UNIVERSITAT POLITÈCNICA DE CATALUNYA BARCELONATECH

Course guides
820460 - PMM - Mechanical Projects

Last modified: 02/06/2015

Unit in charge: Barcelona East School of Engineering
Teaching unit: 712 - EM - Department of Mechanical Engineering.

Degree: BACHELOR'S DEGREE IN MECHANICAL ENGINEERING (Syllabus 2009). (Optional subject).

Academic year: 2015 **ECTS Credits:** 6.0 **Languages:** Catalan

LECTURER

Coordinating lecturer: JOSE ANTONIO TRAVIESO RODRIGUEZ

Others: ALBERTO FORTUNY GARCIA - RUBEN ARROYO GONZALEZ

PRIOR SKILLS

Knoledge about mechanical desing and manufacturing

REQUIREMENTS

Have taken and passed the courses of TDMM2 and EPFM

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:
1. Understand manufacturing, metrology and quality assurance systems and processes.
2. Calculate the characteristics of, design and test machines.

Transversal:
3. ENTREPRENEURSHIP AND INNOVATION - Level 3. Using knowledge and strategic skills to set up and manage projects. Applying systemic solutions to complex problems. Devising and managing innovation in organizations.
4. TEAMWORK - Level 3. Managing and making work groups effective. Resolving possible conflicts, valuing working with others, assessing the effectiveness of a team and presenting the final results.

TEACHING METHODOLOGY

· The classes of the course is designed to develop Project Type (PBL).
· The work will be done in groups of 2 or 3 members each, at most.
· Teachers will support and guidance.
· All work that is delivered on the date indicated will not be received.

LEARNING OBJECTIVES OF THE SUBJECT

To understand and know how to calculate, apply and integrate the various structural elements, and transmission of guidance in the design of machines.
Learn to design the manufacturing process of various elements in a machine.

STUDY LOAD

Type	Hours	Percentage
Hours small group	15,0	10.00
Self study	90,0	60.00
Hours large group	45,0	30.00

Total learning time: 150 h

CONTENTS

(ENG) -Tema 1. Concepció, disseny i càlcul de les diferents parts d'una màquina

Description:
The subject Mechanical Projects will be based on the development of a mechanical engineering project. The work consists of designing a set of mechanical components and design of the manufacturing process of its components.

The work was developed from the following statement:

A company dedicated to the commercialization of industrial fans want to launch a new product to market. As engineers we are free exercise commissioned the study and design a complete new models. The features that should have this model are:
· Motor power: 2KW about
· It must be transported in a van

The design and definition of the product will be in the first phase:
First Phase: Conceptual Description of the product through a table of functional specifications. Pre-set design, the design of parts and elements in the set., Selection of appropriate materials for each of the elements and the selection of standardized components and business need.

Specific objectives:
· Develop knowledge with practical applications in different subjects of the race, and use them in a project "real."
· Learning to work together to make decisions without constant guidance of the teacher should be consulted literature, catalogs, technical information, etc..
· Become familiar with the problems and the design process.
· Learn to use standards and catalogs.
· Gain a global perspective on the development of a draft or draft.
· Learn how to submit reports and project reports.

Related activities:
Tasks to develop
1. Conceptual Description of the product through a table of functional specifications
2. Pre-set the overall design
3. Detailed design of all

Full-or-part-time: 75h
Practical classes: 30h
Self study : 45h

(ENG) -Tema 2. Disseny del procès de fabricació de les parts d'una màquina

Description:
Stages of manufacturing
Second phase: Implementation of the plans and drawings of all construction details of each piece. Design of manufacturing process / decide which components are manufactured at the company. Economic assessment of what they decide to outsource its manufacturing to outside companies.

Third phase: Preparation of all documentation must accompany the Project Report, User Machine, Maintenance Manual, Budget Presentation.

Specific objectives:
· Use tools to carry out plans.
· Learn to design the manufacturing process of a piece.

Related activities:
Tasks to develop
1. Producing a map of the whole and of each component, describing the dimensions, geometric characteristics, surface and manufacturing required
2. Deciding which process is most suitable for the manufacture / parts to be manufactured
3. Make a description of the selected process. Discuss your most important features and machinery to be used.
4. Detail the operations performed to make the / selected pieces (Route manufacturing technology for machining).
5. Calculations corresponding to the selected machine tool to be used in each operation, taking into account the available machines in the workshop

Full-or-part-time: 75h
Practical classes: 30h
Self study : 45h

GRADING SYSTEM

To evaluate the course will be considered in three areas:
· The work done in class (30%)
· The report submitted, which will consider both the content and the way it is presented (30%)
· The quality of the exhibition of the work and how defense (40%)

EXAMINATION RULES.

Presentation of the work done
· The work must be submitted properly bound and presented, according to the rules of the Final Grade (GFR).
· will have to submit a written report of work in computer space to 1.5 A4 sheet with Arial 12. The extent of memory should be approximately 20 pages. In addition, this report must be submitted in digital format also.

EXHIBITION
· must be to develop a plan that contains the basic points of the exhibition. It will not read fluently and naturally.
· To do this you have 15 minutes for each task.
· The exhibition will be a PowerPoint presentation, slides, films, or other resources and / or material support.
· must be made also a leaflet with commercial information of the machine