



Course Specification

(Bachelor)

Course Title: General Biology

Course Code: APEP1601

Program: Diploma - Technology of Environmental Protection

Department: Biology Department

College: Applied Science

Institution: Umm Al-Qura University

Version: 2

Last Revision Date: 12/ 2024

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A. General information about the course:

1. Course Identification

1. Credit hours: (3)

3 Credits (2 theoretical + 1 Practical)

2. Course type

- A. ☐ University ☐ College ☒ Department ☐ Track ☐ Others
- B. ☒ Required ☐ Elective

3. Level/year at which this course is offered: (1st Year / 1st Level)

4. Course General Description:

General Biology provides an overview of life on Earth, the evolutionary relationships among major groups of organisms, and the structural and functional characteristics of these organisms. The course covers major areas of biology ranging from cellular to whole organism and includes the study of ecosystems. The focus on cellular level processes leads to an understanding of the importance and roles of the cell. By comparing the processes in unicellular organism and multicellular plants and animals, candidates investigate the increasing levels of life complexity. The key areas of biodiversity and interdependence are covered, along with the processes leading to evolution as well as food security and ethical issues. General Biology is intended primarily for students majoring in any of the biological sciences or life science-related fields (Chemistry, physics, and mathematics).

5. Pre-requirements for this course (if any):

6. Co-requisites for this course (if any):

7. Course Main Objective(s):

The main objective of this course is to give an overview of the many features that are common to living organisms and what is meant by "life" and "living organisms."

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	30 h	80%
2	E-learning		
3	Hybrid		





No	Mode of Instruction	Contact Hours	Percentage
	<ul style="list-style-type: none"> Traditional classroom E-learning 		
4	Distance learning		

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	30 h
2.	Laboratory/Studio	14 h
3.	Field	
4.	Tutorial	
5.	Others (specify)	
Total		

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
1.0	Knowledge and understanding			
		K1		Quiz.
1.1	Understanding the basic biological principles through an integrated approach.		Lectures Lab work	Final and mid-term exam. Assignments and activities
1.2	Understanding the cellular processes of living organisms.	K2	Lectures Lab work	Quiz. Final and mid-term exam. Assignments and activities
	Identify the unifying themes and key concepts of different organisms.	K3	Lectures Lab work	Quiz. Final and mid-term exam. Assignments and activities





Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
1.4	Describe the anatomy, function, genetics and evolution of different types of organisms.	K4	Lectures Lab work	Quiz. Final and mid-term exam. Assignments and activities Quiz.
1.5...	Demonstrate factual knowledge of contemporary natural science.	K5	Lectures Research activity. Web based study	Final and mid-term exam. Assignments and activities
2.0	Skillsk5			
2.1	The student will apply contemporary scientific models to describe the natural world.	S1	Lectures Lab work	Quiz. Final and mid-term exam. Assignments and activities Quiz.
2.2	To understand and apply the scientific method.	S2	Lectures Lab work Research activity	Final and mid-term exam. Assignments and activities
2.3	Demonstrate basic problem-solving processes, including observation, inference, measurement, prediction, use of numbers, classifying and use of space and time relationships in life sciences	S3	Lectures Lab work Research activity	Quiz. Final and mid-term exam. Assignments and activities
2.4	Demonstrate integrated process skills, including identification and control of variables, interpretation of data, formulation and testing of hypotheses, and	S4	Lab work Research activity	Quiz. Final and mid-term exam. Assignments and activities





Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
	experimentation in the life sciences.			
3.0	Values, autonomy, and responsibility			
3.1	An awareness of ethical, social and cultural issues within a global context and their importance in the exercise of professional skills and responsibilities.	V1	Lectures Lab work Research activity	Quiz. Final and mid-term exam. Assignments and activities
3.2	A commitment to continuous learning and the capacity to maintain intellectual curiosity throughout life.	V2	Lectures Lab work Research activity	Quiz. Final and mid-term exam. Assignments and activities
...				

