



Course guide

240E0316 - 240E0316 - Advanced Production Systems

Last modified: 16/05/2023

Unit in charge: Barcelona School of Industrial Engineering
Teaching unit: 732 - OE - Department of Management.

Degree: MASTER'S DEGREE IN AUTOMOTIVE ENGINEERING (Syllabus 2012). (Optional subject).
MASTER'S DEGREE IN MANAGEMENT ENGINEERING (Syllabus 2012). (Optional subject).
MASTER'S DEGREE IN AUTOMOTIVE ENGINEERING (Syllabus 2019). (Optional subject).

Academic year: 2023 **ECTS Credits:** 3.0 **Languages:** Spanish

LECTURER

Coordinating lecturer: Bautista Valhondo, Joaquin

Others: Bautista Valhondo, Joaquin

PRIOR SKILLS

- Numerical ability.
- Reflective, analytical and synthesis attitudes.
- Proactivity and responsibility.

REQUIREMENTS

- Basic and applied statistics (probability, distribution laws and forecasting techniques).
- Calculus and Algebra.
- Linear programming and mathematical programming.

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:

1. Adapting to structural changes in society motivated by such factors or phenomena of economic, energy or natural to solve the problems and to provide technological solutions with a high commitment to sustainability
2. Acquire concepts and techniques related to quantitative and experimental methods for analysis and decision making.
7. Apply quantitative and experimental methods for decision-making in situations where intangibles appear.
11. Apply theories and principles inherent in the production and logistics area in order to analyze complex situations and uncertainty, and make decisions using engineering tools.
14. Conceptualize engineering models, apply innovative methods in problem solving and applications suitable for the design, simulation, optimization and control of processes and systems
16. Develop and implement sustainable and socially responsible solutions.
24. Identify, analyze, diagnose, design and implement solutions in complex socio-technical systems.
25. Integrate easily to interdisciplinary and creative technical team of any company in the automotive sector, research center or laboratory tests

Generical:

- 32. Ability to apply appropriate knowledge of mathematical aspects, analytical, scientific, instrumental, technological and management, the resolution of the problems of the automotive
- 34. Conceive, design, calculate and design processes, equipment, facilities and plants related to the design and manufacture of vehicles and their systems
- 37. Learn and master the analytical tools necessary for decision making in the organizational context more efficient.
- 38. Develop independent learning skills to maintain and enhance the powers of Automotive Engineering, to allow the continued development of the profession.
- 41. Be able to manage, plan and monitor multidisciplinary teams.
- 44. Be able to perform strategic planning and apply it to both constructive systems of production, quality and environmental management

TEACHING METHODOLOGY

Lecture class: the teacher presents the theoretical and practical matter, with the active participation of students.

Practical class: the teacher meets with the participation of students, assumptions or problems related to the theoretical contents of the course.

Projects: consist in a project to solve a problem of engineering organization. Depending on the characteristics of matter, the student can do the project individually or in teams. The student or students shall prepare the project report. In addition, teachers may require an oral defense of the memory in court. The defense includes the exposure of the relevant contents of memory, and a discussion with the court on issues related to the project.

LEARNING OBJECTIVES OF THE SUBJECT

The objective of the subject is to present the basic issues related to the production systems, oriented towards the design and control, providing the student with a basic conceptual vision accompanied by instrumental aspects.

STUDY LOAD

Type	Hours	Percentage
Self study	48,0	64.00
Hours large group	27,0	36.00

Total learning time: 75 h

CONTENTS

title english

Description:

content english

Full-or-part-time: 5h 48m

Theory classes: 1h

Self study : 4h 48m



title english

Description:

content english

Full-or-part-time: 8h 48m

Theory classes: 2h

Practical classes: 1h

Laboratory classes: 1h

Self study : 4h 48m

title english

Description:

content english

Full-or-part-time: 8h 48m

Theory classes: 1h

Practical classes: 2h

Laboratory classes: 1h

Self study : 4h 48m

title english

Description:

content english

Full-or-part-time: 13h 36m

Theory classes: 2h

Practical classes: 1h

Laboratory classes: 1h

Self study : 9h 36m

title english

Description:

content english

Full-or-part-time: 7h 48m

Theory classes: 1h

Practical classes: 1h

Laboratory classes: 1h

Self study : 4h 48m

title english

Description:

content english

Full-or-part-time: 7h 48m

Theory classes: 1h

Practical classes: 1h

Laboratory classes: 1h

Self study : 4h 48m

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Full-or-part-time: 7h 48m

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content english

Full-or-part-time: 7h 48m

Theory classes: 1h

Practical classes: 1h

Laboratory classes: 1h

Self study : 4h 48m

GRADING SYSTEM

Evaluación continua: la evaluación de la adquisición de las competencias asociadas a la asignatura se realizará mediante un mínimo de tres actividades de evaluación sumativa. Cada una de estas actividades tendrá un peso en la calificación final de entre el 10% y el 60%. El sistema de evaluación tendrá que contemplar la recuperación de resultados desfavorables de actividades de evaluación.

Evaluación continuada:

$$\text{Nota final} = 0.3 \times \text{Pruebas parciales prácticas} * \text{BC} + 0.5 \times \text{BCD} + 0.2 \times \text{Prácticas}$$

BCD = Defensa del Business Case

EXAMINATION RULES.

The practices and the end work is done in groups of 4-6 people. The group members must demonstrate their involvement in the development of work, actively participating in them.

Written examinations will be carried out individually, is permitted educational material that the student deems appropriate. We will not accept computers or mobile phones.



BIBLIOGRAPHY

Basic:

- Companys Pascual, Ramon ; Joaquín Bautista Valhondo ; Albert Corominas Subias. "ARTEMISA : Un sistema de ayuda a la programación en una empresa del sector del automóvil". Dirección y organización. ISSN 1132-175X, Nº 16, 1996 , págs. 34-42.
- Langevin, A.; Riopen, D. Logistics systems: design and optimization [on line]. 1st ed. New York, NY: Springer US, 2005 [Consultation: 07/09/2022]. Available on: <https://link-springer-com.recursos.biblioteca.upc.edu/book/10.1007/b106452>. ISBN 9780387249773.
- Bautista, J. ; R. Companys ; A. Corominas. Seqüenciació d'unitats en context JIT. Barcelona: Edicions UPC, 1995. ISBN 8476534973.
- Shapiro, Jeremy F. Modelling the Supply Chain. 2nd ed. Belmont: Thomson Brooks, 2007. ISBN 049512611X.

RESOURCES

Hyperlink:

- https://ocw.upc.edu/curs_publicat/240EO316/2017/2. 240EO316 - 240EO316 - SISTEMAS AVANZADOS DE LA PRODUCCIÓN ETSEIB MUEO / MEAUT
- http://ocw.upc.edu/curs_publicat/240EO316/2016/2. Resource
- <http://www.prothius.com/docencia/?filtre=apunt&filtre2=SAP&lang=es>. Resource
- <http://www.prothius.com/arch/?filtre=video&lang=es>. Resource