

COURSE DESCRIPTION FORM

Department: Biological Sciences

COURSE DESCRIPTION

Course Title: BIOLOGY (1)

Course Number: 0490 - 101

Course Level: ☒ Undergraduate ☐ Postgraduate

Course Type: ☐ University Requirements ☐ Department Requirements
☒ Major Compulsory ☒ Major Elective
☒ Minor Compulsory ☒ Minor Elective

Credit Hours: ☐ 1 credit ☐ 2 credits ☒ 3 credits ☐ 4 credits

Lecture Hours per Week: ☐ none ☐ 1 hour ☒ 2 hours ☐ 3 hours

Lab Hours per Week: ☐ none ☐ 2 hours ☒ 3 hours ☐ 6 hours

Tutorial Hours per Week: ☒ none ☐ 1 hour ☐ 2 hours

Credits: (1-2-3)

Recommended Textbook(s):

1. Sylvia S. Mader and Michael Windelspecht. Biology. WCB McGraw-Hill International Edition. Boston, USA. latest edition.
2. Sylvia Mader, & Michael Windelspecht. Laboratory Manual. WCB McGraw-Hill International Edition. Boston, USA. latest edition.

Catalogue Brief Description:

How to define life and Taxonomy. The process of science. Basic Chemistry and water chemistry. Types of organic molecules. Cellular organization, cell structure and function. Membrane structure and function. Bioenergetics. Photosynthesis and cellular respiration. The cell cycle and cellular reproduction. Mendelian patterns of inheritance. Genetic material structure and function. Gene expression.

خصائص الكائنات والتنوع البيولوجي والتصنيف، الطريقة العلمية للوصول إلى النظريات العلمية. الكيمياء الأساسية وكيمياء الماء والكيمياء العضوية وأنواعها في الخلية. تركيبات الخلية ووظائفها. التركيب الدقيق لغشاء الخلية ووظيفتها في نقل المواد وترابط الخلايا لتكوين الأنسجة. تعريف الطاقة والطاقة الحيوية، عملية البناء الضوئي، عمليات الأيض في الخلية، التكاثر بالانقسام الخلوي الميوزي والميتوزي، المادة الوراثية، تركيب المادة الوراثية ووظيفتها، نسخ المادة الوراثية، وتكوين البروتينات.

Lectures Topics:

1. A View of Life
2. Basic Chemistry
3. The Chemistry of Organic Molecules
4. Cell Structure and Function
5. Membrane Structure and Function
6. Metabolism: Energy and Enzymes
7. Photosynthesis
8. Cellular Respiration
9. The Cell Cycle and Cellular Reproduction
10. Meiosis and Sexual Reproduction
11. Molecular Biology of the Gene

Practical Topics (Laboratory):

1. Scientific Method
2. Microscopy and Metric Measurement
3. Chemical Composition of Cells
4. Cell Structure and Function
5. How Enzymes Function
6. Photosynthesis
7. Cellular Respiration
8. Mitosis
9. Meiosis
10. DNA Biology and Biotechnology

ASSESSMENT METHODS & GRADING

- Check all forms of assessments that may be used for this course.

☒ Term Exams	30 %
☐ Quizzes	%
☐ Homework/Assignments/Quizzes	%
☐ Computer Assignments	%
☐ Term Paper/Projects	%
☐ Oral Presentation	%
☐ Poster Presentation	%
☒ Lab. Work	30 %
☐ Fieldwork	%
☐ Class Participation/Activity	%
☐ Other	%
☒ Lectures Final Exam	40 %
Total	100 %

COURSE LEARNING OUTCOMES

By the end of this course, students will be able to:

- ➊ Apply critical thinking skills to solving problems in biology and related fields.
- ➋ Appreciate the scope, unit, and diversity of life in the biosphere, including the classification of living organisms.
- ➌ Develop knowledge and understanding of general biology, including a basic knowledge of biological molecules, and bioenergetics.
- ➍ Understand cell structure and function.
- ➎ Understand the cell cycle and cellular reproduction.
- ➏ Relating DNA structure to the process of protein synthesis.

Relevance Rate to the Course Learning Outcomes

Course Learning Outcomes	Example(s) of Relevant Topics/Activities	Relevance Rate
①	The process of science.	M
②	Complexity of living things. How living things are classified.	L
③	Water Chemistry. Organic macromolecules. Photosynthesis. Cellular Respiration.	H
④	Cell Structure and function. Organelles and their function.	H
⑤	Prokaryotic and eukaryotic cell division. Genetic recombination.	H
⑥	DNA replication. The Genetic Code. Gene Expression.	M

PROGRAM LEARNING OUTCOMES

Using the labels H, M, or L, rate the relevance of each **Course Learning Outcome** in the learning outcome matrix below to the **Program Learning Outcomes** where applicable.

		COURSE LEARNING OUTCOMES					
		❶	❷	❸	❹	❺	❻
PROGRAM LEARNING OUTCOMES	1. Apply the scientific method to questions in animal biology and perform qualitative and quantitative analysis and interpretation of biological data to demonstrate proficiency in the experimental techniques and methods of analysis appropriate for their area of specialization within animal biology.	M	L	L	L	L	M
	2. Identify the major groups of organisms with emphasis on animals and be able to classify them within a phylogenetic framework to compare and contrast the characteristics of animals that differentiate them from other forms of life.	L	M	L	L	M	L
	3. Comprehend the breadth of studies on the biology of animals as they relate to evolution, adaptation, behavior and ecology.	L	M	L	L	M	M
	4. Explain how organisms' function at the level of the gene, genome, cell, tissue, organ and organ-system thus appreciating the complexities of animals.	L	M	M	M	M	H
	5. Relate the physical features of the environment to the structure of animal populations, communities, and ecosystems.	L	M	M	M	M	M
	6. Integrate related topics in animal biology from separate parts of the course or courses.	L	L	M	M	M	M

	7. Access primary literature, identify a particular topic and evaluate its scientific content and extract information from biological literature, and communicate it effectively in writing scientific reports and essays in the field of animal biology.	M	L	L	L	L	L
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DEPARTMENT LEARNING OUTCOMES

Using the labels H, M, or L, rate the relevance of each **Course Learning Outcome** in the learning outcome matrix below to the **Department Learning Outcomes** where applicable. (A summary of the Department Learning Outcomes is provided in a separate document).

		COURSE LEARNING OUTCOMES					
		①	②	③	④	⑤	⑥
DEPARTMENT LEARNING OUTCOMES	1.						
	2.						
	3.						
	4.						
	5.						

Course Coordinator: DR. Jasem Alrubaian

Program: Animal Biology