IPS Instituto Politécnico de Setúbal
Escola Superior de Tecnologia do Barreiro

Curriculum Unit Sheet

Process Modeling and Simulation

Academic Year:

2018/2019

Course	Master's degree on Chemical and Biological Engineering						
Scientific Area	Processes in Chemical and Biological Engineering						
ECTS Credits	7	**Curriculum Unit code**	MEBQ004	**Year**	1	**Semester**	1	**Type**	Compulsory
Prerequisites							

Contact Hours

Lecture Sessions		**Lecture-Practical Sessions**	45	**Practical and Laboratory Sessions**	15
Tutorial		**Placement**		**Seminar**	
Fieldwork		**Other**		**Autonomous Study**	129

Responsible	Raquel Alexandra Galamba Duarte	**Position**	Assistant Professor
Lecturers	Raquel Alexandra Galamba Duarte	**Position**	Assistant Professor

Learning Outcomes

Provide skills in the use of computer simulation tools in the design and project of equipment and chemical/ biotechnological processes.

Syllabus

- Importance and potential of modeling and simulation of chemical and biotechnological engineering.
- Identification of software used in the modeling and simulation of chemical and biotechnological processes.
- Fundamentals of modelling and simulation processes.
- Use of general purpose software to solve problems in modeling and simulation of chemical engineering and biotechnology.
- Commercial use of simulation software in simulation, analysis and optimization of chemical engineering and biotechnology (Aspen, SuperPro Designer or similar). Open source software.

Teaching Methodologies

The theoretical material is presented promoting the involvement and participation of all students by developing their reasoning skills and stimulating their critical thinking. Classes are often based on practical examples and demonstrations. Practical work will be carried out using appropriate software.

Contents will be available for consultation in the informatic platform Moodle.

Evaluation

Assessment consists of two tests with equal weight, contributing 50% towards the final grade, and a 50% simulation work.

Evidence of the syllabus coherence with the curricular unit's intended learning outcomes	The objective of this curricular unit is to provide skills in the application of computer tools for simulation and design of equipment. The contents are designed to comply with this objective. First it is necessary to introduce the need and usefulness of these tools in particular for the design of processes. At the end of the curricular unit students should know, identify and select among the available tools and be trained to use the most appropriate.
Evidence of the teaching methodologies coherence with the curricular unit's intended learning outcomes	The teaching methodologies are consistent with the objectives of the course since the realization of individual and group assignments allows to instil in students the autonomy and capabilities necessary for troubleshooting and analysis and design/sizing of equipment. Evaluation tests will assess the acquired skills.
Bibliography	1. W.D. Seider, J.D. Seader, D.R. Lewin, Product and Process Design Principles: Synthesis, Analysis and Evaluation, John Wiley & Sons, 2nd Edition, 2004. 2. J. Ingham, I.J. Dunn, E. Heinzle, J.E. Prenosil, Chemical Engineering Dynamics. An Introduction to Modeling and Computer Simulation, Wiley-VCH, 2nd Completely Revised Edition, 2000. 3. R.G.E. Franks, Mathematical Modeling in Chemical Engineering, John Wiley & Sons, 1967.
Observations	