COURSE DESCRIPTION

COURSE DETAILS

Title (of the course): **REACTORES BIOLÓGICOS**
Code: 102257
Degree/Master: **GRADO DE CIENCIA Y TECNOLOGÍA DE LOS ALIMENTOS** Year: 4
Field: OPTATIVIDAD
Character: OPTATIVA Duration:
ECTS Credits: 3.0 Classroom hours: 30
Face-to-face classroom percentage: 40.0% Study hours: 45
Online platform:

LECTURER INFORMATION

Name: GARCIA GARCIA, ISIDORO (Coordinador)
Department: QUÍMICA INORGÁNICA E INGENIERÍA QUÍMICA
Area: INGENIERÍA QUÍMICA
Office location: Marie Curie building (ground floor)
E-Mail: isidoro.garcia@uco.es Phone: 957218589

PREREQUISITES AND RECOMMENDATIONS

Prerequisites established in the study plan

None

Recommendations

A previous course on Industrial Fermentations is advisable

INTENDED LEARNING OUTCOMES

CB2	To know how to apply knowledge to their work or vacation in a professional way. To have the skills that are usually demonstrated through the elaboration and defence of arguments and the resolution of problems within their area of study.
CB5	To develop the the skills necessary to undertake further studies with a high degree of autonomy.
CU2	To know and improve the user's level in the field of ICT.
CT2	Ability to resolve problems.
CT4	Ability to apply theoretical knowledge to your practice.
CT7	Ability to analyse and summarise.
CE1	To recognise and apply the basics of physics, chemistry, biology, physiology, mathematics, and statistics necessary for the comprehension and development of Science and Technology.
CE4	To recognise and apply the main basic operations of industrial processes to ensure the control of processes and food products intended for human consumption.
CE6	To know, understand and apply the classic methodology and the new technological processes aimed at improving the production and treatment of food.
CE16	To put into practice the principles and methodologies that define the professional profile of the food scientist and technologist, demonstrating in an integrated way the acquisition of the skills and competencies that are looked at throughout the degree.

COURSE DESCRIPTION

OBJECTIVES

Many food industries carry out microbial biotransformation operations; the design and basic working aspects of the needed bioreactors use to have a strong influence in the global process. For that reason, this course is aimed:

- To realise the importance of bioreactors in Food Industries.
- To know the most frequent type of bioreactors.
- To introduce the basic issues for the design and analysis of a bioreactor.

CONTENT

1. Theory contents

Topic 1.- Bioreactors in Food Industries.
Topic 2.- Type of bioreactors.
Topic 3.- Design and modelling of bioreactors.
Topic 4.- Kinetics.
Topic 5.- Example of batch process
Topic 6.- Example of semi-batch process.

2. Practical contents

Numerical problems
Laboratory bioreactors
Visiting industrial plants

METHODOLOGY

Methodological adaptations for part-time students and students with disabilities and special educational needs

The specific rules laid down by the Faculty will be followed. Additionally, special circumstances must be weighted up in each case.

Face-to-face activities

Activity	Large group	Medium group	Total
Examinations	3	-	3
Excursions	3	-	3
Lab practice	-	4	4
Lectures	12	-	12
Seminar	-	8	8
Total hours:	***18***	***12***	***30***

COURSE DESCRIPTION

Off-site activities

Activity	Total
Exercises	20
Information search	5
Self-study	20
Total hours	***45***

WORK MATERIALS FOR STUDENTS

Dossier
Exercises and activities

EVALUATION

Intended learnig	Debate	Exams	Problem solving
CB2	X	X	X
CB5		X	X
CE1	X	X	X
CE16		X	X
CE4		X	X
CE6		X	
CT2			X
CT4	X		X
CT7	X		X
CU2			X
Total (100%)	***10%***	***40%***	***50%***
Minimum grade	***0***	***4***	***4***

(*)Minimum grade necessary to pass the course

COURSE DESCRIPTION

¿Valora la asistencia?:

No

General clarifications on instruments for evaluation:

- Only short answer questions will be considered in Exams.
- Additionally, problem solving tests will be carry out
- The use of any paper printed material is allowed for Exams and Problem Solving Tests

Clarifications on the methodology for part-time students and students with disabilities and special educational needs:

The specific rules laid down by the Faculty will be followed. Additionally, special circumstances must be weighted up in each case.

Qualifying criteria for obtaining honors:

In accordance with the Article 30 paragraph 3 of the University of Cordoba Academic Regulations

BIBLIOGRAPHY

1. Basic Bibliography

- BASIC BIOTECHNOLOGY. J. Bu'lock & B. Kristiansen. Academic Press Inc. London. 1987
- INGENIERÍA BIOQUÍMICA. F. Gòdia Casablancas y J. López Santín. Editorial Síntesis. 1998
- INGENIERÍA DE BIOPROCESOS. Mario Díaz. Ediciones Paraninfo. 2012.
- BIOPROCESS ENGINEERING PRINCIPLES. P.A. Doran. Academic Press. (London), 1995

2. Further reading

None

COORDINATION CRITERIA

Visits organization

COURSE DESCRIPTION

SCHEDULE

Period	Examinations	Excursions	Lab practice	Lectures	Seminar
1# Week	0.0	0.0	0.0	2.5	0.0
2# Week	0.0	0.0	0.0	2.5	0.0
3# Week	0.0	0.0	0.0	2.5	3.0
4# Week	0.0	0.0	0.0	2.5	3.0
5# Week	0.0	0.0	0.0	2.0	2.0
6# Week	0.0	0.0	2.0	0.0	0.0
7# Week	0.0	0.0	2.0	0.0	0.0
8# Week	0.0	3.0	0.0	0.0	0.0
14# Week	3.0	0.0	0.0	0.0	0.0
Total hours:	***3.0***	***3.0***	***4.0***	***12.0***	***8.0***

The methodological strategies and the evaluation system contemplated in this Course Description will be adapted according to the needs presented by students with disabilities and special educational needs in the cases that are required.