COURSE: MANUFACTURE AND MACHINES TECHNOLOGY
STUDIES: INDUSTRIAL ENGINEERING (2nd cycle)
CODE: 41051

TYPE: TR
YEAR: 5th
SEMESTER: 1st
CREDITS (hours/week): 6,0 (4)
ECTS CREDITS: 4,5
PROFESSOR: Dr. Guillermo Reyes Pozo
LANGUAGE: Spanish

PREREQUISITORS: Machines theory, elasticity and materials strength, Materials Technology, Theory of circuits and systems, Electronics and instrumentation


COURSES THAT HAVE TO BE STUDIED SIMULTANEOUSLY: none.

COURSE DESCRIPTION:
Several technologies have been studied to manufacture products or set of products, considering the rules of safety and quality implied in the manufacture and techno-economic criteria for products development.

COURSE OBJECTIVES:
Graduates of our program of industrial engineering acquire the knowledges and develop the abilities hereinafter mentioned:

1. To design products and manufacturing processes considering economics, environmental impact, manufacturability and sustainable manufacturing. (c)
2. To identify and solve problems related with manufacturing parts and planning manufacturing processes (e)
3. To be able to understand the broad knowledge integration needed to consider the impact of the manufacturing activity in industry. (h)
4. To use new technologies related with the manufacturing of parts (k)

CONTENTS:
1. Introduction to manufacturing processes
2. Chip removal from metallic parts
3. Traditional machining operations.
5. Special machining processes.
6. Industrial metrology.
7. Quality management according to standards ISO 9000
8. Machines technology.
9. Technic and economic and environmental criteria of the manufacturing processes
10. Additive Manufacturing

METHODOLOGY:

Teaching is carried out in master classes and classes of problems where real cases are discussed and solved in groups.
Practices are done with simulation and with the use of tool machines, metrology machines and real inverse engineering machines. These are the practices:

2. Control of a flexible production process from a SCADA Environment.
3. Additive Manufacturing.

Usually students visit companies of the products design and manufacture sector. Students must also consult periodical publications.

EVALUATION:

A.- Exams
L.- Laboratory participation

Final qualification of the course consists of the 85 % of the exam result and the 15 % of the practices qualification.

CRITERIA FOR RESULTS EVALUATION:

Objective 1:
The student must demonstrate to understand the necessary principles to design a part that can be manufactured and to organize a feasible manufacturing process [A].

Objective 2:
The student must demonstrate that can solve problems related with the design of parts, products and manufacture processes [A, L].

Objective 3:
The student must demonstrate to understand the need to fulfill the standards of quality, safety at work and environmental safety [A].

Objective 4:
The student must demonstrate to know how to use modern tools to automate manufacturing processes and process integration [A, L].

ORDINARY BIBLIOGRAPHY:

BIBLIOGRAPHY or COMPLEMENTARY MATERIAL:

PREPAIRED BY: Dr. Guillermo Reyes Pozo

DATE OF THE LAST REVIEW: May, 2012