

Jordan University of Science and Technology
Faculty of Science and Arts
Department of Biotechnology and Genetic Engineering
Semester 2007

Course Information	
Course Title	Developmental Biology (Embryology)
Course Number	B. 411
Prerequisites	B.102
Course Website	
Instructor	Professor Ahmed Elbetieha
Office Location	Deanship/Faculty of Science and Arts
Office Phone	23480
Office Hours	Monday, Wed. from 11-12:30
E-mail	betieha@just.edu.jo
Teaching Assistant	None
Course Description	
<p>The course will focus on studying the developmental stages in different organisms as Amphibians, Sea Urchins, <i>Drosophila</i> and human. Current approaches in developmental biology including genetic engineering and molecular biology will be discussed.</p>	

Text Book	
Title	Analysis of Biological Development
Author(s)	Kalthoff, K.
Publisher	McGraw Hill
Year	2001
Edition	Second
Book Website	
References	

Assessment Policy		
Assessment Type	Expected Due Date	Weight
First Exam	5 th week of the semester	30%
Second Exam	11 th week of the semester	30%
Final Exam	To be announced by the university	40%
Assignments		

Course Objectives		Weights
1. To Understand the different developmental periods in different organisms		20%
2. To comprehend the different stages of animal development starting from gametogenesis , through cleavage, gastrulation and morphogenesis		25%
3. To understand cell fate, potency and determination		15%
4. To comprehend the principle of genomic equivalence and differential gene expression		20%
5. To appreciate the role of localized cytoplasmic determinants in cell determination		10%

6. To comprehend the molecular basis of development	10%
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Teaching & Learning Methods
1. Lecturing and using the overhead projector as a tool of teaching

Learning Outcomes: Upon successful completion of this course, students will be able to		
Related Objective(s)		Reference(s)
1,2	Recognize the main features distinguishing each stage of development	Chapter 1,,3,4,5,10,12 and Handouts
3	Know the differences between cell fate, potency and determination	6
4,5	Comprehend the principle of genomic equivalence and the role of cytoplasmic determinants in development	7
6	Appreciate the molecular basis of development	1-14

Useful Resources

Course Content		
Week	Topics	Chapter in Text (handouts)
1	Introduction	
2	Overview of development	1
3	Gametogenesis	3
4	Fertilization	4
5	Cleavage	5
6	Cell fate, potency and determination	6
7	Genomic equivalence and the cytoplasmic determinants	7
8	Localized cytoplasmic determinants	8
9	Gastrulation	10

10	Neurulation and axis induction	12
11	Ectoderm organs	13
12	Endodermal and mesodermal organs	14
13 and 14	Selected topics	

Additional Notes	
Assignments	Reading textbook chapters
Exams	The first and second exams 60% (30%) each and 40% for the final
Cheating	Prohibited by the university regulations
Attendance	Very important according the university regulation
Workload	
Graded Exams	
Participation	
Laboratory	
Projects	

Analysis of Biological Development book. Read reviews from world's largest community for readers. This text, now available in FULL COLOR, presents developmental biology as an ongoing process of enquiry, giving students a sense of the ways developmental biologists gain knowledge and a taste of the challenges ahead. The first part of the text focuses on the classical methods of analysis and the stages of embryonic development from gametogenesis to histogenesis. Part Two introduces the genetic and molecular analysis of development. The main attention is paid to chromatography-mass spectrometry, which is the basic method of analysis of small molecules in biological samples. Examples from literary sources and authors' own practice are given. Text. The review highlights some of the practical issues of preparation of calibration samples, method of increasing the stability of the sample at the stage of sampling and plasma preparation. In particular, the influence of various anticoagulants on the accuracy of the analysis is reflected.

1. Pandey S., Pandey P., Tiwari G., Tiwari R. Bioanalysis in drug discovery and development. Pharm Methods. 2010; 1(1): 14-24.