



Course Specifications

Course Title:	Embryology
Course Code:	2014103-3
Program:	Bachelor in Zoology
Department:	Biology Department
College:	College of Sciences
Institution:	Taif University

Table of Contents

A. Course Identification	3
6. Mode of Instruction (mark all that apply)	3
B. Course Objectives and Learning Outcomes	3
1. Course Description	3
2. Course Main Objective.....	3
3. Course Learning Outcomes	3
C. Course Content	4
D. Teaching and Assessment	4
1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods	4
2. Assessment Tasks for Students	5
E. Student Academic Counseling and Support	5
F. Learning Resources and Facilities	5
1. Learning Resources	5
2. Facilities Required.....	6
G. Course Quality Evaluation	6
H. Specification Approval Data	6

A. Course Identification

1. Credit hours: 3 hr
2. Course type
a. University <input type="checkbox"/> College <input type="checkbox"/> Department <input checked="" type="checkbox"/> Others <input type="checkbox"/>
b. Required <input checked="" type="checkbox"/> Elective <input type="checkbox"/>
3. Level/year at which this course is offered: 11 th Level / 4 th year
4. Pre-requisites for this course (if any): Vertebrates 2013204-3
5. Co-requisites for this course (if any): None

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	6 hr/Week	100%
2	Blended	-	-
3	E-learning	-	-
4	Distance learning	-	-
5	Other	-	-

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	30
2	Laboratory/Studio	30
3	Tutorial	-
4	Others (specify)	-
	Total	60

B. Course Objectives and Learning Outcomes

<p>1. Course Description: This course deals with studying fields, branches and history of embryology, gametogenesis and its physiology, fertilization and its mechanism, cleavage, gastrulation and differentiation in descriptive and molecular terms, regeneration mechanisms, embryonic development of chordates, embryonic induction and morphogens, genetic regulation and molecular analysis of development, stem cells and their application as well as embryonic malformation and technology of reproduction.</p>
<p>2. Course Main Objective: By the end of this course, the student can explain vertebrate embryonic development and its implications for evolution and systematic, understand the principles of differentiation, regeneration mechanisms as well as embryonic relationships with molecular biology</p>

3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	Knowledge and Understanding:	

CLOs		Aligned PLOs
1.1	Classify various animal groups based on their characters of embryonic stages.	K2
2	Skills:	
2.1	Analyze different scientific facts related to different mechanisms of embryonic development in animals.	S1
2.2	Utilize concepts and basics of Embryology in economic, medical and environmental contexts.	S3
3	Values:	
3.1	Demonstrate commitment to professional and leadership ethical codes of conduct.	V1
3.2	Appraise initiatives to develop the self-performance.	V3

C. Course Content

No	List of Topics	Contact Hours
1	Chapter 1: Introduction in embryology: Definition, fields and branches, history, concepts and law and its relationship with other sciences.	3L+3P
2	Chapter 2: General introduction in ontogenetic stages: gametogenesis and its hormonal control and types of eggs. Fertilization mechanisms and events in molecular terms.	3L+3P
3	Types of cleavage and its laws. Gastrulation and its characteristics. Differentiations and regeneration.	3L+3P
4	Chapter 3: Embryonic development of Amphioxus and frog/toad.	3L+3P
5	Chapter 4: Early embryonic development of chick embryo.	3L+3P
6	Chapter 5: Early embryonic development of mammals.	3L+3P
7	Chapter 6: Embryonic membranes and placenta-Fate maps.	3L+3P
8	Chapter 7: Development of eye, kidney, ear and heart in vertebrates.	3L+3P
9	Chapter 8: Artificial fertilization- Embryonic malformation-Technology of reproduction.	3L+3P
10	Chapter 9: Embryonic induction and organizers, stem cells and genetic regulation of development	3L+3P
Total		30L+30P

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	Knowledge and Understanding:		
1.1	Classify various animal groups based on their characters of embryonic stages.	Lectures Concept maps	Paper-based exams
2.0	Skills:		
2.1	Analyze different scientific facts related to different mechanisms of embryonic development in animals.	Lectures Brain storming	Paper-based exams Practical reports

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
2.2	Utilize concepts and basics of Embryology in economic, medical and environmental contexts.	Lectures Interactive learning	Paper-based exams Practical reports
3.0	Values:		
3.1	Demonstrate commitment to professional and leadership ethical codes of conduct.	Small group activities Open discussion	Assignments Practical exam
3.2	Appraise initiatives to develop the self-performance.	Small group activities Open discussion	Assignments

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Assignments and activities: 1- Written Assignment 2- Power-point presentation	Variable	10
2	Midterm Exam	5 th	20
3	Periodic Exam	7 th	10
4	Practical Reports	Continuous	15
5	Final Practical Exam	11 th	5
6	Final Exam	12 th	40

*Assessment task (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice:

6 hours per week (as defined in the teaching schedule of the faculty member) for academic advice and consultations.

Teaching staff is also available using Blackboard web site and Taif University “Edugate” System.

F. Learning Resources and Facilities

1. Learning Resources

Required Textbooks	<ul style="list-style-type: none"> - T.W. Sadler (2009). Langman's Medical Embryology. 11th Edition. Lippincott Williams & Wilkins. - Salh Abedl-Aziz Karin (1990). An introduction to descriptive and experimental embryology. Dar Al Mogtamaa Press. Jedda KSA (In Arabic).
Essential References Materials	<ul style="list-style-type: none"> - Lauren Sweeney, Jim Morgan, Jim Morgan (1997). Basic Concepts in Embryology: 1st Edition, McGraw-Hill Professional Publishing. - Tyler, M.S. (2000). Developmental Biology: A Guide for Experimental Study. 2nd Edition. Sinauer Assoc., Inc., Sunderland, MA.
Electronic Materials	Blackboard website Website of Saudi digital Library

Other Learning Materials	Digital programs and professional software
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2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	- Classrooms for 40 students\lecture. - Laboratory for 20 students\ lab activity
Technology Resources (AV, data show, Smart Board, software, etc.)	- Laptop and Data show
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	- Light microscopes - Permanent slides Incubators

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment	Students	Indirect
Quality of learning resources	Peer Reviewer Students	Direct Indirect
Extent of achieving the course learning outcomes	Peer Reviewer Students	Direct Indirect

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)

Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify))

Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	Biology Department
Reference No.	Committee number 14 - Academic Year 1442-1443H
Date	22\5\2022G – 21\10\1443H

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