SUBJECT TEACHING GUIDE

M337 - Water Quality Models

Master's Degree in Environmental Engineering
Master's Degree in Environmental Engineering Research

Academic year 2017-2018

1. IDENTIFYING DATA					
Degree	Master's Degree in Environmental Engineering Master's Degree in Environmental Engineering Research			Type and Year	Optional. Year 1 Optional. Year 1
Faculty	School of civil Engineering				
Discipline	Speciality: Water Optional Subjects Module				
Course unit title and code	M337 - Water Quality Models				
Number of ECTS credits allocated	4,5	Term		Semester based	
Web	http://iqma.ehu.es/moodle/course/view.php?id=45				
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	JAVIER TEMPRANO GONZALEZ
E-mail	javier.temprano@unican.es
Office	E.T.S. de Ingenieros de Caminos, Canales y Puertos. Planta: + 2. DESPACHO - Area de Tecnologías del Medio Ambiente (2033)
Other lecturers	

3.1 LEARNING OUTCOMES
- Critically use the results obtained by an environmental model.
- Understanding the modeling process and necessary for the development of a model in different media stages.
- Employment in person several very relevant models in environmental engineering.

4. OBJECTIVES
Familiarize students with the concept of mathematical model.
Use different models for use in different environmental applications.
Develop critical capacity regarding the results offered a model.

6. COURSE ORGANIZATION	
CONTENTS	
1	Introduction to modeling. Calculation tools: basic concepts of programming and spreadsheet.
2	Modeling of water quality in rivers. expanded Streeter-Phelps model. QUAL2E model.
3	Practical application. Discharge of urban waste water into a river. Sensitivity analysis.
4	Ideal models (review) and real reactors. Tracers.
5	Real reactors practice.
6	Supply and sanitation networks. The EPANET and SWMM models.
7	SWMM model practical application.

7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
Evaluation method Description Test on basic knowledge of the subject	Written exam	Yes	Yes	30,00
Evaluation method Description Oral presentation of one of the developed practical work during the course	Work	No	Yes	20,00
Evaluation method Description written report of practical activities during the course.	Work	Yes	Yes	40,00
Evaluation method Description Volunteer work proposed along the course.	Work	No	No	10,00
TOTAL				100,00

Observations

Observations for part-time students

Students enrolled part-time are not required to attend class, however, is highly advisable to go, as far as possible, to practical classes developed in the classroom, especially those in which computer programs are used.

The evaluation will consist of a test of basic knowledge similar to that proposed for students with ordinary registration (weight 30%), delivery of a written report on the developed practical work during the course (weight 40%), and a presentation subject and oral defense, about fifteen minutes, on one of the practical work chosen by the teacher (weight 30%).

8. BIBLIOGRAPHY AND TEACHING MATERIALS

BASIC

TEJERO I., SUÁREZ J, JÁCOME A. y TEMPRANO J. (2004). "Ingeniería Sanitaria y Ambiental". Escuelas de Ingenieros de Caminos de La Coruña y Santander. ISBN: 84-89627-68-1

TCHOBANOGLOUS, G. y SCHROEDER, E. (1985). Water quality. Addison Wesley. EE UU. ISBN: 0-201-05433-7