

66217 - The Research Process in Chemical Engineering

Información del Plan Docente

Academic Year	2017/18
Faculty / School	110 - Escuela de Ingeniería y Arquitectura
Degree	531 - Master's in Chemical Engineering
ECTS	4.5
Year	1
Semester	Second semester
Subject Type	Compulsory
Module	---

1.General information

1.1.Introduction

1.2.Recommendations to take this course

1.3.Context and importance of this course in the degree

1.4.Activities and key dates

2.Learning goals

2.1.Learning goals

2.2.Importance of learning goals

3.Aims of the course and competences

3.1.Aims of the course

3.2.Competences

4.Assessment (1st and 2nd call)

4.1.Assessment tasks (description of tasks, marking system and assessment criteria)

5.Methodology, learning tasks, syllabus and resources

5.1.Methodological overview

The methodology followed in this course is oriented towards achievement of the learning objectives. A wide range of teaching and learning tasks are implemented, such as

- Lectures, where the fundamentals of each topic will be presented as well as model cases will be analyzed for a better comprehension.
- Problem-solving (cases). Problems will be developed in the computer room, where the students follow the on-line

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- explanation for a better analysis and understanding of experimental design cases and data analysis.
- Regular submission of assignments under the profesor's supervision. It is a way to allow and verify the compression of each concept.

Students are expected to participate actively in the class throughout the semester.

5.2.Learning tasks

The course includes the following learning tasks:

- Lectures (15 hours). The theory of the different proposed topics will be taught.
- Practice sessions at the computers room (30 hours). In these classes, practical cases will be solved by students supervised by the professor. Problems or cases will be related to the theoretical part explained in lectures.
- Assignments (15 hours). 2-3 activities will be proposed and conducted under the supervision of the professor.
- Study (46.5 hours). It is strongly recommended that students study continuously throughout the semester. This includes tutorial hours.
- Assessment (6 hours).

5.3.Syllabus

The course will address the following topics:

Section 1. Scientific information searching.

- Topic 1. The research process.
- Topic 2. Scientific information sources.

Section 2. Research funding.

- Topic 3. Funding sources.
- Topic 4. National funding.
- Topic 5. International funding. Horizon 2020.

Section 3. Design and analysis of experiments.

- Topic 6. Fundamental elements of statistics.
- Topic 7. The 2k factorial design.
- Topic 8. Modelling and parameter estimation. Examples of application in Chemical Engineering.

Section 4. Publishing and disseminating research results.

- Topic 9. Scientific papers, books writing.
- Topic 10. Oral presentations.
- Topic 11. Patents.

Section 5. Additional aspects.

- Topic 12. The research career.

5.4.Course planning and calendar

Further information concerning the timetable, classroom, office hours, assessment dates and other details regarding this course, will be provided on the first day of class or please refer to the EINA website.

5.5. Bibliography and recommended resources

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|-----------|---|
| BB | Day, Robert A.. Cómo escribir y publicar trabajos científicos / Robert A. Day y Barbara Gastel . - 4ª ed. en español Washington, D.C. : Organización Panamericana de la Salud, 2008 |
| BB | Gutiérrez Pulido, Humberto. Análisis y diseño de experimentos / Humberto Gutiérrez Pulido, Román de la Vara Salazar . - 3ª ed. México [etc.] : McGraw-Hill, cop. 2012 |
| BB | Katz, Michael Jay. From research to manuscript : a guide to scientific writing / by Michael Jay Katz Milton Keynes [United kingdom] : Springer, cop. 2009 |
| BB | MacClave, James T.. Statistics / James T. McClave, Terry Sincich . - 9th ed. Upper Saddle River, NJ. : Prentice Hall, cop. 2003 |
| BB | Montgomery, Douglas C.. Control estadístico de la calidad / Douglas C. Montgomery. - 3a ed. México : Limusa, [2007] |
| BC | Laszlo, Pierre.. Communicating Science [Recurso electrónico] : A Practical Guide / by Pierre Laszlo. Berlin, Heidelberg : Springer-Verlag Berlin Heidelberg, 2006. |
| BC | Lazic, Zivorad R.. Design of experiments in chemical engineering : a practical guide / Zivorad R. Lazic . - 1st ed., 1st repr. Weinheim : Wiley-VCH, 2007 |

LISTADO DE URLs:

EsHorizonte2020. Portal español del Programa Marco de Investigación e Innovación de la Unión Europea - [http://eshorizonte2020.es]
Ministerio de Economía y Competitividad. Secretaría de Estado de Investigación, desarrollo e Innovación. - [http://www.idi.mineco.gob.es]