



Universidad Juárez del Estado de Durango Facultad de Ciencias Forestales



Learning Unit Programme
With an integral professional competences approach

I. LEARNING UNIT GENERAL DATA

1. learning Unit Name		2. Code			
Environmental biology		8491			
3. Academic Unit					
FORESTRY SCIENCES FACULTY					
4. Academic programme			5. Level		
Environmental Management Engineering			Higher		
6. Training Area					
Discipline					
7. Academy					
Chemical-Biological Sciences					
8. Modality					
Mandatory	X	Course	X	Attendance	X
Elective		Course-workshop		Non-attendance	
		Workshop		Mixed	
		Seminar			
		Laboratory, field practice, etc.			
		Professional Practice			
		Academic Stay			
9. Pre-requirements					
Have accredited the Learning Units of the first semester of PEIMA.					

10. Theory hours	Practice hours	Independent study hours	Total hours	Credits
4	0	0	4	4
11. Names of the teachers who participated in the development and/or modification of the programme				
Prepared by: Biol. José Carlos Esquivel Flores. Modified by M . C. Celina Palacios Mendoza				
12. Date of development	Date of modification		Date of approval	
December 06, 2014	First modification August 11, 2015 Second modification July 20, 2017		First approval August 18, 2015 Second approval August 07, 2017	

II. LEARNING UNIT SPECIFIC DATA	
13. Presentation	
Environmental biology is considered as the study of how and to what extent organisms have developed their different biological characteristics, going back in some way to the beginnings of our universe, the Earth and the life that inhabits the planet. That is why it is considered vital that the student has biological aspects of living beings: origin, adaptation and evolution, detailing differences, weaknesses and strengths to take appropriate measures in the use of biological agents in bioremediation. This science proposes alternatives to the management of natural resources, facilitates the understanding of the mechanisms under which living beings are governed and gives the possibility of locating our role as human beings in the general web of life	
14. Integral professional competences to develop in the student	
Generic competences	Analysis and synthesis capability, oral and written communication skills, team work
Professional competences	Management of the natural environment: The graduate manages natural spaces and their use, assessing environmental risk and supported by advanced technologies with ethical and professional criteria
General purpose of the course	Offer students an overview from the theories of the origin of life, to the current application of living beings in the search to solve problems of environmental pollution. For this it is necessary that the student has present the morphology and cellular physiology, its adaptations and evolutions in the different living realms. The cell cycle and the types of reproduction of the organism.
15. Joint of axes	
The learning unit articulates the environment, social responsibility and research so that students develop viable projects within a sustainable framework.	

16. development of the course

Module 1

Introduction

Intended learning

Learning contents

Learning product(s)

Strategies

Teaching resources and materials

Reaffirm the conditions and situations that led to conceive each of the theories of the origin of life. The advance of biology in environmental sciences and the need to classify living beings.

1.1 Basic concepts of biology

1.2 Branches of biology

1.3 Biology in environmental sciences

1.4 Theories of the origin of life

1.5 Levels of organization in biology

1.6 Diversity of organisms (living kingdoms)

1.7 Classification system of living beings

Oral presentation, reading summary, Conceptual map Written exam, Glossary of biology, attendance and report of laboratory practices

Team work, individual work, exhibitions by the facilitator and reading of documents in the area, laboratory practices

Computer, internet, whiteboard, marker for whiteboard, projector, multimedia presentations.

Module 2	The cell: origin and evolution			
Intended learning	Learning contents	Learning product(s)	Strategies	Teaching resources and materials
Have enough information about cell types, similarity and differences according to the kingdom they belong to. As well as the function of cellular organelles	2.1. Cell theory	Cell scheme of the kingdoms of life. Oral presentations of cellular organelles and function, Glossary, conceptual map, Digital presentations.	As a team, they will draw pictures of cells and cell structures. Body representation of mitosis and meiosis Oral presentations	Projector of slides, computer, sheets of paper, markers and paint, material for cellular schemes and for body representation.
	2.2. Types of cells			
	2.3 Structure and function of cellular organelles			
	2.4. Cell chemical components			
	2.5. Mechanisms of transport through the cell membrane			
	2.6 Cell division: cell cycle, mitosis and meiosis			
	2.7 Types of reproduction in living beings			
	2.8 Adaptation and evolution of organisms.			

