



## 1. General information

Course: BIOLOGY

Type: BASIC

Degree: 398 - UNDERGRADUATE DEGREE PROGRAMME IN CHEMISTRY

Center: 1 - FACULTY OF SCIENCE AND CHEMICAL TECHNOLOGY

Year: 1

Main language: Spanish

Use of additional  
languages:

Web site:

Code: 57303

ECTS credits: 6

Academic year: 2020-21

Group(s): 20 23

Duration: First semester

Second language: English

English Friendly: Y

Bilingual: N

Lecturer: NILDA DEL CARMEN GALLARDO ALPIZAR - Group(s): 20 23

Building/Office	Department	Phone number	Email	Office hours
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Lecturer: DAVID AGUSTIN LEON NAVARRO - Group(s): 20 23

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## 2. Pre-Requisites

It is recommended to have general knowledge of Biology and Chemistry.

## 3. Justification in the curriculum, relation to other subjects and to the profession

Not established

## 4. Degree competences achieved in this course

## Course competences

Code	Description
CB01	Prove that they have acquired and understood knowledge in a subject area that derives from general secondary education and is appropriate to a level based on advanced course books, and includes updated and cutting-edge aspects of their field of knowledge.
CB03	Be able to gather and process relevant information (usually within their subject area) to give opinions, including reflections on relevant social, scientific or ethical issues.
E03	Handle chemicals safely and with respect to the environment
E12	Understand the chemistry of the main biological processes
G05	Acquire and adapt new knowledge and techniques of any scientific-technical discipline with incidence in the chemical field
T02	Domain of Information and Communication Technologies (ICT)
T03	Proper oral and written communication
T04	Ethical commitment and professional ethics

## 5. Objectives or Learning Outcomes

## Course learning outcomes

## Description

Analyze the central role of ATP in the global energy metabolism of the cell.

Know the strategies used in the acquisition of energy: photosynthesis, chemosynthesis, breathing.

Know how to explain the control points of the cell cycle and the consequences of escaping to these controls.

Understand the importance of coupled processes in living things.

Know how cell membranes are structurally and functionally organized.

Know how to describe the structure and functions of cellular organelles and cytoskeleton.

Know how to describe the organization of genetic material in prokaryotic and eukaryotic cells.

Know how to describe the sequence of events that takes place in cell signaling.

Know how to explain the influence that water exerts, due to its properties, on biomolecules.

Know how to explain the control points of the cell cycle and the consequences of escaping to these controls.

Know how to identify the structure and function of biological molecules.

Know how to identify the stages of the eukaryotic cell cycle and describe its main processes.

Know how to recognize different types of signaling molecules.

Being able to compare the general characteristics of prokaryotic and eukaryotic cells and contrast plant and animal cells.  
 Being able to predict the thermodynamically favorable sense of a process in biological systems.

## 6. Units / Contents

**Unit 1: Introduction to cells.**

**Unit 2: Chemical components of cells**

**Unit 3: Cellular energy.**

**Unit 4: Cell surface. Plasma membrane.**

**Unit 5: Cellular organelles.**

**Unit 6: Cytoskeleton**

**Unit 7: Cell signalling**

**Unit 8: Cell cycle**

**Unit 9: Cell death**

## 7. Activities, Units/Modules and Methodology

Training Activity	Methodology	Related Competences (only degrees before RD 822/2021)	ECTS	Hours	As	Com	Description
Class Attendance (theory) [ON-SITE]	Lectures	CB01 E12 G05	1.16	29	Y	N	They have a duration of 55 minutes. PowerPoint presentations and other computer media are used.
Workshops or seminars [ON-SITE]	Combination of methods	CB03 E12 G05 T02 T03	0.44	11	Y	N	The aim is to promote self-learning in the student, as well as to familiarize them with the use of widely used scientific databases. If a grade equal to or greater than 5 is not obtained, students may examine the content in the final test.
Laboratory practice or sessions [ON-SITE]	Practical or hands-on activities	E03 E12 G05 T03 T04	0.48	12	Y	Y	The practices will be developed in the laboratory and through them different practical aspects related to the subject will be covered.
Progress test [ON-SITE]	Assessment tests	CB01 E12 G05	0.04	1	Y	N	First partial test that allows evaluating the theoretical contents of the first 4 theory topics of the subject. It takes place coinciding with the equator of the subject. If the progress test is not passed, the student will be able to examine the content of the final test again.
Progress test [ON-SITE]	Assessment tests		0.04	1	Y	N	Second progress test that takes place during the last days of theory class. The students are examined for the theoretical contents studied from topic 4. If a grade of 5 is not obtained, the student may be examined for the contents in the final test.
Study and Exam Preparation [OFF-SITE]	Self-study	CB01 E12 G05	3.6	90	N	-	Preparation of seminars and study of progress tests.
Group tutoring sessions [ON-SITE]	Group tutoring sessions		0.12	3	N	-	Discussion and resolution of concepts and doubts. They take place coinciding with the beginning, equator and end of the course. If less than 1 hour is needed to clear up all doubts, the rest of the time is spent in theory classes. They will be notified well in advance.
Progress test [ON-SITE]	Assessment tests	E12 G05	0.04	1	Y	N	Evaluation of the practical contents by means of a theoretical test. If the progress test is not passed, the students can be tested again in the final test.
Final test [ON-SITE]	Assessment tests	E12 G05 T03	0.08	2	Y	N	Final test that coincides with the ordinary call of the subject. This test is optional for students who meet the two criteria a) have passed the three progress tests (theory and practice) b) the sum of the different activities carried out during the course (progress tests, practical exams and seminars) weighted according to their value offers a value equal to or greater than 5. Students who pass the three progress tests but who, when adding the different weighted

