Course E-Syllabus

1	**Course title**	Developmental Biology
2	**Course number**	0304362
3	**Credit hours**	2, 3
	Contact hours (theory, practical)	
4	**Prerequisites/corequisites**	0303102
5	**Program title**	Bachelor of Biological Sciences
6	**Program code**	0304
7	**Awarding institution**	University of Jordan
8	**School**	Science
9	**Department**	Biology
10	**Level of course**	Third Year
11	**Year of study and semester (s)**	First semester 2020/2021
12	**Final Qualification**	B.Sc. in Biological Sciences
13	**Other department (s) involved in teaching the course**	none
14	**Language of Instruction**	English
15	**Teaching methodology**	☐Blended ☒Online
16	**Electronic platform(s)**	☒Moodle ☒Microsoft Teams ☐Skype ☐Zoom ☐Others……
17	**Date of production/revision**	First semester 2020

18 Course Coordinator:

Hana' Al-ebous, PhD
Office: 404/2 Biology building
Phone number: 22237
Email: h.alebous@ju.edu.jo

Office hours: Wednesday, Thursday (8-10 am) and by appointment

19 Other instructors:

None

20 Course Description:

This course deals with the following topics: Male reproductive system, spermatogenesis, oogenesis, fertilization, assisted reproduction technology, cleavage, gastrulation, neurulation, and early human development. In addition, the course covers development of the following: The skin and its derivatives; the central nervous system, the sense organs; the heart and major blood vessels, the excretory and the reproductive systems, the limbs, the digestive system; the respiratory system. Also a study of the fetal membranes, parturition, and twinning is covered.

Laboratory:

Histological sections will be used to study gametogenesis in Grasshopper, Ascaris cat, and rabbit. Fertilization in Sea Urchin, cleavage and neurultion in frog will be illustrated using histological sections too. Histological sections of the frog, chick, and the pig embryos will be used to illustrate changes that occur as the embryo develops. Embryo and fetus models will be used to study different developmental stages. Fertilized chicken eggs will be used to study different developmental stages. Laboratory topics will cover gametogenesis, early development, and the development of the body systems.

21 Course aims and outcomes:

A- Aims: This course will enable students to explore and gain further understanding of developmental biology through the investigation of different stages of human and animal development.

Provide students with a broad base of knowledge regarding human embryology

B- Intended Learning Outcomes (ILOs):
Upon successful completion of this course, students will be able to:

1- Understand complete details about events in early and systematic embryological development including gametogenesis, fertilization, and implantation.
2- Knowledge and Understanding development and formation of human systems and organs

22. Topic Outline and Schedule:

Topic	Week	Instructor	Achieved ILOs	Evaluation Methods	Reference
Gametogenesis, Preparation of the Female Reproductive Tract For Pregnancy and Hormonal Interaction Involved with Reproduction in Males	1	Hana Alebous	1	Exams	1 **Ch. 1**
Transport of Gametes ,Fertilization and ART	2	Hana Alebous	1	Exams	1 **Ch. 2**
Cleavage and Implantation	3	Hana Alebous	1	Exams	1 **Ch. 3**
Formation of Germ Layers and Early Derivatives	4	Hana Alebous	1	Exams	1 **Ch. 5**
Establishment of the Basic Embryonic Body Plan	5	Hana Alebous	1	Exams	1 **Ch. 6**
Placenta and Extraembryonic Membranes	6	Hana Alebous	1	Exams	1 **Ch. 7**
Skeletal System	7	Hana Alebous	2	Exams	2 **Ch. 9**
Muscular System	7		2	Exams	2 **Ch. 10**
Body Cavities	8	Hana Alebous	2	Exams	2 **Ch. 11**
Cardiovascular System	9	Hana Alebous	2	Exams	2 **Ch. 12**
Respiratory System	10	Hana Alebous	2	Exams	2 **Ch. 13**
Digestive	11	Hana Alebous	2	Exams	2

