



Course Specifications

Course Title:	Invertebrates
Course Code:	23072261-3
Program:	BSc Biology.
Department:	Biology
College:	Aljumum University College
Institution:	Umm Al-Qura University

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A. Course Identification

1. Credit hours: 3 hours
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: Level 3/ 2nd year
4. Pre-requisites for this course (if any): General biology (23071101-4).
5. Co-requisites for this course (if any):

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom		70 %
2	Blended		
3	E-learning		10 %
4	Correspondence		10 %
5	Other		10 %

7. Actual Learning Hours (based on academic semester)

No	Activity	Learning Hours
Contact Hours		
1	Lecture	24
2	Laboratory/Studio	42
3	Tutorial	6
4	Practical/Field work/Internship	6
5	Others (specify)	10
	Total	88
Other Learning Hours*		
1	Study	
2	Assignments	
3	Library	
4	Projects/Research Essays/Theses	
5	Others (specify)	
	Total	

* 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

This course "Invertebrates" is designed for the students who graduate from BSc Biology.

Invertebrate's course is dealing with taxonomy of invertebrate phyla. It gives the general and specific characters of different phyla; also morphology, anatomy and biology of selected species that representing those phyla.

1. List the general characters of the main phyla (protozoa, Porifera, Cnidaria, Platyhelminthes, Nematoda, Annelida, Arthropoda, Mollusca and Echinodermata).
2. Identify the main types of invertebrates upon their morphological variations.
3. Illustrate the biology and life cycles of selected examples of invertebrates.
4. Define the phylogenetic relations among the different invertebrates.
5. Understand the economic and medical importance of all invertebrates' phyla.
6. By the end of the course, the student should: Learn the importance of recognizing taxonomic status of the living organism to distinguish it and facilitate their study. Compare and classify invertebrate phyla. Describe the internal anatomy of representative animals of different phyla. Demonstrate, Recognize differentiate, illustrate and compare between anatomical structures in invertebrate phyla.
7. Apply microscopic examination for microscopic invertebrate specimens

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	Knowledge:	
1.1	Define the classification and diversity of invertebrate animals. <input type="checkbox"/>	
1.2	Describe the morphological characters of each invertebrate phylum. <input type="checkbox"/>	
1.3	Demonstrate the internal structure and life cycle of representative examples. <input type="checkbox"/>	
1...	Identify the cross, longitudinal or sagittal sections of some invertebrate animals.	
2	Skills :	
2.1	The student is able to propose solutions to some problems..	
2.2	<input type="checkbox"/> To use computer and internet.	
2.3	<input type="checkbox"/> To describe the disorders arise after any organ injury	
2...		
3	Competence:	
3.1	Developing oral presentations.	
3.2	<input type="checkbox"/> Communicating personal ideas and thoughts.	
3.3	<input type="checkbox"/> Work independently and as part of a team to finish some assignments.	
3...	<input type="checkbox"/> Communicate results of work to others	

C. Course Content

No. of Weeks	List of Topics	Contact Hours
1 st week	<ul style="list-style-type: none"> • Definition of invertebrates • An introduction to the history of the evolution of invertebrate taxonomy. • Foundations of animals' classification. • Kingdom Protozoa – General characters <p>Phylum: Sarcomastigophora (Ex.:Entamoeba and The foraminifera):</p>	2

	studying general biological activities	
2 nd week	Phylum: Ciliophora - eg.: <i>Paramecium sp</i> • Taxonomic position – reproduction and deferent biological activities.	2
3 rd week	Multicellular organisms (Parazoan animals general characters)- Phylum: Proifera- studying deferent biological activities and reproduction.	2
4 th week	Subkingdom: Metazoa - Phylum: Cnidaria (general characters) ○ Class: Hydrozoa (eg.: <i>Obelia</i>) ○ Class: Scyphozoa (eg.: <i>Ourelia</i>) ○ Class: Anthozoa (eg.: <i>Alcyoniun</i> and stony corals) – general morphological characters.	2
5 th week	The Triploblastica -Phylum: Annelida - general characters of phylum and classes : 1) Class: Oligochaeta – eg. <i>Allolobophora caliginosa</i> – tegument - internal structure of deferent systems - reproduction and life cycle 2) Class: Polychaeta – eg. <i>Nereis</i> – general morphology and reproduction. 3) Class: Hirudinea – eg. <i>Hirudo medicinalis</i> (Medical leech) - morphology - internal systems reproduction and life cycle.	2
6 th week	Med term Exam	2
7 th week	Phylum: Arthropoda - general characters of phylum and classes: shrimp internal anatomy – morphology some other aquatic arthropods of economic importance.	2
8 th week	Scorpion and spider shape, anatomy and life cycle ▪ Comparison between <i>Scolopendera</i> and <i>Iulus sp</i>	2
9 th week	Phylum: Mollusca (general characteristics – Main classes) 1. Class: Gastropoda (Desert snail) study of the morphology and anatomical - the life cycle – the importance of the torsion and coiling – Orders of gastropods 2. Class: Polyplacophora morphology and anatomy of chiton.	2
10 th week	3. Class: Bivalvia - Anodonata sp. (shell morphology – internal anatomy – feeding – reproduction and life cycle). 4. Class: Cephalopoda (general characteristics -Classification of Class: Cephalopoda) – <i>Sepia and Octopus</i> (general morphology and anatomy – biological activities).	2
11 th week	Phylum: Echinodermata (Classification and general characteristics). 1. Class: Asteroidea - Sea Stars (general morphology and anatomy - Water Vascular System). 2. Class: Ophiuroidea – <i>Ophiocoma</i> 3. Class: Echinoidea – <i>Tripneustes</i> 4. Class: Holothoridae – Sea cucumber	2
12 th week	Revision	2
13 th week	Final Exam	2

