Course Specifications

Course Title:	**Vertebrates**
Course Code:	**23072262-3**
Program:	**BSc Biology.**
Department:	**Biology**
College:	**Aljumum University College**
Institution:	**Umm Al-Qura university**

Table of Contents

A. Course Identification

1. Credit hours: **3 hours**
2. Course type **a.** University ☐ College ☐ Department ■ Others ☐ **b.** Required ■ Elective ☐
3. Level/year at which this course is offered: **2nd Year / level 4**
4. Pre-requisites for this course (if any)**:** **Invertebrates (23072261-3).**
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**	**28**	**16**
2	**Blended**	**42**	**16**
3	**E-learning**		
4	**Correspondence**		
5	**Other**		

7. Actual Learning Hours (based on academic semester)

No	Activity	Learning Hours
Contact Hours		
1	**Lecture**	**28**
2	**Laboratory/Studio**	**42**
3	**Tutorial**	
4	**Others** (specify)	
	Total	
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

The course covers a detailed study of vertebrate animals, their taxonomy and anatomy. The course follow up the evolution of morphological and anatomical features of body organs in vertebrate

classes. The course also describes different types of structural modifications which are developed in the different body systems or organs as modes of adaption with the changes in the surrounding environment. Study samples were taken for each taxon as a model of study

2. Course Main Objective

Intended Learning Outcome:

- The course gives a clear idea about the evolution of anatomical and organ Amphioxus features of the different classes of chordates especially vertebrate animals. General characteristics in addition to anatomical features of different body systems and organs in chordates, fishes, amphibians, reptiles, birds and mammals are the matter of study in this course. The course also focuses or contrasts on understanding the extent of development in the organs and body systems by transition from sect to sect.
- 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 between specific characters of chordates with invertebrate animals.
- Classify selected species of Phylum Chordata [Acraniata (Protochordata); Craniata (Vertebrata)]. □ Compare between selected examples such as: □ Ascidia and Balanoglossus
- Agnatha and Gnathostomata.
- Cartilaginous and bony fishes.

□ **Amniotes and an-amniotes**

3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	**Knowledge:**	
1.1	The course covers a detailed study of vertebrates animals.These animals mostly have large sizes and easy to studied by the naked eye. The course follow up the evolution of morphological and anatomical features of the different body organs in vertebrate classes beginning with the study of simple and graduated to higher vertebrates with more complicated body systems and organs . The course also take in consideration the different types of structural modifications which are developed in the different body systems or organs as modes of adaption with the changes in the surrounding media of the animals or the environmen taking into account the mutations that can occur to suit the different environments where these animals are present . Animal samples were taken from each taxon as models of study. .	
1.2		
1.3		
1...		
2	**Skills :**	
2.1	**Cognitive Skills**: (i) Description of cognitive skills to be developed (ii) Teaching strategies to be used to develop these cognitive skills (iii) Methods of assessment of students cognitive skills **Interpersonal Skills and Responsibility**:	
2.2		
2.3		
2...		

CLOs		Aligned PLOs
	(i) Description of the interpersonal skills and capacity to carry responsibility to be developed (ii) Teaching strategies to be used to develop these skills and abilities (iii) Methods of assessment of students interpersonal skills and capacity to carry responsibility **Communication, Information Technology and Numerical Skills** -Description of the skills to be developed in this domain. **Psychomotor Skills (if applicable)** (i) Description of the psychomotor skills to be developed and the level of performance required (ii) Teaching strategies to be used to develop these skills (iii) Methods of assessment of students psychomotor skills	
3	**Competence:**	
3.1	Developing oral presentations.	
3.2	□ Communicating personal ideas and thoughts.	
3.3	□ Work independently and as part of a team to finish some assignments.	
3...	□ Communicate results of work to others	

C. Course Content

List of Topics	Contact Hours
□ Introduction to Phylum Chordata, classification, general characters.	**1**
□ General characters of protochordates □ Features of Cephalochordates. Morphology and anatomy of Amphioxus. Digestive, circulatory, excretory, genital and nervous systems of Amphioxus.	
□ General features of Urochordata. Digestive, circulatory, excretory, genital and nervous systems of Ascidia. □ General features of Hemichordata. Morphology of Balanoglossus. Digestive, circulatory, excretory, genital and nervous systems of Balanoglossus.	**1**
□ Agnathostomata: Class: Cyclostomata. Digestive, circulatory, excretory, and genital and nervous systems of Lamprey.	**2**
□ Gnathostomata: Features of cartilaginous fishes. External morphology, digestive, circulatory, excretory, genital, skeletal and nervous systems of dogfish.	**1**
□ General Characters and classification of bony fishes, external features and dissection of Tilabia, digestive, circulatory, excretory, genital, skeletal and nervous systems.	**1**
□ Tetrapoda: Class: Amphibians, characters, classification. Dissection of toad. Study digestive, circulatory, excretory, genital, skeletal and nervous systems of toad.	**1**