System					**Ch. 14**
Urogenital System	12	Hana Alebous	2	Exams	2 **Ch. 15**
Head and Neck	13	Hana Alebous	2	Exams	2 **Ch. 16**
Central Nervous System	14	Hana Alebous	2	Exams	2 **Ch. 17**
Ear	15	Hana Alebous	2	Exams	2 **Ch. 18**
Eye	15	Hana Alebous	2	Exams	2 **Ch. 19**
Integumentary System	15	Hana Alebous	2	Exams	2 **Ch. 20**
Fetal Period and Birth	16	Hana Alebous	3	Exams	1 **Ch. 18**
Introduction+ Orientation	1	Hana Alebous			
Oogenesis in Ascaris	2	Hana Alebous	1	-Weekly Quizzes -Exams	3
Spermatogenesis in Grasshopper	3	Hana Alebous	1	-Weekly Quizzes -Exams	3
Fertilization in Sea Urchin	4	Hana Alebous	1	-Weekly Quizzes -Exams	3
Cleavage +Neurultion in Frog.	5	Hana Alebous	1	-Weekly Quizzes -Exams	3
Frog Development I (3 mm Embryo).	6	Hana Alebous	2	-Weekly Quizzes -Exams	3
Frog Development II (5-7mm Embryo)	7	Hana Alebous	2	-Weekly Quizzes -Exams	3

Early Chick Development	8	Hana Alebous	1	-Weekly Quizzes -Exams	3
24 Hr. Chick Embryo	9	Hana Alebous	2	-Weekly Quizzes -Exams	3
36 Hr. Chick Embryo	10	Hana Alebous	2	-Weekly Quizzes -Exams	3
48 Hr. Chick Embryo	11	Hana Alebous	2	-Weekly Quizzes -Exams	3
72 Hr. Chick Embryo	12	Hana Alebous	2	-Weekly Quizzes -Exams	3
10 mm pig Embryo	13	Hana Alebous	2	-Weekly Quizzes -Exams	3

- Teaching methods include: Synchronous lecturing/meeting; Asynchronous lecturing/meeting
- Evaluation methods include: Homework, Quiz, Exam, pre-lab quiz…etc

23 Evaluation Methods:

Opportunities to demonstrate achievement of the ILOs are provided through the following assessment methods and requirements:

Evaluation Activity	Mark	Topic(s)	Period (Week)	Platform
First Exam	15	Ch.1-6	TBA	LMS
Mid Lab.	15		TBA	School
Second Exam	15	Ch. 7-11	TBA	LMS
Final Lab.	15		TBA	School
Final Exam	40	All material	TBA	TBA

24 Course Requirements (e.g: students should have a computer, internet connection, webcam, account on a specific software/platform…etc):

Computer, Internet connection, E-Learning, LMSystem, Microsoft Team

25 Course Policies:

- Attendance policies: Regular class attendance is expected, attendance by seating number.

B- Absences from exams and handing in assignments on time: Reporting a valid reason of absence is accepted.

C- Health and safety procedures: All students should comply with the university Health and safety procedures

D- Honesty policy regarding cheating, plagiarism, misbehavior: All students should comply with the university Honesty policy regarding cheating, plagiarism, misbehavior

E- Grading policy: Depends on average

First Hour Exam : 150 points
Second Hour Exam : 150 points
Final Exam: 350 points
Lab. Quizzes : 50 points
Mid. Term Lab. Exam: 150 points
Final Lab. Exam; 150 points

F- Available university services that support achievement in the course:

Data Show Projector, internet access

26 References:

1- Human Embryology & Developmental Biology (2009) B.M. Carlson, 4th ed.

2- Langman's Medical Embryology (2010). Sadler, T. 11th ed.

3- Developmental Biology, A Guide for Experimental Study. Mary S. Tyler Sinauer Associates, Inc. Publishers.

27 Additional information:

Name of Course Coordinator: د.هناء العبوس Signature: ---------- Date: ----------

Head of Curriculum Committee/Department: Signature: ----------

Head of Department: ---------- Signature: ----------

Head of Curriculum Committee/Faculty: ---------- Signature: ----------

Dean: ---------- Signature: ----------