هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

T-104
2022

Course Specification

Course Title:	**Embryology**
Course Code:	**ZOOL452**
Program:	**Biology**
Department:	**Biology**
College:	**Science**
Institution:	**Jazan University**
Version:	**4**
Last Revision Date:	**18 October 2020**

Table of Contents:

A. General information about the course:

Course Identification					
1. Credit hours:	2				
2. Course type					
a.	University ☐	College ☐	Department☒	Track☐	Others☐
b.	Required ☒	Elective☐			
3. Level/year at which this course is offered: Level 12 – 4th Year					
4. Course general Description ➢ The embryology course deals with the description of early developmental stages of embryos of some vertebrate animal's also human embryo. ➢ This course describes some of the special topics in embryology like, parthenogen congenital anomalies, stem cells and artificial fertilization.					
5. Pre-requirements for this course (if any): Animal Physiology ZOOL- 351					
6. Co- requirements for this course (if any): None					
7. Course Main Objective(s) *Our successful students after finishing this course will be able:* ➢ To understand the embryological development in Quran and Sunnah. ➢ To state the historical background of embryology and enumerate the different historical development theories. ➢ Define types of cell growth. And compare between growth and differentiation. ➢ To devote an introduction to embryology, gametogenesis, fertilization, and the development of embryo from zygote to neural tube formation. ➢ To address the developmental events during all stages of prenatal life. ➢ To emphasize the human developmental stages and the differences between it and different examples of different vertebrate phyla. ➢ To examine teratological defects of developing embryos. ➢ To examine the development of some organ systems, as well as a look into the development of sensory organs. ➢ To study the stem cells, different types, and its role in regenerative medicine. types of artificial insemination, collection of sperms and eggs, artificial insemination. Also *in vitro* fertilization (ICSI) in humans and test tube babies. embryonic membranes and twins. ➢ To understand the concept of parthenogenesis reproduction and artificial parthenogenesis.					

1. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1.	Traditional classroom	33	100%
2.	E-learning	0	0%
3.	Hybrid	0	0%

No	Mode of Instruction	Contact Hours	Percentage
	• Traditional classroom • E-learning		
4.	Distance learning	0	0%

2. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	11
2.	Laboratory/Studio	22
3.	Field	0
4.	Tutorial	0
5.	Others (specify)	0
	Total	33

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	Knowledge and understanding			
1.1	Define all principals, concepts, theories and aspects of embryology	K1.1	Interactive lectures. Classroom discussions Tutorials. Self-learning activities.	MCQs. Short answer questions. True/False.
1.2	Differentiate between different mechanisms, functions, practices and processes related to embryology	K2.1	Interactive lectures. Classroom discussions Tutorials. Self-learning activities.	MCQs. Short answer questions. True/False. Compare
1.3	Interpret by using your knowledge and understanding most embryonic developmental process.	K3.2	Interactive lectures. Classroom discussions Tutorials. Self-learning activities.	MCQs. Short answer questions. True/False.
2.0	Skills			
2.1	Examine theoretically or practically the slides, photos, diagrams or statements of embryology.	S1.3	Interactive lectures. Classroom discussions Tutorials. Self-learning activities.	MCQs. Short answer questions. True/False. Quizzes. Midterm. Final.
2.2	Argue different embryological approaches in laboratory or even theoretically.	S2.2	Interactive lectures. Classroom discussions Tutorials. Self-learning activities.	MCQs. Short answer questions. True/False. Quizzes. Midterm. Final.
2.3	Propose solutions for different complex embryological approaches.	S3.2	Interactive lectures. Classroom discussions Tutorials. Self-learning activities.	MCQs. Short answer questions. True/False. Quizzes. Midterm. Final.
2.4	Prepare well-organized written scientific document, using appropriate media, with	S4.3	Interactive lectures. Classroom discussions Tutorials.	MCQs. Short answer questions. True/False. Quizzes.

