



Course Specifications

Course Title:	Invertebrates
Course Code:	Zoo251-3
Program:	B.Sc. Biology
Department:	Biology
College:	Science
Institution:	Faculty of Science, Jazan 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	خطأ! الإشارة المرجعية غير معرفة.
2. Course Main Objective.....	خطأ! الإشارة المرجعية غير معرفة.
3. Course Learning Outcomes	3
C. Course Content	5
D. Teaching and Assessment	5
1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods	5
2. Assessment Tasks for Students	6
E. Student Academic Counseling and Support	6
F. Learning Resources and Facilities.....	6
1. Learning Resources	6
2. Facilities Required.....	7
G. Course Quality Evaluation	7
H. Specification Approval Data	7

A. Course Identification

1. Credit hours:			
2. Course type			
a.	University <input type="checkbox"/>	College <input type="checkbox"/>	Department <input checked="" type="checkbox"/>
b.	Required <input checked="" type="checkbox"/>	Elective <input type="checkbox"/>	Others <input type="checkbox"/>
3. Level/year at which this course is offered: 3 rd level/ 2 nd year			
4. Pre-requisites for this course (if any): None			
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	26h	86.7%
2	Blended	4h	13.3%
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	

B. Course Objectives and Learning Outcomes

Course Title	Course Code	Number of Study Hours				Year	Level	Prerequisites
		Theo.	Tut.	Lab.	Credit			
INVERTEBRATES	251ZOO	2	-	1	3	1 st	3 rd	

(1) Brief Course Description:

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

(2) Course Objectives

This course is designed to provide students with the following concepts:

1. To emphasize the general characters of the main phyla (protozoa, Porifera, Cnidaria, Platyhelminthes, Nematoda, Annelida, Arthropoda, Mollusca and Echinodermata).
2. To identify the main types of invertebrates upon their morphological variations.
3. To illustrate the biology and life cycles of selected examples of invertebrates.

4. To define the phylogenetic relations among the different invertebrates.
5. To understand the economic and medical importance of all invertebrates' phyla.
6. To recognizing taxonomic status of the living organism to distinguish it and Recognize differentiate, illustrate and compare between anatomical structures in invertebrate phyla.

(3) Course Contents

- 1- **Introduction:** classification of Invertebrates and phylogeny animals
- 2- **Classification: of lower invertebrates:** give general characteristics, their evaluation, metabolism, symmetry, cleavage and gastrulation, respiration, excretion, reproduction and biological colony.
- 3- The protozoan Phyla
- 4- Phylum Sarcomastigophora
- 5- Phylum Ciliphora
- 6- Phylum Proifera: Songes
- 7- Phylum Cnidaria
- 8- **Classification of higher invertebrates:** give general features, coelomic cavity, segmentation, movement, extraction organs, receptors and sensor organs.
- 9- Phylum Plathelminthes
- 10- Phylum Nematoda : Roundworms
- 11- Phylum Molluscs
- 12- Phylum Anthropoda
- 13- Sub Phylum Crustacean
- 14- Phylum Echinodermata

1) Practical:

This course is designed to reinforce the principles of apply microscopic examination for microscopic invertebrate specimens. In addition, learn taxonomy of large species and identify their morphology. Key classifications of higher and lower invertebrates. Field trip to local habitats for collecting samples.

(4) Assessment Criteria

Exams: Essay/Objective, oral, class work, research work and collecting samples.

Practical: Identifying samples and slides, drawings.

- Periodic Exams and Quizzes: 30 %
- Assignments, and Classroom Activities: 20 %
- Final exam: 50%

(5) Course Teaching Strategies

- Lectures, photographs, slides, multimedia, Field trips, web-based learning. Samples, Light microscopes, glassware, chemicals.

