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**Department of Biology**

**College of Science**

**University of Salahaddin**

**Subject: Embryology**

**Course Book: third Class**

**Lecturer's name: Inaam Ahmad Mustafa**

**Assist.Prof. (Theory)**

**Lecturer Dr.Shang Z. Abdulqadir (practical)**

**Academic Year: 2022/2023**

Course Book

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| **1. Course name** | Embryology |
| **2. Lecturer in charge** | Assist Prof Inaam A. MustafaLecturer Dr.Shang Z. Abdulqadir  |
| **3. Department/ College** | Biology/Science |
| **4. Contact** | e-mail: inaam.mustafa@su.edu.krdshang.abdulqadir@su.edu.krd (07504665530) |
| **5. Time (in hours) per week**  | Theory 2hr./week Practical 3hrs/week |
| **6. Office hours** | To be return to the schedule on the office door  |
| **7. Course code** | SBIO |
| **8. Teacher's academic Profile**  | **Inaam A.Mustafa CV:**I graduated from SalahaddinUniversitey-College of science in 1981. In 1988 I finished my MSc degree at Salahaddin University. |
| **Profile** | **Lecturer Dr. Shang Z. Abdulqadir CV:**B.Sc. in Biology, Biology, University of Salahaddin, College of Sciences, 2005.M.Sc. in Histology and embryology, University of Salahaddin, College of Sciences, 2010. Ph.D. 2019 in cell biology, University of Salahaddin, College of Sciences |
| **9. Keywords** | Embryology, Histology |
| **10. Course overview:**This course is designed to accommodate one semester of the general education requirements for understanding the main concepts of embryology and developmental biology. And how the organisms are arises from the single cells, a zygote. As well as explain the reproductive patterns in animals on land & in aquatic environments. With emphasis on the fundamental developmental processes. |
| **11. Course objective:**1. A basic understanding of embrygenesis , including the process of cell divisions,signaling& movements, gamete formation, fertilization, zygote formation & implantation, through cleavage,gastrulation and some aspects of organogenesis and birth defects .
2. To develop scientific literacy sufficient for an understanding of above process in some animal models, begining with the simple chordates (amphioxus) extending throughout amphibians & mammals.
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| **12. Student's obligation**\***Exam policy:** Student Should take 3 exams during the course There will be no make-up exams for absences students without medical report. **\*Classroom polices:****1- Attendance:** Students are strongly encouraged to attend class on a regular basis.2- **L ateness:** Lateness to class is disruptive3- **Electronic devices:** Allcell phones are to be turned off at the beginning of class and put away during the entire class.4-**Talking:** During class please refrain from side conversations. These can be disruptive to your fellow students and your professor5- **NoDisrespectful to both the professor and to your fellow students**. |
| **13. Forms of teaching****Face-to-Face (Lectures and PowerPoint)** |
| **14. Assessment scheme** |
| **15. Student learning outcome:**After completion of this course, you will be able to: * Define common terms used in embryology.
* Identify different embryo development stages from sperm and ovum to adults.
* Comparison between different vertebrate embryo development.
* Studying some embryo malformation.
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| **16. Course Reading List and References‌:****1. Useful Text books** a. Slack, J.M.W.(2006)Essential developmental biology.Blackwell Publishing Ltd,Second edition(electronic book). b. Campbell, N.A. &Reece,J.B.(2005)Biology.7th edition.Pearson Education, Inc. c. MaderS.S,(2009) concepts of biology,McGraw-Hill Companies, Inc.,Chapter35pp.d. McGeady,Tpatrick.A,PJQuinn,ES,Fitzpatrick&M.T,Ryan(2006)Veterinary Embryology,1stEdition,Blackwell Publishing Ltd. e. Hickman C. P, L.S. Roberts, A.Larson ,H.I'Anson(2004)Integrated principles of zoology,12th edition,McGraw-Hill Companies, Inc.Chapter7&8.f. SadlerT.W.(2006)Langman's Medical Embryology, 10th Ed, Lippincott Williams wilkinis.**2. Useful internet resources** a. <http://people.ucalgary.ca/~browder/virtualembryo/chick.html>b. http://www.vadlo.com/basic embryology c. <http://www.nature.com/nature>d. http://www.osun.org/embryology e. http:// [www.virtualhumanembryo.lsuhsc.edu](http://www.virtualhumanembryo.lsuhsc.edu) |
|  Week |  Subject |
| 1 | Male reproductive system (testis and penis) |
| 2 | Female reproductive system (ovary and uterus) |
| 3 | Embryonic development of the Amphioxus (fertilization of the egg, stage of cleavage, blastulation and gastrulation)  |
| 4 | Formation of organ rudiment of Amphioxus (nervous system, mesoderm, notochord and gut or archenteron) |
| 5 | Embryonic development in frog (egg and fertilization, stage of cleavage, blastulation and gastrulation, formation of organ rudiment of frog) |
| 6 | Larva of frog (3-4mm frog embryo, 10mm frog embryo) |
| 7 | Embryonic development of chick (oogensis of chick, stage of cleavage, blastula, stage of formation of primitive streak:7-8 incubation and 13 hr. incubation) |
| 8 | 16 hr. incubation chick embryo, 18 hr. incubation chick embryo, 23 hr. incubation chick embryo |
| 9 | 24 hr. incubation chick embryo, 33 hr.incubation chick embryo,36 hr.incubation chick embryo |
| 10 | 38 hr. incubation chick embryo, 48 hr. incubation chick embry, 55 hr. incubation chick embryo |
| 11 | Body folds and extraembryonic membranes, yolk sac formation, aminion and serosa and allantois |
| 12 | Embryonic development of chick embryo at 3rd and 4th day of incubation |
| 18. Example of questionsSample of examination questionsQuestions fromQ1/ Answer by (True) or (false):Q2/ Fill with suitable answers:Q3/ Write about two of the following:Q4/ Mention the function of the following:Q5/ Draw and label the following |