

**UZO-495 Human Embryology**

**Cr. (2)**

**Course Objectives:**

The course aims to:

1. Provide information on transmission of traits from the parents in their gametes, the formation of zygote and its development
2. Impart detailed knowledge about cellular basis of morphogenesis, mechanisms of cellular differentiation and induction.

3. Provide understanding of the mechanisms of organogenesis, factors controlling growth and oncogenesis.

### **Course Learning Outcomes:**

Upon successful completion of the course, the student will be able to:

1. **Gain** familiarity with features that make an organism model for the learning of developmental biology *e.g.*, fertilization in sea urchin with mammalian like mechanisms.
2. **Apprehend** the contributions of the sperm and the egg to form zygote
3. **Elucidate** the problems associated with cell differentiation through fate mapping.
4. **Arrange and investigate** the classical and modern experiments into “find it”, “block it”, and “move it” categories
5. **Demonstrate** the ability to label macromeres, mesomeres, and micromeres and know which cell types are derived from each of these cell layers in the early embryo (*e.g.*, primary and secondary mesenchyme, ectoderm, endoderm, and mesoderm).

### **Course Contents:**

Formation of normal and abnormal gametes and their relation to age, getting ready for pregnancy, transport of gametes and fertilization. Cleavage and implantation, formation of germ layers and early derivatives, establishment of basic embryonic body plan. Placenta and extra embryonic membranes

### **Teaching-Learning Strategies**

Teaching will be a combination of class lectures, class discussions, and group work. Short videos /films will be shown on occasion.

### **Assignments**

The sessional work will be a combination of written assignments, class quizzes, presentation, and class participation/attendance.

### **Assessments and Examination**

Sessional Work:	25 marks
Midterm Exam:	35 marks
Final term Exam:	40 marks

### **Books Recommended:**

1. Carlson, B.M. 2016. Human Embryology and Developmental Biology, 6<sup>th</sup> Edition Mosby.
2. Moore, K.L. and Prasad. 2000. THE DEVELOPING HUMAN, Saunders.

## **UZO-496 Human Embryology(Lab)**

**Cr. (1)**

### **Course Objectives:**

The course aims to:

1. Provide information on transmission of traits from the parents in their gametes, the formation of zygote and its development
2. Impart detailed knowledge about cellular basis of morphogenesis, mechanisms of cellular differentiation and induction.
3. Provide understanding of the mechanisms of organogenesis, factors controlling growth and oncogenesis.

### **Course Learning Outcomes:**

Upon successful completion of the course, the student will be able to:

1. **Gain** familiarity with features that make an organism model for the learning of developmental biology *e.g.*, fertilization in sea urchin with mammalian like mechanisms.
2. **Apprehend** the contributions of the sperm and the egg to form zygote
3. **Elucidate** the problems associated with cell differentiation through fate mapping.
4. **Arrange and investigate** the classical and modern experiments into “find it”, “block it”, and

“move it” categories

5. **Demonstrate** the ability to label macromeres, mesomeres, and micromeres and know which cell types are derived from each of these cell layers in the early embryo (*e.g.*, primary and secondary mesenchyme, ectoderm, endoderm, and mesoderm).

### **Course Contents:**

Preparation of histological sections of mammalian Gonads, Study of mammalian gonades and gametes.

### **Teaching-Learning Strategies**

Teaching will be a combination of class lectures, class discussions, and group work. Short videos /films will be shown on occasion.

### **Assignments**

The sessional work will be a combination of written assignments, class quizzes, presentation, and class participation/attendance.

### **Assessments and Examination**

Sessional Work: 25 marks

Midterm Exam: 35 marks

Final term Exam: 40 marks