PERSONA CIÈNCIA EMPRESA
Universitat Ramon Llull

TITLE OF COURSE: MANUFACTURING PROCESSES

MATTER: Fundamentals of Mechanical Engineering
MODULE: Common to Industry Branch
PROGRAM TITLE: Degree on Industrial Technologies Engineering

GENERAL CHARACTERISTICS*

Type: ☐ Basic training, ☑ Compulsory elective, ☐ Optional
☐ Final degree project, ☐ Practicum

Duration: Semiannual **Semester/s**: 6
Number of credits ECTS: 4,5
Language/s: Spanish, Catalan, English

DESCRIPTION

BRIEF DESCRIPTION AND JUSTIFICATION (the meaning of the course in relation to the studies. Between 100 and 200 words.)

The course is planned manufacturing processes so as to gain the basic production and manufacturing systems: types of processes manufacturing, technical and economic criteria of the same, modern manufacturing methods assisted by the use of computer and technical assurance specifications manufactured products.
The course takes advantage of the knowledge acquired in Applied Mechanics, Strength Materials Theory of Machines, Materials Science Foundations for integrating knowledge and apply them to manufacturing.
The course includes the fundamentals of manufacturing processes with emphasis on start manufacturing chips, the application of numerical control in the production and industrial metrology.

COMPETENCES (of the course made in relation to preassigned competences in this area.)

Ability to understand and apply the basic and technical skills, including other: computer graphic expression, mechanics and materials necessary for the industrial engineering practice. (E2)
• Knowledge of materials science and technology that enables them to ' learning new methods and theories of dowry and versatility to adapt to new situations. (E3)
• Ability to solve problems with initiative, decision making, creativity, and critical thinking. (E4)
• Knowledge that enable them to carry out measurements and calculations assessments, appraisals, surveys, studies, reports, work plans and other similar work. (E5)
• Ability to develop components, systems, processes or experiments achieve the requirements. (E8)
• Ability to communicate effectively, both orally and in writing, to impart knowledge and skills in the field of engineering industrial. (T1)
• Capacity for organization and planning in the area of business and other institutions and organizations (T4).
• Ability to analyze and assess the social and environmental impact of the solutions

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techniques (T6).
• Basic knowledge of production systems and manufacturing. (CRI9)

PREREQUISITES* (modules, matters, courses and knowledge needed to follow the course. Can be stated that courses must have been completed.)
Competences of the earlier educational stages.

CONTENTS (as a relationship of the chapters that constitute the contents, or topics covered, of the course to a second level detail.)
1. Introduction to manufacturing processes
2. Materials used in the manufacture of
3. Conformative processes, improved properties and coupling
4. New manufacturing processes
5. Boot machining chips
6. Application of numerical control in manufacturing
7. Industrial Metrology
8. Quality control in manufacturing processes

METHODOLOGY

TRAINNING ACTIVITIES* (Complete the table relating activities, workload in ECTS credits, and competences.)

Training activities	ECTS Credits	Competences
Sessions presentation of concepts (A1)	0,9	E2, E3, CRI9
Sessions for resolution of exercises, problems and cases (A2)	0,5	E4, E5, E8, T6, CRI9
Seminars (A3)	0,05	E4, T6
Personal mandatory activities professor-student (A4)	0,05	E2
Practical work / laboratory (A5)	0,9	E2, E5, E7, E8, T6
Oral and writing presentations (A6)	0	T1, T4
Personal study activities by students (A7)	1,7	E2, E3, CRI9
Evaluation activities (exams, tests,…) (A8)	0,2	E3, E4, E7, T1, CRI9
Jobs (A9)	0,1	E4, E5, T1, T4, CRI9
Visits to companies (A10)	0,1	T6
TOTAL	**4,5**	

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EXPLANATION OF THE TEACHING METHODOLOGY (justifying the teaching methods used in relation to the competences and course contents. Between 100 and 200 words.)

The teaching methods used in the course is based on lectures and classes solving practical problems in combination with practice. Due to the technological profile this subject will coordinate visits to manufacturing companies. The lectures and problem solving linked with explanatory dynamic classes (Introduction content), dynamic demonstration (the teacher solve a problem) and dynamic active (The student solves the problem). At the end of each class the student poses the problem resolve for a future class so encourage work outside the classroom.
The practical guide is written by a teacher targets the student. The information must be completed by the guidance literature. The student track your guide, do practical activities involving - Best-group work and generates a report.
During the visits to the teacher coordinates the company's business purpose of the visit. the Students must make a report of the visit. For personal study the student is provided with full documentation of the course theory, problems, practices. It also recommends complementary exercises of literature course

EVALUATION

EVALUATION METHODS* (Fill in the table relating evaluation methods, competences and weight in the qualification of the subject.)

