



## Course guide 820426 - FAB - Manufacturing

Last modified: 11/07/2023

**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). (Compulsory subject).

**Academic year:** 2023    **ECTS Credits:** 6.0    **Languages:** Catalan, Spanish

### LECTURER

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**Coordinating lecturer:** JOSE ANTONIO TRAVIESO RODRIGUEZ

**Others:**

Primer quadrimestre:  
SERGIO CALLES VICO - Grup: M13  
JUAN VICENTE RODRIGUEZ REDONDO - Grup: M11, Grup: M12  
DANIEL ROMANILLOS DELGADO - Grup: M14, Grup: T11, Grup: T12, Grup: T13  
JOSE ANTONIO TRAVIESO RODRIGUEZ - Grup: M11, Grup: M12, Grup: M13, Grup: M14, Grup: T11, Grup: T12, Grup: T13  
ERIC VELÁZQUEZ CORRAL - Grup: M11, Grup: M12, Grup: M13, Grup: M14, Grup: T11, Grup: T12, Grup: T13

Segon quadrimestre:  
SERGIO CALLES VICO - Grup: M11, Grup: M12, Grup: M15  
JUAN VICENTE RODRIGUEZ REDONDO - Grup: M13, Grup: M14  
DANIEL ROMANILLOS DELGADO - Grup: T11, Grup: T12, Grup: T13, Grup: T14  
JOSE ANTONIO TRAVIESO RODRIGUEZ - Grup: M11, Grup: M12, Grup: M13, Grup: M14, Grup: M15, Grup: T11, Grup: T12, Grup: T13, Grup: T14

### REQUIREMENTS

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Per G\* ENG MECÀNICA  
AMPLIACIÓ D'EXPRESSIÓ GRÀFICA. DISSENY MECÀNIC - Prerequisit  
CIÈNCIA I ENGINYERIA DE MATERIALS - Precorequisit  
Per DG MECÀNIC-MATERIALS  
AMPLIACIÓ D'EXPRESSIÓ GRÀFICA. DISSENY MECÀNIC - Prerequisit  
CIÈNCIA I ENGINYERIA DE MATERIALS - Precorequisit  
Per DG MATERIALS-MECÀNIC  
AMPLIACIÓ D'EXPRESSIÓ GRÀFICA. DISSENY MECÀNIC - Prerequisit  
Per DG ELECT IND AU-MEC  
AMPLIACIÓ D'EXPRESSIÓ GRÀFICA. DISSENY MECÀNIC - Prerequisit  
CIÈNCIA I ENGINYERIA DE MATERIALS - Precorequisit  
Per DG MEC-ELECT IND AU  
AMPLIACIÓ D'EXPRESSIÓ GRÀFICA. DISSENY MECÀNIC - Prerequisit  
CIÈNCIA I ENGINYERIA DE MATERIALS - Precorequisit

### DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

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**Specific:**

CEMEC-26. Understand manufacturing, metrology and quality assurance systems and processes.  
CEMEC-19. Understand and apply graphic engineering techniques.

**Transversal:**

1. SELF-DIRECTED LEARNING - Level 3. Applying the knowledge gained in completing a task according to its relevance and importance. Deciding how to carry out a task, the amount of time to be devoted to it and the most suitable information sources.

**TEACHING METHODOLOGY**

In the theory and problems classes we will present the items listed in this subject guide, and we'll propose issues and little exercises to do in the classroom and as homework.

For explanations will be used: the blackboard, transparencies, PowerPoint, CD-ROM, Flash Drive, Video and Multimedia Systems. Also in class we will show samples of parts, components and small tools related to the subject matter.

The students will have notes and documentation in virtual space ATENEA UPC Campus.

**LEARNING OBJECTIVES OF THE SUBJECT**

General Objectives

- 1 .- Knowledge of parts manufacturing.
- 2 .- Create the ability to control and verificate products.
- 3 .- Developpe the ability to solve problems of metrology and manufacturing processes.
- 4 .- To know the rules to make the parts.
- 5 .- Ability to select the optimal manufacturing process of a piece.