Midterm exam	**1**
Class Reptilia, classification of reptilian orders, General characteristics. Study digestive, circulatory, skeletal, urino-genital and nervous systems of representative lizard.	**1**
Class Aves: classification, general characteristics, external form, and dissection of body systems such as digestive, circulatory, excretory, genital, skeletal and nervous systems of pigeon.	**1**
Class Mammalia: classification, general characteristics, external form, and dissection of body systems such as digestive, circulatory, excretory, genital, skeletal and nervous systems of rabbit.	**1**
Revision, Presentations	**1**

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 1.2 ….	The course covers a detailed study of vertebrates animals.These animals mostly have large sizes and easy to studied by the naked eye. The course follow up the evolution of morphological and anatomical features of the different body organs in vertebrate classes beginning with the study of simple and graduated to higher vertebrates with more complicated body systems and organs . The course also take in consideration the different types of structural modifications which are developed in the different body systems or organs as modes of adaption with the changes in the surrounding media of the animals or the environmen taking into account the mutations that can occur to suit the different environments where these animals are present . Animal samples were taken from each taxon as models of study. - .	Discussion. -Tutorials that review the content of each lecture. - Independent study assignment which requires the use of library reference materials. -Virtual labs.	Homework, exams and research papers
2.0	**Skills**		
2.1	**Cognitive Skills** - Acquire the skills needed for sub-culturing in a pathogen free environment. - Carry out careful examination of the cultured cells under sterile conditions.	- Lectures. - Brain storming. - Discussion.	.- Problem solving questions. -Group and individual assignments that require the application of analytical tools..

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
	- Analyse the data obtained and draw careful observations and conclusions		
2.2	**Interpersonal Skills & Responsibility** - be involved in self-directed learning. - succeed in team work. - share and discuss results with others. - be involved in a simple research project. - Evaluate answers and positively criticize them.	-Lab work. -Case Study. -Active learning. -Small group discussion -Cooperative learning and application of scientific method in thinking the scientific problem solving. -Work as part of a team.	- Assessment of group assignment. - Evaluate the independent assignments
2.3	**Communication, Information Technology, Numerical** -Use information and communication technology. - 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. - Encourage students to use internet for searching certain electronic journals regarding topics of the course. - Scientific writing. - Use his/her observations to solve problems. - Doing research and conduct searches for restoring information. - Able to calculate and discuss the facts and logical propose methods to solve the difficulties.	-Oral presentations. - Internet search assignments and essays. -Incorporating the use and utilization of computer in the course requirements. -Students will be asked for delivering a summary regarding certain topics related to the course.	-Evaluation of student essays and assignments. -Evaluating the laboratory written reports. -Marks given to for good reports and presentations -Evaluating during the discussion in lecture and reports. Part of the grad is put for student's written participation
2.4	**Psychomotor:** -Enhancing the ability of students to use computers and internet to prepare a research article. - Interpret the laboratory data**.**	Follow up students the students in lab and during carryout all the laboratory experiments	-Giving additional marks for the students they have accurate laboratory results and good seminar presentation -Practical exam.

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
3.0	**Competence**		
3.1	Use information and communication technology	Oral presentations. Internet search assignments and essays. Incorporating the use and utilization of computer in the course requirements. Students will be asked for delivering a summary regarding certain topics related to the course.	Evaluation of student essays and assignments. Evaluating the laboratory written reports. Marks given to for good reports and presentations 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			
6			
7			
8			

***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	- Mahmoud Albanhawi, and others (2006). Text book of Zoology, tenth edition, Dar -Almaref, Egypt. - Mohammad Hassan Hamoud , Biology of vertebrates (2005), first Arabic edition, to be eligible for publication and distribution, Jordan. - Abdel Raouf Gamal and Hassan Shehata (2003). Chordata, first

	edition, Publishing House, Riyadh, 2003. - Mohamed Ismail Mohamed and others (2002). Fundamentals of Zoology, , First Edition, Dar Al-Arab Thought, Cairo. - Animal General, vertebrate and invertebrate: Zahid, Nabil Zaki, and Khaled Bakr Kamal, Al-Shegri Store book, 1426.
Electronic Materials	http://www.ucmp.berkeley.edu/chordata/chordata.html
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
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