

DATOS DE LA ASIGNATURA					
Asignatura:	Biochemical Industrial Processes			Código:	757509
Módulo:	Optional			Materia:	Biochemistry
Carácter:	Optional	Curso:	4º	Cuatrimestre:	1º
Créditos ECTS	3	Teóricos:	2.5	Prácticos:	0.5
Departamento/s:	Química y CCMM "Prof. JC Vilchez"		Área/s de Conocimiento:	Biochemistry and Molecular Biology	

PROFESOR/A		E-mail	Ubicación	Teléfono
Rosa Leon Bañares		<a href="mailto:rleon@uhu.es">rleon@uhu.es</a>	P4-N5-13	959219951
Horario Tutorías	Prof. 1	Martes, Jueves 12:00-14:00; Miércoles 16:00-18:00		
	Prof. 2			
	Prof. 3			
Campus Virtual	<input checked="" type="checkbox"/> Moodle <input type="checkbox"/> Página web:			

<b>This Subject</b>	<p>The subject "Biochemical Industrial processes" offers to the student of the degree in Chemistry a global view of the applications of the Biochemistry and the Biotechnology, focused mainly in the agrofood and pharmaceutical industries.</p> <p>Some techniques, such as PCR or DNA chips, are routinely used in clinical and agrofood analysis. Furthermore many industries of the chemical, pharmaceutical and food/feed sectors use enzymes or microorganisms in their productive processes. A Chemistry graduate should know the basis of these techniques.</p>
<b>Recomendaciones</b>	To know basic concepts in Biochemistry and Molecular Biology.
<b>BLOQUES TEMÁTICOS</b>	<ol style="list-style-type: none"> <li>I. Introduction</li> <li>II. Enzymatic Biotechnology</li> <li>III. Microbial Biotechnology</li> <li>IV. Techniques of Genetic manipulation</li> <li>V. Industrial applications of Biochemistry and Molecular Biology</li> </ol>

Temario Teórico y Planificación Temporal:	<p><b>BLOCK I. INTRODUCTION</b></p> <p>LESSON 1. INTRODUCTION TO BIOTECHNOLOGY. Concept, historical view, formal objectives of biotechnology. Main applications, future perspectives, main industrial fields of application.</p> <p><b>BLOCK II. BIOTECNOLOGÍA ENZIMÁTICA</b></p> <p>LESSON 2. BIOTECNOLOGÍA ENZIMÁTICA. Enzymatic source selection, general view of the enzymatic purification process, industrial enzymes (amylases, proteases, lipases, peptinases). Applications of enzymes in research, biomedicine and biosensors. Biocatalysis immobilization.</p> <p><b>BLOCK III. MICROBIAL BIOTECHNOLOGY</b></p> <p>LESSON 3. MANTENANCE AND CULTURE OF MICROORGANISMSS. Definition of microbial growth, Experimental methods for microbial growth determination, Disontinuous growth, growth curve, exponential phase. Matematical expression of the microbial growth. Physiological factors affecting the specific growth rate.</p> <p>LESSON 4. CONTINUOUS GROWTH OF MICROORGANISMOS. Continous reactors. Quimiostats, intriseal regulation of a quimiostat, Turbidostat. Cinetical models of the microbial growth. Equations of balance in a quimiostat. Kinds of reactors. Lab, pilot and industrial scale.</p> <p><b>BLOCK III. INGENIERÍA GENÉTICA Y BIOLOGÍA MOLECULAR</b></p> <p>LESSON 5. TRANSGENIC BACTERIA APPLICATIONS. Genetic engineering. Clonning strategies. Isolation of foreingn DNA. Clonning vectors. Industrial examples of application of genetic engineering (insuline, recombinant vaccines) , diagnostic techniques.</p> <p>LESSON 6. TRANSGENIC PLANTS. Plant kindong as a source of products. Traditional genetic engineering. Molecular genetic engineering. Methods for the genetic manipulation of plant cells. Examples: golden rice, Bt cotton.</p> <p><b>BLOCK IV. APLICACIONES INDUSTRIALES DE LA BIOTECNOLOGÍA</b></p> <p>LESSON 7. INDUSTRIAL APPLICATIONS OF BIOTECHNOLOGY. Biomass, Bioethatnol, biodiesel and other biofuels, Obtaining primary and secondary metabolites, antibiotics. Traditional biotecnology, Fermentative processes in food. Wine and vinification. Production of beer. Vinager. Vegetal fermentations.</p>				
	Actividades Dirigidas y Planificación Temporal	<p>Se diseñarán distintas actividades (mesas redondas sobre noticias biotecnológicas publicadas en prensa, sobre bioquímicos o biotecnólogos insignes, etc), que se realizarán en grupos reducidos autorizados por el profesor. Estas actividades ayudarán a reforzar y asimilar los contenidos de la asignatura</p>			
Distribución Horas Presenciales	Grupo Grande	Grupo Pequeño	Laboratorio	Lab. Informática	Campo
	11.8 h	6.9 h			5 h



*Grado de Química*

*Curso 2013-2014*



**Bibliografía:**

1. **Biología Básica** J. Bu`lok and B. Kristiansen. Ed. Acribia, Zaragoza, 1987
2. **Basic Biotechnology.**
3. **Biotechnology from A to Z. 2ªEd.** William Bains Oxford University Press, London, 2000
4. **Environmental Micorbiology** R.M. Maier, I.L. Pepper, C.P. Gerba Academic Press,2000
5. [www.wiley-vch.de/books/biotech](http://www.wiley-vch.de/books/biotech)
6. [www.uah.es/otrosweb/biomodel](http://www.uah.es/otrosweb/biomodel)
7. <http://www.sebiot.org/>