**STUDY LOAD**

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

**Total learning time:** 150 h

**CONTENTS**

**(ENG) 1. Metrologia i Qualitat**

**Description:**

Technical regulations. Standardization and manufacturing series. Geometric and dimensional tolerances. Positions and qualities of the tolerances. Adjustments of fish. Types of adjustments. Recommended adjustments. Applications Metrology and metronutrients. Measurement errors Measurement, comparison and verification instruments. Measuring machines. Control of the surface state. Production quality control.

**Specific objectives:**

- Know and identify the instruments and measuring machines used to do the metrology of the pieces.
- Know the most important regulations to take into account in order to make measurements in mechanics.
- Apply to the design of a piece everything related to dimensional and geometric adjustments and tolerances, and to relate these concepts to the processes and operations necessary to manufacture a piece.

**Full-or-part-time:** 30h 30m

Theory classes: 7h 30m

Laboratory classes: 6h

Self study : 17h



#### (ENG) 2. Fabricació de peces per Formació

**Full-or-part-time:** 21h 30m  
Theory classes: 7h 30m  
Self study : 14h

#### (ENG) 3. Fabricació de peces per arrancament de Ferritja

**Full-or-part-time:** 40h 30m  
Theory classes: 10h 30m  
Laboratory classes: 4h  
Self study : 26h

#### (ENG) 4. Màquines de Control Numèric i Fabricació Flexible

**Full-or-part-time:** 17h  
Theory classes: 6h  
Laboratory classes: 2h  
Self study : 9h

#### (ENG) 5. Fabricació de peces per Deformació Plàstica

**Full-or-part-time:** 21h  
Theory classes: 6h  
Laboratory classes: 2h  
Self study : 13h

#### (ENG) 6. Processos de fabricació de materials plàstics

**Full-or-part-time:** 7h  
Theory classes: 3h  
Self study : 4h

#### (ENG) 7. Soldadura i Tall de peces

**Full-or-part-time:** 12h 30m  
Theory classes: 4h 30m  
Self study : 8h

### GRADING SYSTEM

Parcial tests 35 % / Generic proficiency (Assessed through final test): 10 % / Laboratories: 20 % / Final Test: 35 %  
This subject does not have re-evaluation test



## EXAMINATION RULES.

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There are two partial test. Each one of them is to evaluate topics 1 and 2 (1s test) and 3 and 4 (2d test). They will be developed in 1:30 hour. There are also a final test to evaluate the other topics, and at the same time you will do the Laboratories test. In this subject there are not re-evaluation exam

## BIBLIOGRAPHY

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### Basic:

- Travieso Rodríguez, José Antonio; Nápoles Alberro, Amelia. Ingeniería de los procesos de fabricación : mediante el arranque de virutas. Madrid: Delta Publicaciones, 2010. ISBN 9788492954032.
- Arias Sanvicente, Héctor; Lasheras Esteban, José M<sup>a</sup>. Tecnología mecánica y metrotecnica. 7<sup>a</sup> ed. San Sebastián: Editorial donostiarra, 1978. ISBN 8470630873.

### Complementary:

- Larburu Arrizabalaga, Nicolás. Máquinas : prontuario : técnicas, máquinas, herramientas. 4a ed. Madrid: Paraninfo, 1992. ISBN 8428319685.
- Coca Rebollero, Pedro; Rosique Jiménez, Juan. Tecnología mecánica y metrotecnica. Madrid: Pirámide, 1996. ISBN 8436816633.

## RESOURCES

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### Hyperlink:

- Modern machine shop [en línea]. Cincinnati, OH: Gardner Publications. ISSN 0026-8003. <http://search.proquest.com/publication/40497>- Advances in manufacturing [en línea]. Springer. ISSN 2195-3597. <http://link.springer.com/journal/volumesAndIssues/40436>- CIRP journal of manufacturing science and technology [en línea]. New York, N.Y.: Elsevier Science. ISSN 1755-5817.. <http://www.sciencedirect.com/science/journal/17555817>