D. Teaching and Assessment

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

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
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Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	Knowledge		
1.1	By the end of the course the student should be able to: <input type="checkbox"/> Define the classification and diversity of chordate animals. <input type="checkbox"/> Describe the morphological characters of all classes, ... <input type="checkbox"/> Dissect the internal structure and life cycle of representative examples. <input type="checkbox"/> Identify the cross, longitudinal or sagittal sections of some animals.	In-class lecturing where the previous knowledge is linked to the current and future topics. Homework assignments. Discussions (connecting what they learn in the class and applying this information in laboratory). Handout of lecture notes for each topic	Homework and quizzes. Midterm and final written exams (theoretical and practical). Evaluation of reports. Oral presentation. Course work reports.
1.2			
...			
2.0	Skills		
2.1	Developing oral presentations	Application of essential scientific techniques through lectures, classes and essays. <input type="checkbox"/> Small group discussion. <input type="checkbox"/> Ask the students to make small search project during the semester. <input type="checkbox"/> Making connections between different topics across the course.	Course work reports. Evaluation of the topics prepared by students according to the content, arrangement, and covering of the topic. Midterm and final exams. Checking the homework assignments
2.2	Communicating personal ideas and thoughts.		
...	Work independently and as part of a team to finish some assignments.		
3.0	Competence		
3.1	Use information and communication technology	Oral presentations. <input type="checkbox"/> Internet search assignments and essays. <input type="checkbox"/> Incorporating the use and utilization of computer in the course requirements. <input type="checkbox"/> Students will be asked for delivering a summary regarding certain topics related to the course.	Evaluation of student essays and assignments. <input type="checkbox"/> Evaluating the laboratory written reports. <input type="checkbox"/> Marks given to for good reports and presentations <input type="checkbox"/> Evaluating during the discussion in lecture and reports. Part of the grad is put for student's written participation
3.2	Use IT and communication technology in gathering and interpreting information and ideas		
...	Use the internet as a means of communication and a source of information.		

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Home works, search or presentation	4th and 8th weeks	10 %
2	Midterm "Written Test (1)"	8th week	30%
3	Final Exam "Practical Test"	15th week	20%
4	Final Exam Written Test		40%
5			

#	Assessment task*	Week Due	Percentage of Total Assessment Score
6			
7			
8	Total		%100

*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 :

F. Learning Resources and Facilities

1. Learning Resources

Required Textbooks	Lecture notes prepared by faculty member
Essential References Materials	<p>Modern Text Book of Zoology: Invertebrates (2008). Prof. R. L. Kotpal. Rastogi Publications, 2012 – 883pp.</p> <p>A Textbook of Invertebrates (2012). H.S. Bhamrah , Kavita Juneja, Sara, S. Publishing.</p> <p>A Text book of Invertebrates (2010). N C Nair , N Arumugam , N Soundarapandian, T Murugan S leelavathy, Sara, S. Publishing.</p>
Recommended Books and Reference Material (Journals, Reports, etc) (Attach List)	<ul style="list-style-type: none"> • Barnes, R.S.K. :”Kingdom animalia”. • In Asynoptic classification of living organisms. • Blachwell scientific publication 1984. • Barnes, R.S.K. : The invertebrates • A new synthesis PC low and P jw olive, 1989
Electronic Materials	
Other Learning Materials	

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Classrooms, laboratories
Technology Resources (AV, data show, Smart Board, software, etc.)	data show

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

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods

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	

Head of Department



Dr. Wessam M. Filfilan

Stamp

