SYLLABUS

1. Course description

Degree:	**Biotechnology**
Course:	**Genetic Engineering**
Module:	**Biochemistry and Molecular Biology**
Department:	**Molecular Biology and Biochemical Engineering**
Academic Year:	**2017-18**
Term:	**First**
ECTS credits:	**6**
Year:	**2nd year**
Type:	**Compulsory**
Language:	**Spanish**

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

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2.1. Coordinator: Manuel J. Muñoz Ruiz

2.2. Lecturers	
Name:	Manuel J. Muñoz Ruiz
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Department:	Molecular Biology and Biochemical Engineering
Area:	Genetics
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Name:	Silvia Salas Pino
School:	School of Experimental Sciences
Department:	Molecular Biology and Biochemical Engineering
Area:	Genetics
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3. Topics

Unit 1. Basic concepts and history of Genetic Engineering. Definition of Genetic Engineering. Origin, aim, tools and basic technics.

Unit 2. Purification and analysis of nucleic acids. DNA and RNA purification, Quantification of nucleic acids. Electrophoresis. Pulse field Electrophoresis. DNA labelling. Hybridization. Southern. Northern and DNA Sequencing.

Unit 3. Enzymes to manipulate the DNA. Nucleases. Restriction enzymes, Types and characteristics. Ligase. Polymerases. Modification enzymes, Topoisomerase.

Unit 4. Bacterial vectors. Strategies for clonning and recombinant identification. Characteristics and applications of the most usual bacterial vectors. Plasmids, bacteriophages, cosmids, fomsids and BACS. Detection of recombinants.

Unit 5. Clonning and expression vector of Eukaryote. Fungus vectors: YEp, YIp, YRp, YAC, expression vectors. Integration in the chromosome. Detection of transgenics.

Unit 6. DNA libraries. Genomic and coding DNA libraries. Features and limitiations. Construction of a library. Clon identification.

Tema 7. PCR and its variants. Polymerase change reaction. Polimerases types. PCR product purification. Clonning PCR fragments. Nested PCR. PCR variants: RT-PCR, RACE, MOPAC, PCR largas, PCR cuantitativa, DD-PCR.

LAB CLASES

Lab class 1. Clonning of DNA fragments in a bacterial vector.