

60565 - Water resources and hydraulic facilities

Información del Plan Docente

Academic Year	2017/18
Faculty / School	201 - Escuela Politécnica Superior
Degree	546 - Master in Agricultural Engineering
ECTS	6.0
Year	1
Semester	First semester
Subject Type	Compulsory
Module	---

1.General information

1.1.Introduction

1.2.Recommendations to take this course

1.3.Context and importance of this course in the degree

1.4.Activities and key dates

2.Learning goals

2.1.Learning goals

2.2.Importance of learning goals

3.Aims of the course and competences

3.1.Aims of the course

3.2.Competences

4.Assessment (1st and 2nd call)

4.1.Assessment tasks (description of tasks, marking system and assessment criteria)

5.Methodology, learning tasks, syllabus and resources

5.1.Methodological overview

The methodology followed in this course is oriented towards achievement of the learning objectives. It is focused on applied technology and it favors the acquisition of skills needed in professional practice.

The theoretical contents are taught with the support of ppt, animations, interactive examples, and encouraging the active participation of students and the incorporation of their own experience. Practical contents of the course consist on practical examples using computer tools provided in the course.

5.2.Learning tasks

The course includes the following learning tasks:

- Lectures (30 hours).
- Exercises and case studies (20 hours).
- Computer laboratory practice sessions (10 hours).
- Homework (24 hours)
- Study (60 hours).
- Assessment (6 hours).

5.3.Syllabus

The course will address the following topics:

Theory

- C1 Fundamentals of Hydrodynamic Transport
- C2 Free surface flows
- C3 Channel regulation
- C4. Free surface Irrigation
- C5 Transients in networks
- C6 Hydrological Cycle
- C7 Surface hydrology. Precipitation
- C8 Flood hydrographs
- C9 Underground hydrology. Wells characterization

Practice

- P1 Surface Flow steady
- P2 Surface Flow Transient I
- P3 Surface Flow Transient II
- P4 Surface irrigation
- P5 Water hammer

5.4.Course planning and calendar

The following table shows the weekly organization proposed for this course, which is divided into topics (identified as contents C1, C2, ...). For each of them, it is specified the hours of theory, exercises, practice (all in sessions of 2h), assessment (6h), and homework hours for study and exercises.

Week	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Total
T1 Theory	C1	C2	C2	C2	C3	C3	C4	C4	C5	C6	C7	C8	C9	C9		30
T2 Exercises	C1	C1	C2	C2	C2	C3					C7	C8	C9	C9		20
T3 Comp							P1	P2	P3	P4	P5					10

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Lab																	
T6 Homework				2h	2h	2h	2h	2h	2h	2h	2h	2h	2h	2h	2h	2h	24
T7 Study	4h	4h	4h	4h	4h	4h	4h	4h	4h	4h	4h	4h	4h	4h	4h	4h	60
T8 Assessment																6 h	6

5.5. Bibliography and recommended resources

- BB** Chow, Ven Te. Hidrología aplicada / Ven Te Chow, David R. Maidment, Larry W. Mays ; traducción Juan G. Saldarriaga ; revisión técnica Germán R. Santos G. . Santafé de Bogotá ; Madrid : McGraw-Hill, imp. 1999
- BB** French, Richard H.. Hidráulica de canales abiertos / Richard H. French ; traducción M.I. Ariel Fredman ; revisión técnica Jorge Esteban Athala Molano . México McGraw-Hill cop. 1988
- BB** Gurovich R., Luis A.. Riego superficial tecnificado / Luis A. Gurovich R. 2ª ed. México : Alfaomega, cop. 1999
- BB** Muñoz Carpena, Rafael. Hidrología agroforestal / Rafael Muñoz Carpena, Axel Ritter Rodríguez . Madrid : Mundi-Prensa ; Las Palmas de Gran Canaria : Gobierno de Canarias, Dirección General de Universidades e Investigación, 2005
- BB** Transitorios y oscilaciones en sistemas hidráulicos a presión / editores José M. Abreu, Rafael Guarga, Joaquín Izquierdo . Valencia : Universidad Politécnica, Unidad Docente Mecánica de Fluidos, D.L.1995
- BC** Abbott, Michael Barry. Computational hydraulics / Michael B. Abbott, Anthony W. Minns . [2nd ed.] Aldershot : Ashgate, 1998
- BC** Discharge characteristics / edited by D.S. Miller . Rotterdam, [etc.] : A.A. Balkema, 1994
- BC** Energy dissipators / edited by D.L. Vischer and W.H. Hager . Rotterdam, [etc.] : A.A. Balkema, 1995
- BC** Fried, Erwin. Flow resistance : a design

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- BC** guide for engineers / Erwin Fried, I. E. Idelchik . New York [etc.] : Hemisphere Publishing Corporation, cop. 1989
- BC** Miller, D. S.. Internal flow systems / D.S.Miller . 2nd ed. Bedford, UK : BHR, 1996
- BC** Naudascher, Eduard. Hydrodynamic forces / Eduard Naudascher . Rotterdam, [etc.] : A.A. Balkema, 1991
- BC** Wylie, E. Benjamin. Fluid transients in systems / by E. Benjamin Wylie and Victor L. Streeter ; with Lisheng Suo . Englewood Cliffs, NJ : Prentice Hall, cop. 1993

The updated recommended bibliography can be consulted in:
<http://psfunizar7.unizar.es/br13/egAsignaturas.php?id=9695>