

SYLLABUS

1. COURSE DESCRIPTION

Degree:	Biotechnology
Course:	Microbial Biotechnology
Module:	Biochemistry and Molecular Biology
Department:	Molecular Biology and Biochemical Engineering
Academic Year:	2017-18
Term:	First
ECTS credits:	4,5
Year:	3rd year
Type:	Compulsory
Language:	Spanish

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

SYLLABUS

2. LECTURERS

Coordinator	
Name:	Eduardo Santero Santurino
School:	School of Experimental Sciences
Department:	Molecular Biology and Biochemical Engineering
Area:	Microbiology
Office Hours:	Mondays, Tuesdays: 16.00 – 19.00 (Previous appointment through e-mail)
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Lecturer	
Name:	Carlos Medina Morillas
School:	School of Experimental Sciences
Department:	Molecular Biology and Biochemical Engineering
Area:	Microbiology
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SYLLABUS

3. TOPICS

- 1.- Microorganisms of industrial interest
- 2.- Production of heterologous proteins:
Production vectors in bacteria and fungi
Strategies to maximize heterologous protein production
Prokaryotic protein production problems
- 3.- Biocatalysis:
Biotransformation
Enzymes of interest
Obtaining the biocatalyst: Genomics and Metagenomics
Improvement of the biocatalyst
- 4.- Energy production:
Ethanol and biodiesel
ABE fermentation
Hydrogen
Electricity
- 5.- Production of polymers and biosurfactants:
Bioplastics
Other biopolymers
Biosurfactants
- 6.- Acid production:
Citric
Itaconic
Gluconic
- 7.- Production of amino acids:
Corinebacterium and production of amino acids
Production of glutamate
Other amino acids
- 8.- Food Biotechnology:



SYLLABUS

Beer, wine

Dairy products: Yogurt and cheese

9.- Environmental Biotechnology:

WWTP and aerobic digestion (other aerobic digestion systems)

Nitrogen elimination systems

Digestion of activated sludge

10.- Biomining:

Acid mine drainage

Copper biomining

Other minerals biomining

11.- Sanitary Biotechnology:

Secondary metabolites: antibiotics

Vaccines