SUBJECT TEACHING GUIDE

677 - Ecology and Microbiology

Master's Degree in Environmental Engineering and Management

Academic year 2023-2024

1. IDENTIFYING DATA					
Degree	Master's Degree in Environmental Engineering and Management			Type and Year	Optional. Year 1
Faculty	School of civil Engineering				
Discipline	Complement in Training				
Course unit title and code	677 - Ecology and Microbiology				
Number of ECTS credits allocated	3	Term		Semester based (1)	
Web					
Language of instruction	Spanish	English Friendly	No	Mode of delivery	Face-to-face

Department	DPTO. CIENCIAS Y TECNICAS DEL AGUA Y DEL MEDIO AMBIENTE
Name of lecturer	XABIER EDUARDO MORENO-VENTAS BRAVO
E-mail	xabier.moreno@unican.es
Office	E.T.S. de Ingenieros de Caminos, Canales y Puertos. Planta: + 2. DOCTORANDOS ECOLOGIA (2016)
Other lecturers	MARIA LUISA PEREZ GARCIA

3.1 LEARNING OUTCOMES

- Identify, understand and use the concepts and terms of ecological theory.
  Ability to assess the state of natural systems.
  Understand the importance of microorganisms in the maintenance of ecosystems and in the balances of the biosphere.
  Know the diversity and role of microorganisms in solving environmental problems.
  Understand the contributions of Environmental Microbiology in the field of Biotechnology.

4. OBJECTIVES

Show the student a broad, dynamic and current visión of Ecological Science.
Acquire a general concept of Microbiology in relation to the environment and Environmental Engineering, regarding the diversity as well as their relationships in ecosystems, natural or artificial, and the functional role the play.

6. COURSE ORGANIZATION

CONTENTS	
1	Introduction to General Ecology
2	Ecophysiology.
3	Population Dynamics.
4	Community Ecology.
5	Prokaryotic cell and eukaryotic cell.
6	Microbial diversity.
7	Biogeochemical cycles.
8	Introduction to metabolism.
9	Group work proposal.
10	Evaluation.

7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
Theoretical exam	Written exam	Yes	Yes	70,00
Presentation of the group work	Work	No	No	30,00
TOTAL				100,00

Observations

It will be necessary to pass the theoretical exam and the presentation of the group work to obtain the final grade of the subject. Only for duly justified causes (eg health restrictions), the evaluation tests may organize remotely, with prior authorization from the center management.

Observations for part-time students

Students on a part-time basis will undergo an evaluation process that will consist of completion of a written exam of the subject taught (60% of the final grade) and in the delivery of a work (40% of the final grade) related to the topics taught.

8. BIBLIOGRAPHY AND TEACHING MATERIALS

BASIC

Acevedo, MF, y Raventos, J. 2003. Dinámica y manejo de poblaciones: modelos unidimensionales. Publicaciones de la Universidad de Alicante
Beeby, A. & A.M. Brennan. 2004. First Ecology. Ed Oxford.
Dajoz, R. 2002. Tratado de Ecología. Ed Mundi-Prensa
Odum. 1973. Ecología. Interamericana
Margalef, R. 1982. Ecología. Ed. Omega
Smith, RL. y TS. Smith. 2000. Ecología. Ed Addison Wesley

Atlas, R. y Bartha, R. 2002. Ecología microbiana y Microbiología ambiental. Addison Wesley
Davis, B.D; Dulbecco, R.; Eisen HN; Ginsberg, HS. 1996. Tratado de Microbiología. Masson
Díaz, R., Gamazo, C. y López-Goñi,I. 1995. Manual práctico de Microbiología. Masson S.A.
Grant, W.D. and Long, P.E. 1989. Microbiología Ambiental. Acribia S.A.
Madigan M.T., JM Martinko y J. Parker. 2003. Brock Microbiología de los Microorganismos. Pearson/Prentice-Hall Iberia.
Maier,R.M., Pepper, I.L. and Gerba, C.P. 2000. Environmental Microbiology. Academic Press.
Prescott, L.M., Harley, J.P. and Klein, D.A. 2004. Microbiología. Ed. McGraw-Hill Interamericana.