25872 - Computer Aided Design I

Syllabus Information

Academic Year: 2019/20

Subject: 25872 - Computer Aided Design I

Faculty / School: 110 - Escuela de Ingeniería y Arquitectura

Degree: 558 - Bachelor's Degree in Industrial Design and Product Development Engineering

ECTS: 6.0

Year: 2

Semester: First 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

BASIC COMPETENCES

CB01. Students have demonstrated knowledge and understanding in a field of study that is part of the general secondary education curricular, and is typically at a level which, although it is supported by advanced textbooks, includes some aspects that involve knowledge of the forefront of their field of study.

CB02. Students can apply their knowledge to their work or vocation in a professional manner and have competences typically demonstrated through devising and defending arguments and solving problems within their field of study.

CB03. Students have the ability to gather and interpret relevant data (usually within their field of study) to inform judgments that include an important reflection on social, scientific or ethical issues.

CB04. Students can communicate information, ideas, problems and solutions to both specialist and non-specialist audiences.

CB05. Students have developed those skills needed to undertake further studies with a high degree of autonomy.

GENERAL COMPETENCES

GC06. Ability to generate the necessary documentation for the proper transmission of ideas through graphics, reports and technical documents, models and prototypes, oral presentations in Spanish and other languages.

GC07. Ability to use and master techniques, skills, tools and techniques and communication and others specific of design engineering needed for design practice.

GC08. Ability to learn continuously, to develop autonomous learning strategies and to work in multidisciplinary groups with motivation and determination to achieve goals.

SPECIFIC COMPETENCES

SC18. Ability to generate 3D geometric models for application to presentations, photorealistic rendering, simulations and tests of various kinds.

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 is based on teaching in class theoretical contents and the subsequent realization of practices proposed by the teacher, which progressively increase in complexity allowing to consolidate the theoretical content that is taught.

Enrolled students will have access from the beginning of the course through the corresponding course Moodle-unizar to all information relevant for monitoring the course:

- Program structure and content of the subject.
- Timetable
- Evaluation criteria
- Chronological planning and content of the sessions.
- Documentation of the subject.
- Course notes.
- Problems and statements of work to do.
- Bibliography of reference for the contents of the subject.
- Teacher data as tutoring schedules, etc.

4.2.Learning tasks

The course includes the following learning tasks:

1 Lectures taught to all students (1h / week). In these classes, the teacher presents the entire group of students most theoretical content needed for the development of the subject, the various modules that compose it and the interrelationship between them

2 Lessons guided practice (3h / week) in the computer classroom. They are taught in groups of about 20 people. In these and on the computer the contents are taught applied to each of the modules. The teacher with the help of a video projector makes a practical application of the most important commands. Students try to reproduce on their own computer the obtained explanations.

3 tutored classes. In them, the teacher monitors the progress of the work, gives indications for the next steps and verifies the level of learning of each student.

The distribution of the workload is set out below. The total teaching load of the subject is 6 ECTS: 150 hours for the student of which:

- 15 hours of lecture (15 sessions of 1 hour)
- 40 hours of practical classes (20 sessions of 2 hours)
- 20 hours of theoretical study.
- 70 hours of practical work.
- 2.5 hours of examination and presentation of papers.
- 2.5 hours of protection of jobs.

4.3.Syllabus

The subject program of practical sessions and theoretical sessions is detailed below:

Subject program practical sessions:

The program to develop in the practice sessions is as follows:

1.Introduction to the environment of 3D Parametric Modeling (Week 1)

2.Modeling of pieces (Week 2 to 5)

1. Process of work with sketches (creation, geometric and dimensional restriction)
2. The workflow in a parametric model based on operations:
3. Sketch operations
4. Work operations
5. Predefined operations

3. The flow of work in the Creation and management of assemblies (Week 6 to 10)

1. Insertion and Restrictions between parts
2. Exchange of parts
3. Insertion of standard parts

4. Assembly operation simulations (Week 10-15)

1. Presentations
2. Application of materials and colors.
3. Views
4. Animations and exploded views

Subject program theory sessions:

The subject program to be developed in the theory sessions is as follows:

1. Project concept in parametric modeling and its management (Week 1-2)
2. Assisted modeling of sheet metal parts. (Week 3-6)
   1. Different methodologies for obtaining sheet metal parts
   2. Configuration of sheet metal styles.
   3. Sheet metal developments
3. Mode strategies in 3D parametric CAD (Week 7-8)
   1. Adaptive design and advanced features
   2. Derived geometries
4. Assisted modeling of structures. (Week 9-10)
   1. Skeleton structure.
   2. 3D Sketch
   3. Work with standard profiles for structures.
5. Creation and management of welded sets (Week 11-12)
6. Techniques for import and export of models between applications (Week 13-14)

4.4.Course planning and calendar

The practice sessions are held in the laboratory according to the schedule established by the Center and published prior to the start date of the course on the website of the Centre and on bulletin boards.

Each teacher will inform its hours of tutoring.

The other activities will be planned depending on the number of students and will be announced with enough time.

4.5.Bibliography and recommended resources