



Course guides

295107 - 295II015 - Technology Innovation

Last modified: 30/06/2021

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

Degree: MASTER'S DEGREE IN CHEMICAL ENGINEERING (Syllabus 2019). (Compulsory subject).
MASTER'S DEGREE IN INTERDISCIPLINARY AND INNOVATIVE ENGINEERING (Syllabus 2019). (Compulsory subject).

Academic year: 2021 **ECTS Credits:** 6.0 **Languages:** English

LECTURER

Coordinating lecturer: Jordi Olivella Nadal

Others: Jorge Olivella Nadal
Joan Martinez Sanchez
Gema Calleja Sanz

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:

CEMUEQ-09. Manage Research, Development and Technological Innovation, taking into account the transfer of technology and property and patent rights

CEMUEQ-10. To adapt to the structural changes of society motivated by factors or phenomena of an economic, energetic or natural character and to contribute with technological solutions with a high commitment of sustainability

Generical:

CGMUEQ-04. To carry out the appropriate research, undertake the design and manage the development of engineering solutions, in new or little known environments, relating creativity, originality, innovation and technology transfer

CGMUEQ-09. Communicate and discuss proposals and conclusions in multilingual, specialized and non-specialized forums, in a clear and unambiguous way

CGMUEQ-10. Adapt to changes, being able to apply new and advanced technologies and other relevant developments, with initiative and entrepreneurial spirit

CGMUEII-03. Analyze the economic, social and environmental impact of technical solutions to base strategic decisions on criteria of objectivity, transparency and professional ethics.

CGMUEII-04. Transfer technological solutions in the form of products, services, processes or facilities in an efficient and sustainable manner, with an attitude of leadership and entrepreneurial spirit.

Transversal:

01 EIN. ENTREPRENEURSHIP AND INNOVATION: Knowing about and understanding how businesses are run and the sciences that govern their activity. Having the ability to understand labor laws and how planning, industrial and marketing strategies, quality and profits relate to each other.

02 SCS. SUSTAINABILITY AND SOCIAL COMMITMENT. Being aware of and understanding the complexity of social and economic phenomena that characterize the welfare society. Having the ability to relate welfare to globalization and sustainability. Being able to make a balanced use of techniques, technology, the economy and sustainability.

TEACHING METHODOLOGY

The teaching of the course is based on different methodologies (Master classes, seminars, workshops, projects) prioritizing active learning and "learning by doing" through exercises and team projects.



LEARNING OBJECTIVES OF THE SUBJECT

At course completion, the student should be able to:

To carry out the appropriate research, undertake the design and manage the development of engineering solutions, in new or little-known environments, relating creativity, originality, innovation and technology transfer.

Adapt to changes, being able to apply new and advanced technologies and other relevant developments, with initiative and entrepreneurial spirit.

Analyse the economic, social and environmental impact of technical solutions to base strategic decisions on criteria of objectivity, transparency and professional ethics.

Transfer technological solutions in the form of products, services, processes or facilities in an efficient and sustainable manner, with an attitude of leadership and entrepreneurial spirit.

STUDY LOAD

Type	Hours	Percentage
Hours large group	34,0	22.67
Self study	96,0	64.00
Hours small group	20,0	13.33

Total learning time: 150 h

CONTENTS

Innovation tools

Description:

CX/Design thinking
Business Model Innovation
Blue Ocean
Tech trends

Full-or-part-time: 12h

Theory classes: 12h

Data driven innovation

Description:

Data-driven innovation
Methods and software
Data analysis use cases: market segmentation, churn analysis, SNA, process innovation, competitor analysis

Full-or-part-time: 11h

Theory classes: 11h



Strategy of innovation

Description:

Innovation cycle
Innovation ecosystem
Technology roadmap
Innovation strategy plan

Full-or-part-time: 11h

Theory classes: 11h

GRADING SYSTEM

Class assignments of blocks 1, 2 and 3: 20% each
Course project: 40%

BIBLIOGRAPHY

Basic:

- Mitchell, Ryan E. Web scraping with Python : collecting data from the modern web. 2nd ed. Sebastopol, CA: O'Reilly, [2018]. ISBN 9781491985571.
- Ulrich, Karl T.; Eppinger, Steven D.; Yang, Maria C. Product design and development. 7th ed. New York: McGraw-Hill Education, [2019]. ISBN 9781260566437.

Complementary:

- North, Matthew A. Data mining for the masses : with implementations in rapidminer and R. 3th ed. Cracòvia: Matthew North, [2018]. ISBN 9781727102475.
- Aydin, Olgun. R Web scraping quick start guide. Birmingham: Packt Publishing, [2018]. ISBN 9781789138733.
- Kotu, Vijay; Deshpande, Balachandre. Data science : concepts and practice. 2nd ed. Amsterdam: Morgan Kaufmann, [2018]. ISBN 9780128147610.