Evaluation Methods	Weight	Competences
Final Exam (A)	43%	E2, E3, E4, E7, CRI9
Examination / s Partial / s / control / s scheduled / s (B)	17%	CRI9
Activities done in class (C)	3%	E2, E4
Exercises outside of class (D)	2%	E3, T1, T3, CRI 9
Reports realizats work (E)	6%	T1, CRI9
Presentations and / or oral examinations (F)	1%	E2, T1
Modeling, Proposed, etc.. (G)	5%	E7
Laboratory reports (H)	8%	E2, E4, T1
Practical work / lab (I)	13%	E2, E4
Work in other centers (Practicum) (J)		
Participations (K)	2%	E4, T6

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LEARNING OUTCOMES (Explanation of the achievements of students that allow competences evaluation, relating to competences and evaluation methods.)

• The student must demonstrate knowledge of manufacturing processes conformatives, subtractive and additive materials used as well as manufacture of industrial products. (E2, E3, E5, E8, T1, CRI9) [A, B, C, E, F, G, H, I].
• The student must demonstrate the knowledge to solve problems of selection manufacturing methods, calculation schemes cutting schedule control numerical and industrial metrology. (E2, E3, E4, E5, E7, T1, CRI9) [A, B, C, E, F, G, H, I].
• The student must demonstrate knowledge of methodologies for quality assurance in manufacturing. (E2, E3, E4, E7, T1, T6) [A, B, C, E, F, G, H, I].

QUALIFICATION (Explanation of the calculation system of qualifying the course.)

The course evaluation will consider all aspects listed in the table assessment with its corresponding weight. The greater weight of the note falls on the Final Exam (A) 43%. Also included in the final results of programmed controls (B) 17% Activities done in class (C) 3%, reports of work done (E) 6% Presentations and / or oral examinations (A) 1% Project development, models, etc.. (G) 5% Laboratory reports (H) 8% and assignments / lab (I) 13% and Participation (K) 2%.
To pass the course you must have a minimum of four in all evaluation.

EVALUATION OF COMPETENCES (Defining expressions of calculation for each competence based on corresponding evaluations activities.)

To evaluate skills (E2, E3, E4, E7, T1, CRI9) in each evaluation activities part of the grade will reflect the skills acquired. The ability to understand and apply basic computer expertise, graphic expression, mechanics and materials (E2) will be evaluated in the modeling and projects as well as the final exam. The competition will be assessed with aspects E3 Specific questions on the final exam. The competition will be evaluated on E4 Troubleshooting the final exam, scheduled and controls the work practical laboratory project and considering the methodology of solving the treatment results, the application of modeling and simulation. The competition is E7 measured with the development of numerical control programs.
Competition T1 delimiting measure the ability to present and defend the work reports. The CRI9 competition will be measured in specific sections of the exam, controls scheduled project, practices and presentations measuring knowledge of manufacturing processes. Each activity will have an assessment notice maximum ten points will be divided into amounts to quantify the degree of acquisition of skills by the student.

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TEXTBOOKS (recommended and accessible to students.)

1. Groover, M. P. “Fundamentos de manufactura moderna”. Ed.: Prentice Hall. 1997
2. Boothroyd, G. “Fundamentals of machining and machine tools”. 2ª edición. Ed.: Marcel Dekker. 1989
3. Gerling, H. “Alrededor de las máquinas herramientas”. 3ª edición. Ed.:Reverté. 2000
4. Lasheras, J. M. “Tecnología Mecánica y Metrotécnia”. Ed. :Donostiarra. 1997
5. Peláez Vara, J. “Máquinas herramientas auxiliares” Colección La máquina herramienta. Centro E.N.CEDEL. 1993
6. Molera Solá, P. “Electromecanizado: Electroerosión y mecanizado electroquímico”. Barcelona. Ed.: Marcombo. 1989
7. LAMPRECHT, J. L. “ISO 9000 en la Pequeña y Mediana Empresa”. Ed.:AENOR. Madrid, 1996.
8. WALDNER, J. B. “CIM. Principles of Computer-Integrated Manufacturing”. Ed.: J. Wiley & Sons.
9. Shigley, J. E. “Diseño en Ingeniería Mecánica”. Ed.: McGraw-Hill. 2002

HISTORICAL DOCUMENT

EARLIER CHANGES
June 20, 2011, Dr. Guillermo Reyes Pozo

LAST REVISION

February 28, 2012, Dr. Guillermo Reyes Pozo

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