

Program	09TT- Engineering in Telecommunication Technologies and Services
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Course number and name	
Number	95000079
Name	Computer Drawing Dibujo por Ordenador
Semester	Y2-S3

Credits and contact hours	
ECTS Credits	4.5
Contact hours	45

Coordinator's name	JULIÁN ROBLEDO CANDELA
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Specific course information

Description of course content

The subject of computer drawing is framed within Graphic Expression in engineering. This discipline is a mean of conveying information using a universal language that jumps the barriers of language and allows to see and understand a body or a model conceived by someone involved in a project or design's processes of a circuit, device, etc at a glance. Any candidate to be graduated in engineering will be reinforced in their training experience and thrive in these skills, using a Software that performs the tasks of creation and file of a drawing , design or model with great accuracy and speed.

From the "sketches" to scale drawings, maps,... but also the display of 3D models from any desirable view, with any combination of finishes and lighting and the possibility of tours inside the model, solar studies as well as playing relative movements of some parts respect to others.

Also any object drawn in 2D or 3D can be analyzed from metric (area, volume) and physical (position of the center of gravity, inertia, turning radius) properties perspective. Here the computing power of the Software used will be appreciated and can be compared to the Software used in other subjects offered at the school.

The knowledge that student acquires will allow to go one step further to have models that incorporate non-graphical information (interaction with databases), as well as combining files with geographic information to perform field modeling Telecommunication works.

List of topics to be covered

1. Organization and introduction to CAD systems
 - 1.1 Classroom organization; access to computers.
 - 1.2 Drawing machines: computer, Tablet, liner.
 - 1.3 Graphics editors.
2. CAD Software
 - 2.1 Elements of drawing. Geometry and attributes.
 - 2.2 Aid to drawing. Drawing supports

2.3 Organization. Text. 2.4 Edition. Display 2.5 Compound shapes. Measuring 2.6 Dimensioning 2.7 Treatment of cells and groups. Outline /sketch 3. 3D systems 3.1 Definition of space objects models. 3.2 3D objects generation. Boolean operations 3.3 Geometric and topological operations. 3.4 Implementation of a 3D model. 3.5 Rendering of a 3D model. 3.6 Movement. 4. Integration and applications 4.1. BD-CAD integration and projects and manufacture applications. 4.2. CAD-CAM systems.		
Prerequisites or co-requisites		
No previous subjects required to attend this subject. Prior advisable knowledge: geometry and mathematics studied in high school		
Course category in the program		
<input type="checkbox"/> R (required)	<input checked="" type="checkbox"/> E (elective)	<input type="checkbox"/> SE (selective elective)

Specific goals for the course	
Specific outcomes of instruction	
RA1 - understanding and application of the measures and the scale in a drawing. Realization of sketch	
RA2 - understanding and use of CAD tools to do geometrical constructions for an 2D or 3D model	
RA3 - capacity abstract properties and characteristics of a real body or 3D object for insertion in a flat 2D and a 3D model	
RA4 - deep dive into a 3D model including display rendering, lighting and shadows in time according to their real on Earth position; capturing images, obtaining of sections and movements around and inside the 3D model	
Student outcomes addressed by the course	
CG1- CG13, CECT1, CECT2, CECT3	

Bibliography and supplemental materials	
- Bentley. "Guía Práctica de Microstation" - Julio Blanco Fernández, Félix Sanz Adan. "CAD-CAM: GRÁFICOS, ANIMACIÓN Y SIMULACIÓN POR COMPUTADOR" . Paraninfo, ISBN: 9788497320771 - L. E. Ramos, M. Scharfhausen. "Microstation". McGraw Hill	

Teaching methodology			
<input checked="" type="checkbox"/> lectures	<input checked="" type="checkbox"/> problem solving sessions	<input checked="" type="checkbox"/> collaborative actions	<input type="checkbox"/> laboratory sessions
Other:	Case study		