



Course guide

820014 - OP - Production Organisation

Last modified: 10/10/2024

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

Degree: BACHELOR'S DEGREE IN BIOMEDICAL ENGINEERING (Syllabus 2009). (Compulsory subject).
BACHELOR'S DEGREE IN CHEMICAL ENGINEERING (Syllabus 2009). (Compulsory subject).
BACHELOR'S DEGREE IN ELECTRICAL ENGINEERING (Syllabus 2009). (Compulsory subject).
BACHELOR'S DEGREE IN ENERGY ENGINEERING (Syllabus 2009). (Compulsory subject).
BACHELOR'S DEGREE IN INDUSTRIAL ELECTRONICS AND AUTOMATIC CONTROL ENGINEERING (Syllabus 2009). (Compulsory subject).
BACHELOR'S DEGREE IN MECHANICAL ENGINEERING (Syllabus 2009). (Compulsory subject).
BACHELOR'S DEGREE IN MATERIALS ENGINEERING (Syllabus 2010). (Compulsory subject).

Academic year: 2024 **ECTS Credits:** 6.0 **Languages:** Catalan, Spanish

LECTURER

Coordinating lecturer: RAFAEL PASTOR MORENO

Others: Primer quadrimestre:
DAVID AGUSTIN RIPOLL - Grup: M11, Grup: M12, Grup: M21, Grup: M22
BRUNO DOMÉNECH LÉGA - Grup: M31, Grup: M32
XAVIER GRÈBOL NOGUERAS - Grup: T11, Grup: T12
RUBÉN MARTÍN TORT - Grup: T21, Grup: T22
RAFAEL PASTOR MORENO - Grup: M21, Grup: M22, Grup: M41, Grup: M42
GEMMA ROS ESCODA - Grup: M11, Grup: M12, Grup: M31, Grup: M32

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:

4. Understand the applications of business organisation.
5. Understand the basics of production and manufacturing systems.

Transversal:

2. ENTREPRENEURSHIP AND INNOVATION - Level 2. Taking initiatives that give rise to opportunities and to new products and solutions, doing so with a vision of process implementation and market understanding, and involving others in projects that have to be carried out.

TEACHING METHODOLOGY

The course has 4 different typologies of sessions along the semester:

- Theory: explanation of the theoretical concepts and resolution of small practical examples (20% of the time)
- Problems: resolution in group of practical exercises to deepen on the theoretical concepts (10% of the time)
- Laboratory: resolution of mathematical models using specialised software (10% of the time)
- Selflearning: guided activities as well as personal and non-in-person study (60% of the time)



LEARNING OBJECTIVES OF THE SUBJECT

Show the main ideas of production, its relationship with the logistics area and other management elements of the enterprise
Give to the students the idea of the importance of decision making when managing logistic and production systems.
Prepare the student to different techniques to schedule and control activities.
Prepare the student to solve fuzzy problems.
Teach the student quantitative techniques applicable to the solution of management problems

STUDY LOAD

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

Total learning time: 150 h

CONTENTS

Introduction

Description:

Concept of production and productive system. Typologies of productive systems. Typology of decisions in production management. Concept and classifications of costs. Criteria for the evaluation and selection of investments.

Related competencies :

CEI-17. Understand the applications of business organisation.

Full-or-part-time: 10h

Theory classes: 4h

Self study : 6h

Location and distribution

Description:

Location problems and their relationship with the system production-distribution. Multicriteria nature of location problems. Classifications. Models for costs optimisation under continuous assumptions. Models for costs optimisation of several facilities under discrete assumptions. Design of distribution routes, formulation, constraints and objectives.

Related competencies :

CEI-15. Understand the basics of production and manufacturing systems.

Full-or-part-time: 15h

Theory classes: 6h

Self study : 9h

Inventory management for independent demand

Related competencies :

CEI-15. Understand the basics of production and manufacturing systems.