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
	introduction, body, and conclusions		Self-learning activities.	Midterm. Final.
3.0	Values, autonomy, and responsibility			
3.1	Manage teamwork effectively by integrating different skills and abilities of team members.	V3.1	Individual assignments. Group discussion. Lab-work. Self-learning activities. Micro-Project Presentation (individual and teamwork)	Group Assignment. Observation. Group Discussion. Oral exam. Laboratory work.

C. Course Content

No	List of Topics	Contact Hours
1.	Introduction: Embryology in Quran and Sunnah, Historical Introduction to Embryology, different historical development theories, different branches of embryology, somatic cells, germ cells, Reproduction cell differentiation and development.	1
2.	Gametogenesis: Primordial germ cells, sexual differentiation, testis development, ovary development, Spermatogenesis, spermiogenesis, sperm structure, cell culture of spermatogenic cells, oogenesis, ovum structure, classification of ova, egg membranes, ovum culture	3
3.	Fertilization: Membrane structure and chemical reaction, molecular aspects and the role of acrosome, the role of cortical granules, biochemical changes.	1
4.	Cleavage& Gastrulation: types of cleavage, blastulation, , fate maps.	1
5.	Development of some vertebrate examples: amphioxus, fishes, amphibian, reptilia, birds and human. early embryonic development, development of some system organs, extra-embryonic membranes, metamorphosis, development of some sense organs, placenta of human and twins.	2
6.	Stem Cells	1
7.	Parthenogenesis & Artificial insemination: types of parthenogenesis, mechanisms, Sperm collection, Preservation of semen, Collection of ova,	1

	Preservation of ova, artificial animal fertilization, and artificial human fertilization.	
8.	Congenital malformation: causes, types, examples, mechanisms.	1
Total		11

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Theoretical quiz	4	5
2.	Mid-term exam	6	10
3.	Practical quiz	5	5
4.	Practical assignment	6	5
5.	Final practical exam	11	20
6.	Final Exam	12	50

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.)

E. Learning Resources and Facilities

1. References and Learning Resources

Essential References	➢ Handbook of descerptive and experimental embryology. علم الأجنة الوصفى والتجريبي للدكتور صالح عبدالعزيز كريم – جامعة الملك عبدالعزيز ➢ **Experimental Embryology:** by Ahmad Rashed Al Himaidi and Saleh Abdulaziz Karim / King Saud University Press,2008. ➢ **Introduction to descriptive and experimental embryology,** by saleh abdelaziz koraim 1990.
Supportive References	➢ Hickman C.P., Roberts L.S, Larson A., I'Anson H., Eisenhour D.J. (2006) **Integrated Principles of Zoology**. McGraw-Hill Higher, New York ➢ **Developmental Biology "**by Scott F. Gilbert 2003 7th ed .Sinauer Association Inc. Sunderland Massachusetts's.
Electronic Materials	➢ www. Youtube.com, www. Wikipedia.com, developmental biology, Embryology
Other Learning Materials	➢ powerpoint presentations given by the instructors practical and theoritical

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	1 Lecture room(s) for groups of 25 students. 1 Laboratory for group of 15 students.
Technology equipment (projector, smart board, software)	Internet connection, data show or smart board
Other equipment (depending on the nature of the specialty)	Light microscopes, microscopic slides for the course subjects, models of embryonic development, consumables, incubators, chemicals and glasswares.

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Peer to peer Reviewer, students	Indirect (Surveys)
Effectiveness of student's assessment	Program quality committee, Program leader, peer reviewer	Direct (Cross Check), Indirect (Surveys)
Quality of learning resources	Students	Indirect (Surveys)

Assessment Areas/Issues	Assessor	Assessment Methods
The extent to which CLOs have been achieved	Course coordinator	Excel sheet of CLOs assessment (direct), Surveys (indirect)
Other		

Assessor (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

G. Specification Approval Data

COUNCIL /COMMITTEE	BIOLOGY PROGRAM BOARD
REFERENCE NO.	BIO2214
DATE	20/9/2022AD

Course coordinator: **Dr. ABDELALIM GADALLAH**

Signature:

Head of Department

Name: **Dr. ABDULLAH YAHYA MASHRAQI**

Signature: