



## Course guides

# 220261 - 220261 - Advanced Machining Systems

Last modified: 29/05/2020

**Unit in charge:** Terrassa School of Industrial, Aerospace and Audiovisual Engineering  
**Teaching unit:** 712 - EM - Department of Mechanical Engineering.

**Degree:** MASTER'S DEGREE IN INDUSTRIAL ENGINEERING (Syllabus 2013). (Optional subject).

**Academic year:** 2020    **ECTS Credits:** 5.0    **Languages:** Spanish

### LECTURER

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**Coordinating lecturer:** Xavier Salueña

**Others:** José Antonio Ortiz  
Xavier Salueña

### DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

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**Specific:**

1. Ability to learn and understand the dynamic phenomena and its formulation for their application in the development of each of the stages of conception, design, calculation and simulation of fluid dynamic.
2. Ability to learn and understand advanced fluid dynamic processes, power transmission and advanced manufacturing for application in industrial facilities based on the product and production volume elements, machines and vehicles.
3. Ability to learn and understand design tools like CAD / CAM / CAE, CFD numerical simulation and dynamic simulation for design and advanced computing facilities and fluid dynamic systems.
4. Ability to know the laws, regulations and directives in force whenever assessing the environmental implications, energy, social and ethical professional activity.
5. Ability to learn and understand the dynamic phenomena and its formulation for application in the development of each of the stages of conception, design and mechanical calculations.
6. Ability to learn and understand numerical simulation tools for the design, calculation and fabrication of components, systems and mechanical installations.

### TEACHING METHODOLOGY

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### LEARNING OBJECTIVES OF THE SUBJECT

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### STUDY LOAD

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Type	Hours	Percentage
Self study	80,0	64.00
Hours small group	15,0	12.00
Hours large group	30,0	24.00

**Total learning time:** 125 h

## CONTENTS

### (ENG) Introducción a la fabricación avanzada

**Full-or-part-time:** 12h

Theory classes: 2h

Laboratory classes: 2h

Self study : 8h

### (ENG) Programación en CNC y CAD-CAM

**Description:**

**Full-or-part-time:** 37h

Theory classes: 4h

Laboratory classes: 13h

Self study : 20h

### (ENG) Obtención y cálculo de utillajes de piezas metálicas por conformado.

**Full-or-part-time:** 6h

Theory classes: 2h

Self study : 4h

### (ENG) Diseño de piezas para la fabricación, sistemas de prototipaje avanzado.

**Full-or-part-time:** 6h

Theory classes: 2h

Self study : 4h

### (ENG) Cálculo y diseño avanzado de utillajes e instalaciones para el conformado de piezas de chapa.

**Full-or-part-time:** 12h

Theory classes: 4h

Self study : 8h

### (ENG) Cálculo y diseño avanzado de utillajes e instalaciones para piezas de moldeo.

**Full-or-part-time:** 12h

Theory classes: 4h

Self study : 8h

### (ENG) Cálculo y diseño avanzado de utillajes para la fabricación de piezas de plástico.

**Full-or-part-time:** 6h

Theory classes: 2h

Self study : 4h



**(ENG) Sistemas avanzados de mecanizado.**

**Full-or-part-time:** 22h  
Theory classes: 6h  
Self study : 16h

**(ENG) Sistemas avanzados de acabado superficial.**

**Full-or-part-time:** 6h  
Theory classes: 2h  
Self study : 4h

**(ENG) Sistemas avanzados de corte y soldadura.**

**Full-or-part-time:** 6h  
Theory classes: 2h  
Self study : 4h

## ACTIVITIES

**(ENG) ASISTENCIA A SESIONES DE PRÁCTICAS**

**Full-or-part-time:** 15h  
Laboratory classes: 15h

**(ENG) EXAMEN 1ER PARCIAL**

**Full-or-part-time:** 24h  
Theory classes: 8h  
Self study: 16h

**(ENG) PROYECTO CNC O CAM**

**Full-or-part-time:** 26h  
Theory classes: 6h  
Self study: 20h

**(ENG) EXAMEN FINAL**

**Full-or-part-time:** 40h  
Theory classes: 16h  
Self study: 24h



**(ENG) PROYECTO FABRICACIÓN PIEZA**

**Full-or-part-time:** 20h

Self study: 20h

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**GRADING SYSTEM**

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**BIBLIOGRAPHY**

**Basic:**

- Ciurana, Q.; Fernández, A.; Monzón, M. (eds.). Guía de tecnologías de rapid manufacturing. 2ª ed. Girona: Documenta Universitaria, 2008. ISBN 9788496742185.
- Gastrow, Hans. Moldes de inyección para plásticos. Barcelona: Hanser, 1992. ISBN 848745402X.
- Florit, Antonio. Tratado de matricería. Tecnofisis, 2009. ISBN 9788461268887.
- Ehmann, Kornel F. [et al.]. Micromanufacturing: international research and development. Dordrecht: Springer, 2007. ISBN 9781402059483.
- Cuatrecasas Arbós, Ll. Diseño de procesos de producción flexible. 2ª ed. Madrid: TPG Hoshin, 2000. ISBN 8487022251.
- Koellhoffer, L.; Manz, A.F.; Hornberger, E.G. Manual de soldadura. México: Limusa, 1998. ISBN 9681849264.
- Kalpakjian, S.; Schmid, S.R. Manufactura, ingeniería y tecnología [on line]. 5ª ed. México: Pearson Educación, 2008 [Consultation: 18/11/2020]. Available on: [http://www.ingebook.com/ib/NPcd/IB\\_BooksVis?cod\\_primaria=1000187&codigo\\_libro=5323](http://www.ingebook.com/ib/NPcd/IB_BooksVis?cod_primaria=1000187&codigo_libro=5323). ISBN 9789702610267.
- Steen, W.M.; Mazumder, J. Laser material processing. 4th ed. New York: Springer, 2010. ISBN 9781849960618.
- Salueña, X.; Nápoles, A. Tecnología mecánica [on line]. 2ª ed. Barcelona: Edicions UPC, 2001 [Consultation: 08/01/2016]. Available on: <http://hdl.handle.net/2099.3/36437>. ISBN 8483014491.
- Arnone, Miles. Mecanizado de alta velocidad y gran precisión. Bilbao: El MT, 2000. ISBN 9788431404772.

**Complementary:**

- Dashchenko, Anatoli (ed.). Manufacturing technologies for machines of the future: 21st century technologies. Berlin: Springer, 2003. ISBN 3540434925.