Course guide
295022 - FP - Fundamentals of Polymers

Last modified: 02/03/2026

Unit in charge: Barcelona East School of Engineering
Teaching unit: 702 - CEM - Department of Materials Science and Engineering.

Degree: BACHELOR'S DEGREE IN MATERIALS ENGINEERING (Syllabus 2010). (Compulsory subject).

Academic year: 2025 **ECTS Credits:** 6.0 **Languages:** Spanish

LECTURER

Coordinating lecturer: MARIA LLUÏSA MASPOCH RULDUA

Others:

Primer quadrimestre:
NICOLAS CANDAU - Grup: M21, Grup: M22
NOEL LEÓN ALBITER - Grup: M21, Grup: M22
LEANDRO ISIDRO MARTÍNEZ OROZCO - Grup: M21, Grup: M22
MARIA LLUÏSA MASPOCH RULDUA - Grup: M21, Grup: M22
ROSE MARY RITA MICHELL URIBE - Grup: M21, Grup: M22
ORLANDO ONOFRE SANTANA PEREZ - Grup: M21, Grup: M22

Segon quadrimestre:
NICOLAS CANDAU - Grup: M11
NOEL LEÓN ALBITER - Grup: M11
LEANDRO ISIDRO MARTÍNEZ OROZCO - Grup: M11
MARIA LLUÏSA MASPOCH RULDUA - Grup: M11
ROSE MARY RITA MICHELL URIBE - Grup: M11
ORLANDO ONOFRE SANTANA PEREZ - Grup: M11

PRIOR SKILLS

General knowledge of chemistry

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:
CEB-04. Understand the fundamental principles of general, organic and inorganic chemistry and apply them in engineering.
CEI-09. Understand the fundamentals of materials science, technology and chemistry. Understand the relationship between the microstructure, synthesis or processing and the properties of materials.

Transversal:
07 AAT N1. SELF-DIRECTED LEARNING - Level 1. Completing set tasks within established deadlines. Working with recommended information sources according to the guidelines set by lecturers.

TEACHING METHODOLOGY

MD1: Expository class with material available in digital campus
MD2: Seminars and activities deliverables
MD3: Conducting laboratory practices

LEARNING OBJECTIVES OF THE SUBJECT

1. Review the basic concepts of organic chemistry
2. Know the main reactions of polymerization
3. Learn how to calculate and determine the average molecular mass of polymers
4. Know the polymer identification techniques

STUDY LOAD

Type	Hours	Percentage
Self study	90,0	60.00
Hours small group	9,0	6.00
Hours large group	51,0	34.00

Total learning time: 150 h

CONTENTS

Principios de Química Orgánica

Description:
Introduction
Main reactive groups
Attractive forces
Isomerías
Main reactions

Related activities:
Practices with molecular models

Full-or-part-time: 49h 40m
Practical classes: 15h
Laboratory classes: 2h
Guided activities: 1h
Self study : 31h 40m

Polymers

Description:
Basic definitions
Polymerization reactions
Molecular structure
Polymerization systems
Dimensions of the chain
Identification of polymers
Main reactions
Dimensions of the chain
Identification of polymers

Related activities:
1. Viscosymmetry
2. Obtaining thermoplastics (PA6.10)
3. Preparation PU foams
4 Identification by flame behavior
5. IR identification

Full-or-part-time: 105h 20m
Practical classes: 30h
Laboratory classes: 10h
Guided activities: 2h
Self study : 63h 20m

GRADING SYSTEM

The final mark (Nf) will be calculated according to the following table:
Type of evaluation: Continuous evaluation
Note deliverable activities (A) = 10%
Lab note (P) = 20%
Final Exam (ET) = 70%
Final mark (Nf): 0.1 A + 0.2 P +0.7 ET
THERE IS REEVALUATION

BIBLIOGRAPHY

Basic:
- Bruice, Paula Yurkanis. Organic chemistry : study guide and solutions manual. Harlow, England: Pearson, 2017. ISBN 9781292160436.
- Callister, William D. Introducción a la ciencia e ingeniería de los materiales [on line]. 2a ed. Barcelona [etc.]: Reverté, 1995-1996 [Consultation: 24/11/2021]. Available on: https://search.ebscohost.com/login.aspx?direct=true&scope=site&db=nlebk&db=nlabk&AN=2616389. ISBN 9786070500251.

RESOURCES

Other resources:
Presentations of the classes available in atenea
Practice script available at atenea
Script of the activities available in atenea