Full-or-part-time: 35h

Theory classes: 14h

Self study : 21h

GRADING SYSTEM

The final mark of the course is calculated as follows:

$$NF = \max\{NF1; NF2\}$$

$$NF1 = 0,45 \cdot EF + 0,25 \cdot EP + 0,15 \cdot EL + 0,1 \cdot ACT + 0,05 \cdot ACL$$

$$NF2 = 0,45 \cdot EF + 0,35 \cdot EP + 0,2 \cdot EL$$

EF = mark of the final examen

EP = mark of the mid-term exam

EL = mark of the laboratory exam

ACT = mark of the activities of continuous evaluation of theory

ACL = mark of the activities of continuous evaluation of laboratory

In the NF mark it will be possible to add up to 0,5 additional points through the participation in an evaluable activity out of the course timetable, which is expected to be carried out. The participation in this activity will be voluntary, and the organisation of the activity as well as the way to get enrolled will be informed through Atenea. In case of having more requests than available places, a random raffle will be made between petitioners.

In case of failing, a reevaluation exam can be carried out, which allows recovering 80% of the course (the mark of the laboratory exam, EL and ACL, is excluded). Students can attend the reevaluation exam if they accomplish the requirements defined by the EEBE in the Assessment and Permanence Regulations.

BIBLIOGRAPHY

Basic:

- Companys Pascual, Ramón; Corominas Subias, Albert. Organización de la producción I: diseño de sistemas productivos. Barcelona: Edicions UPC, 1993-1994. ISBN 8476533632.
- Companys Pascual, Ramón; Corominas Subias, Albert. Organización de la producción II: dirección de operaciones. Barcelona: Edicions UPC, 1995-1996. ISBN 8476534515.

Complementary:

- Heizer, Jay H.; Render, Barry. Dirección de la producción y de operaciones: decisiones tácticas. 11ª ed. Madrid [etc.]: Pearson Educación, 2015. ISBN 9788490352854.
- Heizer, Jay H.; Render, Barry. Dirección de la producción y de operaciones: decisiones estratégicas. 11ª ed. Madrid [etc.]: Pearson Educación, 2015. ISBN 9788490352878.
- Corominas Subias, Albert; Pastor, Rafael; Lusa García, Amaial; García Villoria, Abertol; Fossas Colet, Enric; Domenech Léga, Brunol; Benedito, Ernest; Batlle Arnau, Carles. Técnicas de optimización [on line]. Madrid: Editorial Dextra, 2021 [Consultation: 15/10/2024]. Available on: https://www-ingebook-com.recursos.biblioteca.upc.edu/ib/NPcd/IB_BooksVis?cod_primaria=1000187&codigo_libro=10934. ISBN 9788417946548.
- Hillier, Frederick S.; Lieberman, Gerald J. Introducción a la investigación de operaciones. 11ª ed. México, D.F.: McGraw-Hill Interamericana de España S.L, 2023. ISBN 9781456291006.

RESOURCES

Other resources:

Transparencias de teoría

Domenech, B.; Pastor, R. "Organització de la Producció. Transparències (Curs 24-25_Q2)". Barcelona, 2025. ATENEA.

Enunciados de problemas

Departament d'Organització d'Empreses. "Organització de la Producció. Sessions de problemes. Enunciats (Curs 24-25_Q2)". Barcelona, 2024. ATENEA.

Transparencia de teoría de modelización matemática

Domenech, B.; Pastor, R. "Organització de la Producció. Introducció a la Programació Lineal (Curs 24-25_Q2)". Barcelona, 2025.



ATENEA.

Enunciados de laboratorio

Departament d'Organització d'Empreses. "Organització de la Producció. Sessions de laboratori. Enunciats (Curs 24-25_Q2)".
Barcelona, 2025. ATENEA.

Recursos web

<https://dops.upc.edu/es> /> <https://biblioteca.upc.edu/> />