Module 3	Importance of Environmental Biology			
Intended learning	Learning contents	Learning product(s)	Strategies	Teaching resources and materials
To demonstrate the importance of biology as a basic science in various topics that are related to natural resources and in others that are a product of human activity.	3.1 In biological conservation	Glossary, Oral presentations, Written work Summary of specific topics	Delivery of topics and preparation of summaries, students as a couple or individual will present a case study where they describe the importance of biology to solve an environmental problem.	Articles and / or book chapters. Slide projector, computer.
	3.2 In biological conservation			
	3.3 In biogeochemical cycles			
	3.4 In waste matter of human origin			
	3.5 In the greenhouse effect			
17. Performance assessment:				
Performance evidence(s)	Performance criteria	Application scopes	percentage	
a) Realization and reports of practices b) Conceptual maps, synoptic tables c) Abstracts and synthesis d) Glossary of terminology e) Digital and oral expositions f) Cell schemes g) Written exams	In each performance evidence will be evaluated: Knowledge. expressed in terms of the areas of training, critical based on the scientific method. Skills and abilities. are actions that allow adapting to different scenarios (verbal, written, problem solving, search, etc.). Attitudes and values. - is expressed in terms of behavior. The attitudes are the reflection of the owns values that a person have, some of the values that we will be able to evaluate are the responsibility, the honesty, the respect and the tolerance.	Into the higher semester learning units of the PEIMA, in the labour field as long as it has to work with living beings that requires proposing and establishing management strategies to solve the environmental problems	In each evidence of the values for the criteria are: Knowledge: 50% Skills and abilities: 35% Attitudes and values: 15%. Note: these values make up 80% of the evaluation formative and summative. And in each partial the percentages of self-assessment, Coe valuation and hetero-evaluation will be added (20% in total)	

18. Evaluation criteria:	
Criterion	Value
Formative Evaluation	50% When demonstrating the improvement in the learning processes, individually and as a team.
Summative evaluation	50% At the end of each module evaluated. (Include 20%: self- assessment, Coe valuation and hetero-evaluation)
Criteria summation	100%
19. accreditation	
The accreditation of the learning unit is aligned with the provisions of the regulations of the Forestry Sciences Faculty. It is necessary to approve with a minimum of 6.0. The student who has obtained in the partial examinations a minimum average of 8.5 (eight point five) and 85% attendance, will be exempt from presenting an ordinary exam, being able to present it if he so wishes, in order to improve his qualification. Students, who prove to have effectively attended at least 80% of the classes taught during the semester, will have the right to present ordinary exams.	
20. Information sources	
Basic	1. Wikibooks.org. March 15, 2013. General Biology. 2. Starr C .; Taggart R .; Evers Ch .; Starr L. 2009. Biology The unity and diversity of life. 12a. Edition. Cengage Learning 3. Velázquez Monroy & Ordorica Vargas. 2009. Chemical Composition of the Human Organism. PDF document. IPN. 4. Campbell N. A & Reece, J. B. 2007. Biology. Editorial Panamericana Medical. Bogotá 5. Curtis H .; Barnes N.S .; Schnek A. and Flores G. 2006. Biology 6a.Edition. Editorial Panamericana Medical. 6. Purves, W.K. 2004. Life: The Science of Biology. 7th. Sinauer Associates Edition. 7. Biggs A .; Kapicka C. & Lundgren L. 2000. Biology, the dynamics of life. McGraw-Hill. México. 8. Villee Claude A. 1996. Biology 8a. Ed. McGraw-Hill.
Complementary	1. Lira S. Ricardo H. 2007. Fisiología Vegetal 2a. Edición. Editorial Trillas 2. Hill R.W.; Wyse G.A.; Anderson M. 2006. Fisiología Animal. Editorial Médica Panamericana. 3. Margalef, R. 1998. Ecología. Omega, Barcelona 4. Biodiversitas journal [en línea] URL: http://biodiversitas.mipa.uns.ac
21. Profile for the teacher who imparts this learning unit	

Professional training in the area of biology or sciences to end, with experience and attitude in teaching and preferably with skills in scientific research.