



وكالة الجامعة للشؤون التعليمية  
البرامج الدراسية والتطوير

( 5 )

مختصر توصيف المقرر

Ecophysiology

فسيولوجيا البيئة	:
BIOL-446	:
لا يوجد	:
لا يوجد	:
	:
2	:
<b>Module Title:</b>	<b>Ecophysiology</b>
<b>Module ID:</b>	BIOL-446
<b>Prerequisite (Co-requisite):</b>	N/A
<b>Co-requisite :</b>	N/A
<b>Course Level:</b>	7 <sup>th</sup> level
<b>Credit Hours:</b>	2 Hours

### :(Course Information) \*

### Module Description

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This course provide the students with a broad introduction to the eco-physiology, which studies how plants and animals are affected by and adapts to the surrounding environment. The aim is to give a good overview and understanding of the chemical and physical variables that restrict and affect various physiological mechanisms. These include, for example, temperature, humidity, salinity, oxygen levels, oxidative stress, and pH. Particular emphasis is placed on environmental factors that are affected by humans on a global scale, such as carbon dioxide concentration and temperature. Also physiological mechanisms that are important on the ecosystem level are treated.

### Module Aims

### أهداف المقرر:

1	To understand the relation between environment and the functioning of the live organism.	1
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2	To investigate the effect of ongoing and future climate changes, and how it may limit the distribution and survival of species.	2
3	To understand how some species manage to live in a continuously changing environment and in different climates, others have a much narrower niche.	3
4	Study the physiological mechanisms behind these variations.	4
5	To give a good overview and understanding of the chemical and physical variables that restrict and affect various physiological mechanisms.	5
6	To show how life processes depend on the environment at different levels from immediate environment of a cell to the impact of environment on the whole organism.	6

### Learning Outcomes:

### مخرجات التعليم:

1	Knowledge on the basic principles of physiology and its connection within the frame of biology and other natural sciences.	1
2	Explain the concepts of plant resource acquisition, plant energy budgets and plant water relations and plant to parasite interactions.	2
3	Understanding of the evolution of adaptation on the direct and indirect environment.	3
4	Understand processes at higher level including control and connection of these processes by the nervous and hormonal systems..	4
5	Understand the contact of the live organism with the environment and changes within it.	5
6	Understanding of a living animal behaviour in connection with environment at the basis of synthesis of the knowledge on the function of processes that enable the organism to survive in specific environment.	6

### Course Contents: :

ساعات التدريس (Hours)	الأسابيع	(Subjects)
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3 2

	(Weeks)	
2	1	Introduction to general ecophysiological concepts involving transfer between the environment and the live organism;
2	1	Abiotic Stress (Salinity- Acid soils - Heavy metals) Plant and Soil Analysis
2	1	Plant Stress (Light and Photosynthesis)
2	1	Parasitic Plants (Physiology and Ecological roles)
2	1	Plant Respiration
2	1	Global Change: Rising CO <sub>2</sub>
2	1	Global Change: Climate change
2	1	Climate and microclimate (Thermoregulation in animals)
2	1	Gas laws (Oxygen cascade-diffusion and convection)
2	1	Design of gas exchangers (Evolution of amphibian embryos)
2	1	Respiration in air and water
2	1	Osmosis and diffusion (Water and solute regulation) fish
2	1	Water and solute regulation – (amphibians - reptiles)
2	1	Water and solute regulation – (birds)
2	1	Water and solute regulation – (mammals)

### Textbook and References: :

ISBN	Publishing Year	Publisher	اسم المؤلف (رئيسي) Author's Name	Textbook title
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978-3642284502	2012	Springer	Christian Wiencke	Novel Insights into Ecophysiology
	<b>Publishing Year</b>	<b>Publisher</b>	<b>اسم المؤلف (رئيسي) Author's Name</b>	<b>Reference</b>
978-1107054202	2016	Cambridge University Press	Derek Eamus	A Synthesis of Plant Ecophysiology
978-9402407952	2016	Springer	Michael Tausz	Ecophysiology, Adaptation, and Future Survival
978-3319254906	2016	Springer	Gerhard von der Emde	The Ecology of Animal Senses