							activities do not obtain a grade of 5, must take the final test, which is an integrative test that covers all the theoretical contents studied. The final test also allows students to take exams of the progress tests and the seminars if they have not been passed previously.
Total:			6	150			
Total credits of in-class work: 2.4			Total class time hours: 60				
Total credits of out of class work: 3.6			Total hours of out of class work: 90				

As: Assessable training activity

Com: Training activity of compulsory overcoming (It will be essential to overcome both continuous and non-continuous assessment).

8. Evaluation criteria and Grading System			
Evaluation System	Continuous assessment	Non-continuous evaluation*	Description
Progress Tests	18.50%	0.00%	
Assessment of problem solving and/or case studies	15.00%	0.00%	
Progress Tests	15.00%	0.00%	
Progress Tests	18.50%	0.00%	
Final test	0.00%	100.00%	
Final test	33.00%	0.00%	
<b>Total:</b>	<b>100.00%</b>	<b>100.00%</b>	

According to art. 4 of the UCLM Student Evaluation Regulations, it must be provided to students who cannot regularly attend face-to-face training activities the passing of the subject, having the right (art. 12.2) to be globally graded, in 2 annual calls per subject, an ordinary and an extraordinary one (evaluating 100% of the competences).

9. Assignments, course calendar and important dates	
Not related to the syllabus/contents	
Hours	hours
<b>Unit 1 (de 9): Introduction to cells.</b>	
<b>Activities</b>	<b>Hours</b>
Class Attendance (theory) [PRESENCIAL][Lectures]	2
Workshops or seminars [PRESENCIAL][Combination of methods]	1
Laboratory practice or sessions [PRESENCIAL][Practical or hands-on activities]	3
Group tutoring sessions [PRESENCIAL][Group tutoring sessions]	1
Group 20:	
<b>Initial date:</b> 28-09-2020	<b>End date:</b> 02-10-2020
Group 23:	
<b>Initial date:</b> 28-09-2020	<b>End date:</b> 2-10-2020
<b>Unit 2 (de 9): Chemical components of cells</b>	
<b>Activities</b>	<b>Hours</b>
Class Attendance (theory) [PRESENCIAL][Lectures]	4
Workshops or seminars [PRESENCIAL][Combination of methods]	2
Laboratory practice or sessions [PRESENCIAL][Practical or hands-on activities]	3
Group 20:	
<b>Initial date:</b> 05-10-2020	<b>End date:</b> 14-10-2020
Group 23:	
<b>Initial date:</b> 05-10-2020	<b>End date:</b> 14-10-2020
<b>Unit 3 (de 9): Cellular energy.</b>	
<b>Activities</b>	<b>Hours</b>
Class Attendance (theory) [PRESENCIAL][Lectures]	4
Workshops or seminars [PRESENCIAL][Combination of methods]	2
Laboratory practice or sessions [PRESENCIAL][Practical or hands-on activities]	3
Group 20:	
<b>Initial date:</b> 15-10-2020	<b>End date:</b> 23-10-2020
Group 23:	
<b>Initial date:</b> 15-10-2020	<b>End date:</b> 23-10-2020
<b>Unit 4 (de 9): Cell surface. Plasma membrane.</b>	
<b>Activities</b>	<b>Hours</b>
Class Attendance (theory) [PRESENCIAL][Lectures]	5
Workshops or seminars [PRESENCIAL][Combination of methods]	1
Laboratory practice or sessions [PRESENCIAL][Practical or hands-on activities]	3
Progress test [PRESENCIAL][Assessment tests]	1
Group tutoring sessions [PRESENCIAL][Group tutoring sessions]	1
Group tutoring sessions [PRESENCIAL][Group tutoring sessions]	1
Group 20:	
<b>Initial date:</b> 26-10-2020	<b>End date:</b> 06-11-2020

