



Course Specifications

Course Title:	Embryology
Course Code:	426BIO-2
Program:	Biology
Department:	Biology
College:	College of Arts and Sciences
Institution:	Najran University

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A. Course Identification

1. Credit hours: 2
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: VIII/ 4 th year
4. Pre-requisites for this course (if any): non
5. Co-requisites for this course (if any): non

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	15	100%
2	Blended	-	
3	E-learning	-	
4	Correspondence	-	
5	Other	-	

7. Actual Learning Hours (based on academic semester)

No	Activity	Learning Hours
Contact Hours		
1	Lecture	15
2	Laboratory/Studio	30
3	Tutorial	-
4	Others (specify) E-learning	-
	Total	45
Other Learning Hours*		
1	Study	17
2	Assignments	3
3	Library	10
4	Projects/Research Essays/Theses	5
5	Others (specify)	10
	Total	45

* The length of time that a learner takes to complete learning activities that lead to achievement of course learning outcomes, such as study time, homework assignments, projects, preparing presentations, library times

B. Course Objectives and Learning Outcomes

1. Course Description

Embryology is a course, which introduces the students to definition, theories of knowledge, skills, formation and embryonic stages throughout the embryonic configuration in different models and recognizes recent trends in the cultivation of embryonic and organ replacement. Topics include gametogenesis, fertilization, and development of the embryo from zygote through the differentiation of the neural tube. The second half of the course is devoted to the development of selected human organ systems including the nervous system, sense organs, and the cardiovascular, digestive, respiratory, and urogenital systems. The required laboratory complements the lecture material with a comparison of frog, chick, and pig embryos. Histological, preserved, and selected living materials are studied to illustrate gametogenesis, fertilization, and development of the vertebrate embryo from zygote through the differentiation of organ systems in amphibian, avian and mammalian embryos.

2. Course Main Objective

1. Identify the main purpose of studying Embryology to students.
2. Distinguish between the different developmental stages.
3. Recognizes recent trends in the cultivation of embryonic and organ replacement
4. Illustrate the main stages of development in different animal classes
5. Understand basic laboratory skills and techniques for studying Embryology.
6. Explain similarities and differences between animal phyla on the light of their development.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	Knowledge:	
1.1	Identify the main purpose of studying Embryology to students.	
1.2	Recognize between the different developmental stages.	
1.3	Recognize recent trends in the cultivation of embryonic and organ replacement	
2	Skills :	
2.1	Illustrate the main stages of development in different animal classes	
2.2	Describe basic laboratory skills and techniques for studying Embryology.	
2.3	Explain similarities and differences between animal phyla on the light of their development.	
3	Competence:	
3.1	Work independently and as a team work	
3.2	Manage recourses, time and other members of the group	
3.3	Communicate results of work with others	

C. Course Content: Theoretical Aspect

No	List of Topics	Contact Hours
1	Embryology: Terms; Embryology: History & Concepts	2
2	Spermatogenesis; Oogenesis; Reproductive Cycles.	2
3	Cleavage; Blastulation & Gastrulation; Gastrulation & Germ Layers; Germ Layer Formation	3
4	Implantation- Fetal Membranes, Placenta	2
5	Nervous System & Sense Organs	1
6	Integumentary System	1
7	Digestive System	1
8	Respiratory System	1
9	Circulatory System	1

10	Coelom and Mesenteries- Branchial Arches- Urogenital System	1
Total		15

C. Course Content: practical Aspect

No	List of Topics	Contact Hours
1	Microscope use; Reproductive Anatomy; Meiosis	2
2	Histological study of the gonads nad phases of gametogenesis in frog	2
3	Histological study of the gonads nad phases of gametogenesis in birds	4
4	Stimulation release of eggs and sperms in amphibians	2
5	Developmental stages of embryos in frog (I)	2
6	Developmental stages of embryos in frog (II)	4
7	Production of twins in the laboratory (I)	2
8	Production of twins in the laboratory (II)	2
9	Tracking the formative stages of the chick embryo (I)	2
10	- Tracking the formative stages of the chick embryo (II)	4
11	Study of some fetal abnormalities (I & II).	4
Total		30

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:		
1.1	Identify the main purpose of studying Embryology to students.	Lectures	Final and semester exams
1.2	Distinguish between the different developmental stages.	Lectures	Final and semester exams
1.3	Recognizes recent trends in the cultivation of embryonic and organ replacement	Lectures	Final and semester exams
2.0	Skills :		
2.1	Illustrate the main stages of development in different animal classes	Student negotiations	Class room activity
2.2	Understand basic laboratory skills and techniques for studying Embryology.	Student negotiations	Class room activity
2.3	Explain similarities and differences between animal phyla on the light of their development.	Student negotiations	Class room activity
3.0	Competence:		
3.1	Work independently and as a team work	Student negotiations	Class room activity
3.2	Manage recourses, time and other members of the group	Student negotiations	Class room activity

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.3	Communicate results of work with others	Student negotiations	Class room activity

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Practical First Exam	6	10%
2	Theoretical First Exam	6	10%
3	Practical Second Exam	12	10%
	Theoretical Second Exam	12	10%
4	Practical Final Exam	15	10%
5	Theoretical Final Exam	15	50%

*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 :

- 10 hours per week as office hours
- Academic advisor 10 hours per week

F. Learning Resources and Facilities

1. Learning Resources

Required Textbooks	Moore, K. L. and T. V. Persaud. 1998. The Developing Human. Clinically Oriented Embryology. Sixth Edition. Saunders. - Scotte P.G. (1985) Developmental Biology. Sinaur Ass Inc. USA.
Essential References Materials	A.L. Mescher (2010) Jumqueira's Basic Histology, Text & Atlas Anthony L. Schoenwolf, G. C. 1997. CD Color Atlas for Developmental Biology. Prentice Hall. Schoenwolf, G. C. 1995. Laboratory Studies of Vertebrate and Invertebrate Embryos. Seventh Edition. Prentice Hall
Electronic Materials	Websites
Other Learning Materials	Films related to the course

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) 40 seats/ class room/20 seats/lab Computer access with data show and internet
Technology Resources (AV, data show, Smart Board, software,	Data show, Overhead projector

Item	Resources
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	Models Microscopes

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Course evaluation	Student	direct
Student-faculty meeting	Faculty, Program Leaders	indirect
Departmental council discussions	Staff members	indirect
Discussion with the group of faculty teaching the same course	Peer Reviewer	indirect
Periodical departmental revisions of each method of teaching	Peer Reviewer	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	
Reference No.	
Date	