

Engineering Graphics

Academic Year: (2021 / 2022)

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Department assigned to the subject: Mechanical Engineering Department

Coordinating teacher: CORRAL ABAD, EDUARDO

Type: Basic Core ECTS Credits : 6.0

Year : 1 Semester : 2

Branch of knowledge: Engineering and Architecture

REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

Students are expected to have completed Technical Drawing in the high school.

OBJECTIVES

Upon successful completion of this subject, students will be able to read, understand and develop engineering graphics, plans, drawings, drafts and sketches.

To be able to use the systems for representation: their geometric foundations, symbols and standards

To be able to draw and to define graphically ideas, designs and projects in a precise, clear , unique and standardized manner.

To know the geometric and functional basis for 3D computer aided design (CAD).

To use at least one 3D CAD program

DESCRIPTION OF CONTENTS: PROGRAMME

Theory (T): INTRODUCTION TO ENGINEERING DRAWING AND GRAPHICS: Introduction to engineering graphics and technical drawing.

Practical (P): INTRODUCTION TO COMPUTER AIDED DESIGN: Introduction to Computer Aided Design: Software overview, interface basics, basic file operations.

T - INTRODUCTION TO DRAWING SYSTEMS & DRAWING VIEW CREATION.

P - SOLID EDGE BASICS: . Introduction to Solid Edge software. Drawing 2D Elements. Sketches and profiles.

T - STANDARDIZATION: PARTS, PLANS, DRAFTING AND DESIGN.

P - SKETCHES: Getting started with part modeling. The base feature. Using PathFinder in a Part model.

T - STANDARD MECHANICAL PARTS: Standarization of mechanical, electrical, pneumatic, hydraulic and other parts.

P - FEATURES: Feature Modeling,profile, based features and threaded features.

T - PROJECT MANAGEMENT: Introduction to project management. Description of the main steps in a complete project. Good practices in Engineering.

P - SWEPT PROTUSION

T - INTRODUCTION TO DIMENSIONING: Principal, auxiliary, detail, section, broken and exploded views.

P - DIMENSIONING ACTIVITIES

T - DIMENSIONING II

P - DIMENSIONING ACTIVITIES II

T - DIMENSIONING III

P - DIMENSIONING ACTIVITIES III

T - PROJECTS REVISION: control of the projects progress.

P - INTRODUCTION TO ASSEMBLIES

T - FIT AND TOLERANCES

P - ASSEMBLIES II

T - FIT AND TOLERANCES PRACTICAL EXAMPLES

P - ASSEMBLIES DRAWING PLANS

T - GEOMETRICAL TOLERANCES

P - ERA ENVIRONMENT: Animating, rendering and exploding views. Video generation

T - PROJECT PRESENTATIONS: The final project will be presented by students.

LEARNING ACTIVITIES AND METHODOLOGY

There will be theoretical lessons and practical lesson in computer room. The objective is clearly practical and the students will demonstrate their skills by drawing.

In addition to the exercises proposed during the classes, every student must elaborate a final design project.

ASSESSMENT SYSTEM

% end-of-term-examination/test: 60

% of continuous assessment (assignments, laboratory, practicals...): 40

The performances and exercises demonstrated in the classes will be eventually evaluated by tutors. In addition a final project has to be presented by the student (see cronogram for details) and will be evaluated. This, altogether, will constitute the continuous assessment. It will contribute to 40% of the total ordinary score. A final exam will also be held (60% of total ordinary score). This exam will be practical and held in computer rooms

In order to obtain the average with the continuous evaluation, the student must obtain more than a 5 in the final exam.

The extraordinary exam will also be practical. In this case, extraordinary exam will be 60% of total score and continuous assessment - including project - will be 40% of it or, according to UC3M rules, the exam will be 100%

BASIC BIBLIOGRAPHY

- jesús Félez dibujo industrial, síntesis, 1996

ADDITIONAL BIBLIOGRAPHY

- J. Meneses Alonso, C. Álvarez Caldas y S. Rodríguez Fernández Introducción al Solid Edge, Thomson.

- J.L. Pérez Díaz y S. Palacios Cuenca 50 Ejercicios de Expresión Gráfica, Bellisco.

- siemms <https://solidedge.siemens.com/es/resources/tutorials/>, online.