29625 - Fluid Mechanics

Información del Plan Docente

Academic Year	2018/19
Subject	29625 - Fluid Mechanics
Faculty / School	110 - Escuela de Ingeniería y Arquitectura
Degree	430 - Bachelor's Degree in Electrical Engineering
ECTS	6.0
Year	3
Semester	Second semester
Subject Type	Compulsory
Module	---

1.General information

1.1.Aims of the course

1.2.Context and importance of this course in the degree

1.3.Recommendations to take this course

2.Learning goals

2.1.Competences

2.2.Learning goals

2.3.Importance of learning goals

3.Assessment (1st and 2nd call)

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

4.Methodology, learning tasks, syllabus and resources

4.1.Methodological overview

The learning process for this subject relies on the acquisition of a theroretical background, exercise practice and hands on laboratory or computer work. The early and continuing study of the subject is encouraged through the academic semester. One to one mentoring is also provided as an effective means of clearing up difficult points or complex exercises. The key components of the learning process are:

- Classroom lectures. The whole group of students is expected to attend these lectures where the basic theretical principles of the subject will be explained and discussed. Also during lectures typical exercises will be solved. Students will be prompted to discuss the theory as well as to participate in the solution of the exercises solved. Classroom lectures will be held 3 hours per week according to the timetable published by the School of Engineering management at the begining of the academic year. Attendance to classroom lectures is strongly advised for a

succesful outcome.
- Hands on laboratory and computer work sessions will be held througout the semester. These will take place in smaller groups (between 3 and 12 students on average), are compulsory and will be used in the overall grading of the subject. Work to be performed in each session is described in a written document available to the student in advance.
- Other mentoring and tutoring activities in smaller groups targeting a more detailed or deeper knowledge of particular theoretical questions or practical exercises. The lecturer office hours will be published in the schools e-learning platform at the begining of the semester.
- Autonomous work and self study time. This is the backbone of the learning process and as such enough time must be devoted to it. It is estimated that some 85 hours of self study time is needed on average to pass the subject. It comprises understanding the theoretical concepts, acquire the ability to solve exercises and writing of reports.

4.2.Learning tasks

IN-CLASS AND FACE TO FACE TO TEACHING: 2.4 ECTS (60 hours)

1) Classroom lectures (T1 type activities) (30 hours)

Ordinary classroom lectures addressed to the whole group of students. The main theoretical backgorund of the subject will be explained by the lecturer. Attendance and active participation by the student is fundamental to a succesful outcome.

2) Exercise and case solving sessions (T2 type activities) (20 hours)

Classroom sessions in which exercises are posed, solved and discussed by the lecturer. Active participation of students will be encouraged and stongly advised. Open discussions ensuing an exercise or case solution will help get hold of difficult concepts and subtleties.

3) Hands on laboratory and computer work (T3 type activities) (10 hours)

Small group working sessions in the lab or in the computer room under teacher guidance to apply concepts and practice abilities explained during classroom or exercise solving lectures.

AUTONOMOUS WORK AND SELF STUDY: 3.6 ECTS (90 hours)

4) Self study (T7 type activities) (83 hours)

5) Assessment tests (T8 type actitvities) (7 hours)

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4.3.Syllabus

SYLLABUS

1. Introduction to fluid mechanics

2. Flow kinematics

3. Forces in fluids

4. Fundamental equations of fluid mechanics

5. Basic applications: Hydrostatics. One-diemnsional flows

6. Dimensional analysis and similitude

7. Fluid mechanics instrumentation

8. Pipe flow

9. Turbomachinery and flow systems

10. Boundary layers and aerodynamics

4.4.Course planning and calendar

Classroom and laboratory sessions follow the schedule set forth by the Engineering School management that is published at the begining of every academic year. The particular schedule and student grouping of some laboratory sessions will be made available to the students during the course on the e-learning platform and announced in the classroom.

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The teacher contact details and office hours for consultation and tutoring will be published on the e-learning platform at the beginging of the academic year.

Any outstanding activities will be scheduled during the course and published on the e-learning platform and announced in the classroom.

4.5.Bibliography and recommended resources