Group 23:	
<b>Initial date:</b> 26-10-2020	<b>End date:</b> 06-11-2020
<b>Unit 5 (de 9): Cellular organelles.</b>	
<b>Activities</b>	<b>Hours</b>
Class Attendance (theory) [PRESENCIAL][Lectures]	5
Group 20:	
<b>Initial date:</b> 06-11-2020	<b>End date:</b> 18-11-2020
Group 23:	
<b>Initial date:</b> 03-11-2020	<b>End date:</b> 18-11-2020
<b>Unit 6 (de 9): Cytoskeleton</b>	
<b>Activities</b>	<b>Hours</b>
Class Attendance (theory) [PRESENCIAL][Lectures]	3
Workshops or seminars [PRESENCIAL][Combination of methods]	1
Group 20:	
<b>Initial date:</b> 19-11-2020	<b>End date:</b> 26-11-2020
Group 23:	
<b>Initial date:</b> 19-11-2020	<b>End date:</b> 26-11-2020
<b>Unit 7 (de 9): Cell signalling</b>	
<b>Activities</b>	<b>Hours</b>
Class Attendance (theory) [PRESENCIAL][Lectures]	3
Workshops or seminars [PRESENCIAL][Combination of methods]	2
Group 20:	
<b>Initial date:</b> 27-11-2020	<b>End date:</b> 09-12-2020
Group 23:	
<b>Initial date:</b> 27-11-2020	<b>End date:</b> 09-12-2020
<b>Unit 8 (de 9): Cell cycle</b>	
<b>Activities</b>	<b>Hours</b>
Class Attendance (theory) [PRESENCIAL][Lectures]	2
Group tutoring sessions [PRESENCIAL][Group tutoring sessions]	1
Group 20:	
<b>Initial date:</b> 18-12-2020	<b>End date:</b> 13-01-2021
Group 23:	
<b>Initial date:</b> 18-12-2020	<b>End date:</b> 13-01-2021
<b>Unit 9 (de 9): Cell death</b>	
<b>Activities</b>	<b>Hours</b>
Class Attendance (theory) [PRESENCIAL][Lectures]	1
Workshops or seminars [PRESENCIAL][Combination of methods]	2
Progress test [PRESENCIAL][Assessment tests]	1
Group tutoring sessions [PRESENCIAL][Group tutoring sessions]	1
Final test [PRESENCIAL][Assessment tests]	2
Group 20:	
<b>Initial date:</b> 22/11/2019	<b>End date:</b> 5/12/2019
Group 23:	
<b>Initial date:</b> 22/11/2019	<b>End date:</b> 5/12/2019
<b>Global activity</b>	
<b>Activities</b>	<b>hours</b>
Group tutoring sessions [PRESENCIAL][Group tutoring sessions]	3
Progress test [PRESENCIAL][Assessment tests]	1
Class Attendance (theory) [PRESENCIAL][Lectures]	29
Workshops or seminars [PRESENCIAL][Combination of methods]	11
Laboratory practice or sessions [PRESENCIAL][Practical or hands-on activities]	12
Progress test [PRESENCIAL][Assessment tests]	1
Final test [PRESENCIAL][Assessment tests]	2
<b>Total horas: 59</b>	

10. Bibliography and Sources						
Author(s)	Title/Link	Publishing house	Citv	ISBN	Year	Description
Bruce Alberts et al.	Introducción a la Biología Celular	Medica panamericana		978-607-7743-18-7	2012	Libro muy recomendable para la asignatura. Posee un texto claro y muy sencillo con ilustraciones que ayudan a comprender los principales procesos celulares.
Cooper & Hausman	La célula	Marban		978-84-16042-63-0	2017	Libro recomendable para cursar la asignatura Este libro es muy recomendable para aquellos que quieran conocer las características estructurales y

Alberts, Bruce.Wilson, John.Hunt, Tim.Montes Castillo, Juan Francisco.Llobera i Sande, Miquel.	Biología Molecular de la célula	omega	978-84-282-1638-8	2016	funcionales de la célula. Posee una extensa información muy bien estructurada lo que permite su lectura para aquellos que se incian en el estudio de la célula. The Cell, Seventh Edition provides a balance of concepts and details that meets the needs of today's students and their teachers. Written by an active scientist and experienced educator, this textbook combines readability and cohesiveness with comprehensive and up-to- date science
Geoffrey M. Cooper, Robert E. Hausman	The Cell: A Molecular Approach	Sinauer	1605355631	2015	Essential Cell Biology provides a readily accessible introduction to the central concepts of cell biology, and its lively, clear writing and exceptional illustrations make it the ideal textbook for a first course in both cell and molecular biology As the amount of information in biology expands dramatically, it becomes increasingly important for textbooks to distill the vast amount of scientific knowledge into concise principles and enduring concepts.As with previous editions, Molecular Biology of the Cell, Sixth Edition accomplishes this goal with clear writing and beautiful illustrations
Bruce Alberts, Dennis Bray, Karen Hopkin, Julian Lewis, Alexander D. Johnson, Martin Raff, Keith Roberts, Peter Walter	Essential Cell Biology	Taylor & Francis Group	0815345739	2016	
Bruce Alberts, Alexander Johnson, Julian Lewis, Martin Raff, Keith Roberts, Peter Walter,	Molecular Biology of the Cell	Garland Science	1317563751	2017	