SUBJECT TEACHING GUIDE

M1897 - Experimental methods and statistical analysis of Environmental Variables

Master's degree in integrated management of water systems

Academic year 2017-2018

1. IDENTIFYING DATA					
Degree	Master's degree in integrated management of water systems			Type and Year	Compulsory. Year 1
Faculty	School of civil Engineering				
Discipline					
Course unit title and code	M1897 - Experimental methods and statistical analysis of Environmental Variables				
Number of ECTS credits allocated	4	Term		Semester based	
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
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Other lecturers	JOSE BARQUIN ORTIZ

3.1 LEARNING OUTCOMES
- Students will learn the basics and principles of the scientific method
- Students will learn concepts and techniques of experimental design and simulation of the aquatic environment
- Students will be able to address the statistical treatment of biotic and abiotic variables commonly used for the description and analysis of aquatic communities
- Students will be able to characterize specific sample data using from descriptive statistics to the statistical mathematical modeling based on known distribution functions

4. OBJECTIVES

The course aims to deepen into the concepts, methods and techniques used in experimental studies related to the characterization of the processes of aquatic systems.

The course also aims to show the main types of statistical analyzes that are currently applied to the study of abiotic and biotic variables that characterize aquatic systems.

6. COURSE ORGANIZATION

CONTENTS	
1	1. Types, characteristics and distribution of environmental variables
2	2. Experimental design
3	3. Test of significance and hypotesis testing
4	4. Correlation and regresion
5	5. Temporal series analysis
6	6. Multivariate analysis
7	Final exam

7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
Final exam	Written exam	Yes	Yes	20,00
Test	Activity evaluation with Virtual Media	No	Yes	10,00
Practical task. Exprimental desing of a case study	Work	No	No	20,00
Practical task. Statistical treatment of a set of environmental data	Work	No	Yes	50,00
TOTAL				100,00

Observations

En relación con los acuerdos adoptados en la sesión ordinaria de la Junta de Escuela celebrada el día 10 de junio de 2010, se establece que, con respecto a las actividades evaluación que tengan el carácter de recuperables,
- Como criterio general y salvo que en esta guía se especifique una cosa diferente, un alumno sólo podrá presentarse a la recuperación de aquellas actividades que no haya superado, es decir, en las que no haya obtenido una calificación mínima de cinco sobre diez.
- Como criterio general y salvo que en esta guía se especifique una cosa diferente, en el período de recuperación el procedimiento de evaluación de una actividad será el mismo que el de la actividad que la origina.
Nota: según el Real Decreto 1125/2003 sobre el sistema europeo de créditos y el sistema de calificaciones en las titulaciones universitarias de carácter oficial y validez en todo el territorio nacional, los resultados obtenidos por el alumno en cada una de las materias del plan de estudios se calificarán en función de la siguiente escala numérica de 0 a 10, con expresión de un decimal, a la que podrá añadirse su correspondiente calificación cualitativa:
0,0 - 4.9: Suspenso (SS). 5,0-6,9: Aprobado (AP). 7,0-8,9; Notable (NT). 9,0-10: Sobresaliente (SB)

Observations for part-time students

8. BIBLIOGRAPHY AND TEACHING MATERIALS
BASIC
VALIELA, I. 2001. Doing science. Desing, analysis and communication of scientific research. Oxford University Press.
HUGHES, S.A. 1993. Physical Models and Laboratory Techniques in Coastal Engineering. Advanced Series on Ocean Engineering. Vol. 7. World Scientific.
Luceño, A., González, F.J. 2004. Métodos estadísticos para medir, describir y controlar la variabilidad. Servicio de Publicaciones de la Universidad de Cantabria
Underwood, A.J. 2007. Experiments in ecology. Their logical desing and interpretation using analysis of variance. Cambridge University Press.
Gotelli, N.J., Ellison, A.M. 2004. A Primer of ecological statistics. Sinauer Associates, Inc.
Clarke, K.R., Warwick, R.M. 2001. Change in Marine Communities: an Approach to Statistical Analysis and Interpretation. 2nd Edition. Plymouth Marine Laboratory. UK.
Chalmers, N., Parker, P. 1988. The OU Project Guide. Fieldwork and Statistic for Ecological Projects. The Open University.
Dytham, C. 2011. Choosing and using statistics. A biologist's guide. Willey-Blackwell.