C. Course Content

No	List of Topics	Contact Hours
1.	Mechanisms of Evolution <ul style="list-style-type: none"> Descent with Modification: A Darwinian View of Life The Evolution of Populations and taxonomy (Phylogeny and the Tree of Life) The Origin of Species The History of Life on Earth An Overview of Animal and plant Diversity 	2
2,3	The Cell <ul style="list-style-type: none"> A Tour of the Cell Membrane Structure and Function An Introduction to Metabolism Cellular Respiration and Fermentation Photosynthesis Cell Communication The Cell Cycle 	4
4.	Eukaryotes- Prokaryotes and others <ul style="list-style-type: none"> Protozoa Algae 	2





	<ul style="list-style-type: none"> • Archaea • Bacteria • Cynobacteria • Fungi • Viruses 	
5,6	Genetics <ul style="list-style-type: none"> • Meiosis and Sexual Life Cycles • Mendel and the Gene Idea • The Chromosomal Basis of Inheritance • The Molecular Basis of Inheritance • Gene Expression: From Gene to Protein • Regulation of Gene Expression • DNA Tools and Biotechnology 	4
7	Midterm exam	2
8-9-10.	Plant Form and Function <ul style="list-style-type: none"> • Plant Diversity I: How Plants Colonized Land • Plant Diversity II: The Evolution of Seed Plants • Vascular Plant Structure, Growth, and Development • Resource Acquisition and Transport in Vascular Plants • Soil and Plant Nutrition • Angiosperm Reproduction and Biotechnology • Plant Responses to Internal and External Signals 	6
11-12-13.	Animal Form and Function <ul style="list-style-type: none"> • Basic Principles of Animal Form and Function • Animal Nutrition • Circulation and Gas Exchange • The Immune System • Osmoregulation and Excretion • Hormones and the Endocrine System • Animal Reproduction • Animal Development • Neurons, Synapses, and Signaling • Nervous Systems • Sensory and Motor Mechanisms • An Introduction to Invertebrates • The Origin and Evolution of Vertebrates • Animal Behavior 	6
14.	Ecology <ul style="list-style-type: none"> • An Introduction to Ecology and the Biosphere • Population Ecology • Community Ecology • Ecosystems and Restoration Ecology Conservation Biology and Global Change	4
15.	bioeconomy <ul style="list-style-type: none"> -Livestock 	2



-Medicinal and economic plants
-Pests

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Quiz 1 (Theory)	3	5%
2.	Midterm examination (Theory)	6	15%
3.	Midterm examination (practical)	7	10%
4.	Group project	9-10	10%
5.	Final examination (practical)	15	20%
6.	Final examination (Theory)	16	40%
	TOTAL	100%	

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.).

E. Learning Resources and Facilities

1. References and Learning Resources

Essential References	<p>Campbell Biology, 12th Edition, Author(s): Lisa A. Urry, Micheal L. Cain, Steven A. Wasserman, Peter V. Minorsky, Rebecca B. Orr, Neil A. Campbell, Publisher: Pearson, Year: 2020, ISBN: 9780135988046; 0135988047</p> <p>Investigating Biology Laboratory Manual, Ninth Edition by Judith Giles Morgan, Emory University, and M. Eloise Brown Carter, Oxford College of Emory University 978-0-13447346-8/0-134-47346-9</p>
Supportive References	Sylvia S. Mader (Latest Edition): Biology. McGraw-Hill, USA
Electronic Materials	<p>1. https://www.coursera.org/learn/Biology</p> <p>https://www.edx.org</p>
Other Learning Materials	<p>1. Handouts and Lecture notes</p> <p>2. Microsoft office package.</p> <p>Multi- media associated with the textbook and the relevant websites.</p>

2. Required Facilities and equipment

Items	Resources
<p>facilities</p> <p>(Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)</p>	<p>1. Lecture room suitable for 40 students.</p> <p>2. Lecture room equipped with Data show.</p> <p>3. Biology laboratory.</p>

Items	Resources
Technology equipment (projector, smart board, software)	1. Computers or internet connection. 2. Active Board. 3. Data show is required in every room.
Other equipment (depending on the nature of the specialty)	Laboratory instruments & equipment: light microscope, Spectrophotometer, centrifuge, pH meters, flasks, beakers, screw capped tubes, slides and tips and chemicals kits.

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Faculty	Course report
Effectiveness of Students assessment	Students	Course Evaluation Template
	Program leader / Head of the	
Quality of learning resources	Department Quality Committee	Annual program report
The extent to which CLOs have been achieved		

Assessors (Students, Faculty, Program Leaders, Peer Reviewers, Others (specify))

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	Umm Al-Qura University Council
REFERENCE NO.	851141114462/190635
DATE	22/11/1446