(6) Text Book

- (In Arabic). "الأساسيات المتكاملة لعلم الحيوان؛ اللافقاريات" (1993): كيفلاند هيكممان واخرون

(7) Reference Books

- Hickman, C.P., C.P., Larson, A., Helen I'Anson, H., Keen, S.L., Roberts, L.S. (2011) Integrated Principles of Zoology. 15th edition, McGraw Hill. London, New York.
- Wallace, R.L., Beck, D.E. and Braithwai Water, K.T. (1996). Invertebrate Zoology: A Laboratory Manual. Prentice Hall, USA.
- -Ruppert, E.E, and Barnes, R.D. (1994). Invertebrate Zoology. Saunders College Pu
- -Paul, A Meglitsch and Schram, F.R. (1991). Invertebrate Zoology. Oxford University Press, Oxford.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	Knowledge and Understanding	
1.1	Define all principals, concepts, theories and aspects concerning with invertebrate	K1.1
1.2	Compare between different mechanisms, functions, practices and aspects related to invertebrate	K2.1
1.3	Draw all systems, organs, cells and its contents diagrams and figures of invertebrate	K2,3
2	Skills :	
2.1	Examine theoretically or practically the sides, photos, diagrams or statements of invertebrate	S1,3
2.2	Write a report about any practical or theoretical tasks related to invertebrate	S3,3
3	Values:	
3.1	Illustrate awareness of risk assessment and safety observation when dealing with various equipment at various fields.	V2,1

C. Course Content

No	List of Topics	Contact Hours
1	Terms and bases of classification of animal kingdom	2
2	Subkingdom: Protozoa	10
3	Subkingdom Parazoa: Phylum Porifera	4
4	Subkingdom Metazoa: Phylum Cnidaria	4
5	Bilateria: Acoelomates: Phylum Platyhelminthes	4
6	Coelomates: Pseudocoelomates: Phylum Nematoda	4
7	Eucoelomates: Phylum Annelida	8
8	Eucoelomates: Phylum Arthropoda	8
9	Eucoelomates: Phylum Mollusca	8
10	Eucoelomates: Phylum Echinodermata	4
Total		56

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	Define all principals, concepts, theories and aspects concerning with invertebrate	Lectures	Quizes, short answer questions.
1.2	Compare between different mechanisms, functions, practices and aspects related to invertebrate	Lectures	Quizes, short answer questions.
1.3	Draw all systems, organs, cells and its contents diagrams and figures of invertebrate	Lectures- Lab work	Short answer questions-Homework

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
2.0	Skills		
2.1	Examine theoretically or practically the sides, photos, diagrams or statements of invertebrate	Lectures- Lab work	Practical exam-Homework
2.2	Write a report about any practical or theoretical tasks related to invertebrate	Lectures Group Discussion Lab work	Practical exam-Homework
3.0	Values		
3.1	Illustrate awareness of risk assessment and safety observation when dealing with various equipment at various fields.	Lab work	Practical exam-Homework

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Homework assignment	2	2
2	Practical quizzes	4	2
3	Lecture Quizzes	6	2
4	Mid-term exam	8	10
5	Practical web-based assignment	10	2
6	Lecture web-based essay	12	2
7	Final practical exam	14	30
8	Final Exam	16	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 Office hours/faculty/week.

F. Learning Resources and Facilities

1. Learning Resources

Required Textbooks	-Brusca, C.R., Brusca, G.J. and Haver, N.J. (2018) Invertebrates. Sinauer Associates; 2nd edition. 936 pages. -Hickman, C.P., C.P., Larson, A., Helen I'Anson, H., Keen, S.L., Roberts, L.S. (2014) Integrated Principles of Zoology. 16 th edition, McGraw Hill. London, New York
Essential References Materials	Wallace, R.L., Beck, D.E., Braithwai, Water, K.T. (1996). Invertebrate Zoology: A Laboratory Manual. -Rupert, E.E. & Barnes, R.D. (1994) Invertebrate Zoology. Saunders College Pub.
Electronic Materials	Zoological record
Other Learning Materials	Media softwares

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	2 Lecture rooms for a group of 30 students. 1 laboratory for a group of 15 students
Technology Resources (AV, data show, Smart Board, software, etc.)	One computer laboratory for a group of 15 students.
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	Light microscopes, slides, photomicrographs of the different phyla of invertebrates

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Course Contents		
Course Facilities		
Teaching Methodology		
Assessment Quality		
Assessment Methodology		

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	Consultant Committee/ Board of Biology Department
Reference No.	
Date	12 September, 2020