

SYLLABUS

1. COURSE DESCRIPTION

Degree:	Biotechnology
Course:	Pharmaceutical Engineering and Drug Design
Module:	Optional Training
Department:	Physical, Chemical and Natural Systems
Academic Year:	2017-18
Term:	First
ECTS credits:	6
Year:	3rd year
Type:	Optional
Language:	Spanish

Course Model:	B1	
a. Basic learning (EB):		60%
b. Practical learning (EPD):		40%

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2. LECTURERS

Coordinator	
Name:	Ana Paula Zaderenko Partida
School:	School of Experimental Sciences
Department:	Physical, Chemical and Natural Systems
Area:	Physical Chemistry
Office Hours:	Mondays, Tuesdays: 11.00 – 14.00
Office:	22.3.12
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3. TOPICS

Unit1: Introduction and basic concepts. Molecules with biological activity. Drug development stages. Cost vs innovation.

Unit 2. Pharmacognosy. Concepts. Pharmacognosy objectives and its future projection.

Unit 3. Pharmaceutical forms: Drug dosage forms, advantages and disadvantages.

Unit 4. Chemical Properties and Pharmacological Activity. Theoretical models that explain transport through membranes. Lipinski law. Pharmacokinetics.

Unit 5. Pharmacodynamics. Receptors. Dose-response curve. Stereochemical aspects of drug-receptor interaction.

Unit 6. New drugs research strategies. Rational design. Prototype optimization. SAR Analysis in the drug design. Bioisosterism and QSAR.

Unit 7. Combinatorial design and scrutiny systems. Combination synthesis in solid phase. Coding chemical libraries. Applications.

Unit 8. Chiral drugs. Terminology. Obtaining from the chiral reserve. Biocatalysts.

Unit 9. Innovative drugs. Therapeutic agents for design. Biotechnology and Nanotechnology Convergence. Application examples. Future Perspective. Regulations.

Practical Learning:

Practice 1. Soxhlet extraction from a natural product

Practice 2. Natural product modification

Practice 3. Polarimetry

Practice 4. Drug synthesis

Practice 5. Characterization techniques

Sessions will last 3 hours and will be held at the Physical Chemistry laboratories, according to the dates given by the syllabus.