

SUBJECT TEACHING GUIDE

435 - Genetic Engineering and Biotechnology

University Master's Degree in Molecular Biology and Biomedicine

Academic year 2025-2026

1. IDENTIFYING DATA					
Degree	University Master's Degree in Molecular Biology and Biomedicine			Type and Year	Optional. Year 1
Faculty	Faculty of Medicine				
Discipline	Optional Subjects Module				
Course unit title and code	435 - Genetic Engineering and Biotechnology				
Number of ECTS credits allocated	5	Term	Semester based (1)		
Web					
Language of instruction	English	English Friendly	No	Mode of delivery	Face-to-face

Department	DPTO. BIOLOGIA MOLECULAR
Name of lecturer	MARIA JESUS LUCAS GAY
E-mail	maria.lucas@unican.es
Office	Edificio IBBTEC. Planta: + 3. DESPACHO (308)
Other lecturers	FERNANDO SALMON MUÑIZ MATXALEN LLOSA BLAS MARIA PILAR GARCILLAN BARCIA JORGE RIPOLL ROZADA MARTA ROBLEDO GARRIDO GUILLERMO ABASCAL PALACIOS XURDE MENENDEZ CARAVIA

3.1 LEARNING OUTCOMES

- Ability to critically read and interpret recent scientific works in Genetic Engineering and Biotechnology.
- Acquisition of up-to-date knowledge on the main topics in Genetic Engineering and Biotechnology.

4. OBJECTIVES

This course aims to provide students with an overview of current topics in Genetic Engineering and Biotechnology.

6. SUBJECT PROGRAM

CONTENTS

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| 1 | <ul style="list-style-type: none"> 1- Introduction to Genetic Engineering 2- Gene Cloning 3- Applications of Genetic Engineering in Research 4- Genetic Recombineering 5- CRISPR-Cas Technology and Gene Therapy 6- Protein Biotechnology 7- Protein Therapeutics 8- Green Biotech: Genetic Engineering in Plants 9- Synthetic Biology 10- Latest breakthroughs in Genetic Engineering 11- Genetics and Society 12- The Future of Biotechnology |
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7. ASSESSMENT METHODS AND CRITERIA				
Description	Type	Final Eval.	Reassessn	%
Assistance and participation in class: Attendance in classes, active participation, as well as engagement in debates and computer practices, will be evaluated. Absence from one class will result in a penalty of 0.5 points out of 10 on the final grade.	Others	No	Yes	30,00
Computer lab sessions: The evaluation of the computer practices will be based on several tasks submitted through the Moodle platform. If a student obtains an average score of less than 5 out of 10 on these tasks, they will be required to resubmit.	Activity evaluation with Virtual Media	No	Yes	30,00
Oral presentation: The evaluation will consist of a presentation on a topic related to the course content. Each student will present in class using a PowerPoint presentation. Attendance and participation in this evaluation session are mandatory.	Oral Exam	Yes	Yes	30,00
Continuous assessment through test questions: Digital tools (Moodle and Socrative) will be used to conduct continuous assessment. A quiz of 5 to 10 questions will be given at the end of each class to evaluate the concepts covered during the session.	Activity evaluation with Virtual Media	No	No	10,00
TOTAL				100,00
Observations				
The unjustified absence of more than two days of classes will suppose failing the subject. Justified absences will be recoverable by completing a written task assigned by the teacher responsible for the subject.				
Observations for part-time students				
Part-time students must complete a written assignment assigned by the professor responsible for the course. Additionally, they are required to complete the tasks on the Moodle platform and the oral exam, which consists of a PowerPoint presentation on a topic related to the course content.				

8. BIBLIOGRAPHY AND TEACHING MATERIALS
BASIC
Molecular Biotechnology: Principles and Applications of Recombinant DNA. Sixth Edition (2022). Bernard R. Glick, Cheryl L. Patten. ASM Press. ISBN: 978-1-68367-364-4