K2, K3)
- 4.2: Classification of Placenta. (K1, K2, K3)
- 4.3: Placenta in Mammals. (K1, K2, K3)
- 4.4: Hormonal changes in pregnancy. (K1, K2, K3)
- 4.5: Parturition and Lactation. (K1, K2, K3)
- 4.6: Contraception- Merits- Demerits. (K1, K2, K3)

Unit 5:(15 Hours)

- 5.1: Assisted Reproductive Technology. (K1, K2, K3, K4)
- 5.2: Super Ovulation. Artificial insemination. (K1, K2, K3, K4)
- 5.3: Cryopreservation. (K1, K2, K3, K4)
- 5.4: In Vitro Fertilization (IVF), Test tube babies, Embryo transfer. (K1, K2, K3, K4)
- 5.5: Amniocentesis. (K1, K2, K3, K4)
- 5.6: Bio ethics. (K1, K2, K3, K4)

Books for Reference:**Textbooks:**

1. P.S.Verma, V.K. Agarwal and Tyagi - Chordate Embryology, S.Chand and Co.,New Delhi 2007.
2. Arumugam N. - Developmental Biology- Saras Publication-15th edition 2014.

Reference Books:

3. Balinsky B.L - Introduction to Embryology, 5th Edition. First Indian, Reprint 2012.
4. Mohan P.Arora –Embryology- Himalaya Publishing House, 2011.
5. Veer Bala Rastogi, Jayaraj- Developmental Biology,2nd Edition, Kedar Nath Ram Nath. 1994.
6. Robert S. Mcewen- Vertebrate Embryology, 4th Edition, Oxford & IBH Publishing Co. 1949.
7. Bradley M.Patten, Bruce M. Carlson-Foundations of Embryology, 3rd Edition. Tata McGraw Hill Publishing Company Ltd. 1977.

E-Resources:

- <https://www.sdbonline.org>
- <https://embryology.med.unsw.edu.au>
- <http://www.embryology.ch>
- <https://human-embryology.org>

NON MAJOR ELECTIVE

UGZOA520/UGZOA620-MATERNAL AND CHILD PSYCHOLOGY

Year	SEM	Course code	Title of the Course	Course Type	Course Category	H/W	Credits	Marks
III	V	UGZOA520/ UGZOA620	Maternal and child psychology	Theory	Core Elective	3	2	100

Objectives:

- To understand the complexity of Mother and Child psychology.
- To help the students understand the Biological and Psychological changes in child.
- To overcome the difficulty of motherhood.

Course Outcomes:

On completion of the course the student will be able to...

CO1:Comprehend the puberty, natal periods and maternal changes.

CO2:Explain the growth, developmental stages and motor skills

CO3:Gains insights on the stages of cognitive development and personality.

CO4:Familiarize different emotions, emotional development and moral development.

CO5:Identify, classify and differentiate the gifted, mentally retarded and backward children.

CO/PSO	PSO					
	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	H	M	M	H	M	M
CO2	H	M	M	H	M	H
CO3	H	M	M	M	M	M
CO4	H	M	M	H	H	H
CO5	H	M	M	L	M	M

CO/PO	PO					
	PO1	PO2	PO3	PO4	PO5	PO6

CO1	H	H	H	L	H	M
CO2	H	H	H	L	H	M
CO3	H	H	H	L	H	M
CO4	H	H	H	L	H	M
CO5	H	H	H	L	H	M

Unit 1: BIOLOGY OF REPRODUCTION

(9

Hours)

- 1.1: Hormonal changes of Puberty. (K1, K2, K3)
- 1.2: Mechanism of Genetic Transmission. (K1, K2, K3)
- 1.3: Prenatal period- Hazards during the prenatal period. (K1, K2, K3)
- 1.4: Physical – psychological- maternal stress. (K1, K2, K3)
- 1.5: Pregnancy – Maternal body changes. (K1, K2, K3)
- 1.6: Premenstrual syndrome and peri menopausal behaviour. (K1, K2, K3, K4)

Unit 2: GROWTH AND DEVELOPMENT

(9

Hours)

- 2.1: Growth and Development- Stages. (K1, K2, K3, K4)
- 2.2: Influence of Heredity. (K1, K2, K3)
- 2.3: Influence of Environment. (K1, K2, K3)
- 2.4: Physical growth during Infancy. (K1, K2, K3)
- 2.5: Physical growth during Early Childhood. (K1, K2, K3)
- 2.6: Motor Development- Gross and Fine Motor skills. (K1, K2, K3)

Unit 3: COGNITIVE DEVELOPMENT

(9

Hours)

- 3.1: Cognitive development-Sensorimotor stage. (K1, K2, K3)
- 3.2: Preoperational-concrete operational, formal operation. (K1, K2, K3)
- 3.3: Personality theories- Carl Roger's Self theory. (K1, K2, K3, K4)
- 3.4: Dollard and Miller's Learning theory. (K1, K2, K3)
- 3.5: Bandura and Walter's Social Learning theory. (K1, K2, K3)
- 3.6: Self – Understanding and Identity. (K1, K2, K3)

Unit 4: SOCIO-EMOTIONAL DEVELOPMENT(9 Hours)

- 4.1: Emotions in Babyhood- Early Childhood- Late Childhood. (K1, K2, K3)
- 4.2: Emotional problems of Childhood. (K1, K2, K3)
- 4.3: Psychosocial Development. (K1, K2, K3)
- 4.4: Moral Development- Pre Conventional level. (K1, K2, K3)
- 4.5: Conventional. (K1, K2, K3)
- 4.6: Post Conventional level. (K1, K2, K3)

Unit 5: EXCEPTIONAL CHILDREN

(9

Hours)

- 5.1: Gifted Children- Needs and Problems of Gifted Children. (K1, K2, K3, K4)
- 5.2: Identification of Gifted children. Education of the Gifted Children. (K1, K2, K3, K4)
- 5.3: Mentally retarded – Identifying. (K1, K2, K3)
- 5.4: Classifying the Mentally retarded. (K1, K2, K3)
- 5.5: Causes- Clinical types of Mentally retarded- Prevention. (K1, K2, K3)
- 5.6: Backward children- Kinds-causes- Education. (K1, K2, K3)

Books for Study and Reference:**Textbooks:**

1. Elizabeth B. Hurlock– Developmental Psychology – A Life Span approach 5th Ed.- Tata McGraw-Hill Education, 2001.
2. Laura E. Berk – Child Development- New Delhi, Pearson Prentice Hall, 2003.

Reference Books:

3. Ernest R. Hilgard, Richard C. Atkinson - Introduction to Psychology 6th Ed, 1975.
4. George Butterworth, Margaret Harris– Developmental psychology: A student's Handbook- Tata McGraw Hill Education Private Ltd., 2002.
5. Mangal S.K. – Advanced Educational Psychology 2nd Ed. – Phi Learning, 2010.
6. Thomas L. Crandell, Corinne Haines – Human Development 9th Ed.- Tata McGraw-Hill Education, 2012.
7. Rohall David E., Mikie Melissa A., Lucas Jeffrey W. - Social Psychology: Sociological Perspectives 2nd Ed. – Prentice Hall, 2011.

E-Resources:

<https://www.who.int>

<https://www.mcsprogram.org>

<http://www.nrhmtn.gov.in>

<https://www.ifrc.org>