



Course Specification

(Bachelor)

Course Title: Eco-physiology

Course Code: BIOL447

Program: Biology

Department: Biology Department

College: College of Science

Institution: Majmmah university

Version: 4th

Last Revision Date: 29/12/2023



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A. General information about the course:

1. Course Identification

1. Credit hours: 2 (2 + 0) hours

Equivalent to ECTS credits - 3

2. Course type

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

3. Level/year at which this course is offered: (level 7/ year 4)

4. Course General Description:

Eco-physiology examines the functions and performance of organisms within their natural environments. This course explores the physiological and ecological mechanisms of adaptation to various environmental stresses. Fundamentally, eco-physiology is the scientific study of the processes that enable organisms to survive and thrive. By the end of the course, students will be able to critically analyze the key physiological processes that influence an organism's success in its natural habitat.

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

Nil

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

Nil

7. Course Main Objective(s):

The aim of this course is for students to understand the key environmental stresses that influence organisms. To discuss the physiological changes and processes that enable organisms to adapt. Differentiate between adaptation of organisms to the environment.

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	30	75 %
2	E-learning	10	25 %
3	Hybrid <ul style="list-style-type: none"> • Traditional classroom • E-learning 	NO	NO
4	Distance learning	NO	NO

3. Contact Hours (based on the academic semester)



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

Workload (based on the academic semester)

No	Activity	Work Load /Hours
1.	Contact hours	30
2.	Self-study (Assignments, quizzes, reports, Discussions, Library, research)	30
Total Workload		60
Equivalent to ECTS credit points		3

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			
1.1	Gain the basic knowledge about general Introduction Eco-physiological concepts	K3	Lecture – Lectures with discussion	Quizzes' Midterm and final exams
1.2	Understand and explain adaptation of organisms to their environment.	K3	Lecture – Lectures with discussion	Quizzes' Midterm and final exams
2.0	Skills			
2.1	Investigate why modelling is important to the understanding of the environment influence on physiological functions of plants . Discuss the physiological adaptations and changes of organisms on different the types of stresses (Heat, salt, acid and cold stress)	S2	Lecture Lectures with discussion Brain storming	Quizzes' Midterm and final exams





Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
3.0	Values, autonomy, and responsibility			
3.1	Collect and organize the scientific information.	V2	Team work Reports	Assignment submission, Oral presentation

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	First-term exam	5 th week	15 %
2.	First-term exam	8 th week	15 %
3.	Black board exam (online)	11 th week	10 %
4.	Home works and Assignments	2, 6, 10 th week	10 %
5.	Quiz's	Every 3 weeks	10 %
6	Final exam	15 th week	40 %

*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	<ul style="list-style-type: none"> ▪ Plant Ecophysiology by Jean-Claude Leclerc, published in 2003 by CRC Press, ISBN 9781578082476, 314 pages. ▪ Physiological Plant Ecology by Walter Larcher, published in 1975 by Springer-Verlag, ISBN 9780387073363, with a digitized version from the University of Michigan in 2010.
Supportive References	<ul style="list-style-type: none"> • Plant Physiological Ecology by Hans Lambers, F. Stuart Chapin III, and Thijs L. Pons, published in 2008 by Springer. • Environmental Physiology of Animals by Pat Willmer, Graham Stone, and Ian Johnston, published in 2005 by Blackwell Publishing. • Comparative Physiology of Environmental Adaptations edited by various authors, with a key foundational work being Animal Physiology: Adaptation and Environment by Knut Schmidt-Nielsen, published in 1997 by Cambridge University Press. • Ecophysiology: An Evolutionary Approach edited by Roberto N. Espinoza and Cameron K. Ghalambor, published in 2023 by CRC Press.
Electronic Materials	<ul style="list-style-type: none"> ▪ https://ecophys.forestry.ubc.ca/ ▪ https://data.neonscience.org/ ▪ http://peco.ulb.ac.be/





Other Learning Materials

<https://www.youtube.com/watch?v=gslCCOxg7aQ>

<https://www.youtube.com/watch?v=XotOsO4-G6Q>

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classroom and fully equipped laboratory facilities are available
Technology equipment (projector, smart board, software)	E-podium and smart board facilities are available
Other equipment (depending on the nature of the specialty)	Nil

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Direct
Effectiveness of Students assessment	Program Leaders	Direct
Quality of learning resources	Students	Indirect
The extent to which CLOs have been achieved	Faculty	Direct
Other		

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

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	Biology Department Council
REFERENCE NO.	7
DATE	4/4/1446 (07/10/2024)

