1. BASIC INFORMATION

Subject	Cell Biology
Degree	Bachelor Degree in Biomedicine
School/Faculty	Faculty of Biomedical and Health Sciences
Course	First
ECTS	6 ECTS
Character	Compulsory
Languages	English
Mode	On-site learning
Semester	1
Academic year	25-26
Coordinating teacher	María Jesús Sanz
Teachers	Beatriz Martín, Alejandra Quiroga and María Jesús Sanz

2. PRESENTATION

Cell Biology is a core subject (6 ECTS-150h) that includes part of the necessary training in basic subjects of the Health Sciences branch of knowledge. Cell Biology is part of Module I, together with Molecular Biology and the Fundamentals of Microbiology, taught during the first year of the curriculum of the Bachelor Degree in Biomedicine.

This subject studies the structure, function, and behaviour of cells, making it a fundamental topic for understanding other disciplines such as genetics and immunology, amongst many others.

The objective of this course is to provide students with a foundation for the understanding of the current state-of-the-art on Cell Biology, integrating knowledge acquired in other subjects without losing sight of the latest developments in the field.

3. LEARNING OUTCOMES

Knowledge

CON01. Recognizing cell structures and functions that enable the proper functioning of the human body, and the relationship between its alterations and the origin of different pathologies, from a molecular, cellular, tissue, and organic perspective.

Skills

HAB01. Application of diverse biomedical laboratory techniques for the diagnosis, treatment, and prevention of human diseases.

Competencies

CP01. Acquire the ability to describe and analyse the structural and functional properties of organic and inorganic molecules and the biochemical processes that determine the basis of cellular function, both at the metabolic and at the gene expression regulation levels.

4. CONTENTS

- Eukaryotes cells: Cell structure and function. Relationships amongst cells and their environments. Intracellular signalling. Cell receptors.
- Transport mechanisms across membranes. Ionic basis of membrane potential, ion channels, exocytosis.
- Mechanisms of cell division. Cell cycle and its control mechanisms. Gametogenesis and fertilization. Energetic, biosynthetic and catalytic mechanisms.
- Aging effects. Apoptosis, necrosis, senescence and autophagy.
- Stem cells. Cell differentiation.
- Microscopy and basic laboratory skills and techniques.
- Introduction to human histology.

5. TEACHING-LEARNING METHODOLOGIES

The following are the types of teaching-learning methodologies that will be applied:

- Lectures
- Cooperative learning
- Problem-based learning
- Learning based on workshop-/laboratory-based learning

6. TRAINING ACTIVITIES

The types of training activities that will be carried out and the hours of student's dedication to each of them are as follows:

On-site learning:

Training activity	Number of hours
Lectures	10
Practical applications seminars	20
Debates and discussions	8
Case analysis	26
Student's oral presentations	2
Preparation of reports and essays	12
Independent work	60
Activities in workshops and/or laboratories	10
On-site objective knowledge tests	2
TOTAL (hours)	150

7. ASSESSMENT

The evaluation systems are listed below, as well as their weight in the total grade for the subject:

On-site learning:

Evaluation system	Weight
On-site knowledge tests	50%
Student's oral presentations	5%
Reports and essays	10%
Cases/problems	15%
Performance evaluation	5%
Lab book	15%

On the Virtual Campus, when you access the subject, you will be able to consult in detail the assessment activities that must be carried out, as well as the delivery dates and the assessment procedures for each of them.

7.1. Ordinary call (ordinary exam period)

To pass the subject in the ordinary exam period, students must obtain a mark of al least 5.0 out of 10.0 points in all parts of the evaluation of the subject. Those sections that are marked under 5.00 points (not passed) in the ordinary call must be re-assessed in the extraordinary session.

The final grade will be the weighted average of the partial grades of each of the approved training activities, according to the table above.

The continuous assessment system for training activities requires attendance of at least 50% of classes.

It is mandatory to justify at least 50% attendance at classes, as a necessary part of the assessment process and to comply with the student's right to receive advice, assistance and academic monitoring from the professor. For these purposes, students must use the technological system that the University makes available to them, to prove their daily attendance at each of their classes. This system will also serve to guarantee objective information on the student's active role in the classroom. Failure to prove by the means proposed by the university, of at least 50% attendance, will authorize the professor to grade the subject as failed in the ordinary call, in accordance with the grading system provided for in these regulations. All of this, without prejudice to other requirements or higher attendance percentages that each faculty may establish in the teaching guides or in its internal regulations. Regulations for the assessment of official degree qualifications, Art. 1 point 4.

(http://www.uem.es/myfiles/pageposts/reglamento_evaluacion_titulaciones_oficiales_grado.pdf).

7.2. Extraordinary call (extraordinary exam period)

In order to pass the subject in the extraordinary session, students must obtain a mark of **at least to 5.0 out of 10.0 points** in all parts of the evaluation of the subject that they had not passed during the ordinary call.
Any activities failed in the ordinary session must be submitted, taking into account the corresponding corrections or indications by the teacher. Those activities not submitted on the ordinary call must be delivered at the extraordinary session.
The final mark will be the weighted average of the partial marks of each of the approved activities (at least 5 out of 10 points), according to the table above. For this calculation the mark of the assessable activities passed in the ordinary session will be maintained.

8. SCHEDULE

This section indicates the schedule with dates for submitting evaluable activities for the subject:

Assesable activities	Date
Cases/problems	Weeks 1-15
Reports and essays	Week 10
Performance observation	Throughout the course
On-site knowledge tests	First Objective Knowledge Test: 2/12/25 Second Objective Test: January 2026
Laboratory practical notebook	1 day after each practice
Oral presentations	Weeks 10-12

This schedule may be subject to changes due to logistical reasons. Students will be notified of any changes in a timely manner.

9. BIBLIOGRAPHY

The reference work for following the subject is:

- Cooper, G.; Addams, K. (2023). The Cell. A Molecular Approach. 9th Edition. Ed. OUP USA. ISBN-10: 0197583725.

Recommended bibliography is provided below:

- Plopper, G.; Bebek Ivankovic, D. (2020) Principles of Cell Biology. 3rd Edition. Jones and Bartlett Publishers, Inc. ISBN-10: 1284149846
- Goodman, S. R. (Ed.). (2007). Medical cell biology. Academic Press.
- Alberts, B.; Heald, R.; Hopkin, K.; Johnson, A.; Morgan, D.; Roberts, K.; Walter, P. Essential Cell Biology (2023). 6th Edition. WW Norton & Co. ISBN-10: 1324033398.
- Plattner, H. Hentschel, J. (2011). Biology Cellular. 4th Edition. Ed. Panamericana Médica. (Spanish)
- Ovalle, W.K.; Nahirney, P.C. (2020). Netter's Essential Histology. 3rd Edition. Elsevier.

- Wojciech Pawlina. (2023). Histology: A Text and Atlas: with Correlated Cell and Molecular Biology. 9th Edition. Wolters Kluwer Health.
- Wojciech Pawlina (2024). Histology: A text and atlas. 7th Edition. Ed. Wolters Kluwer.

Recommended web resources are listed below:

- http://www.genome.gov/Glossary/index.cfm (Dictionary of terms genetic in English).
- http://www.ncbi.nlm.nih.gov/PubMed (US National Library of Medicine)
- http://www.ensembl.org/index.html (Database genomics European)
- http://www.neb.com/nebecomm/tech_reference/restriction_enzymes/cloning_guide.asp(New England Biolabs company web page).
- http://www.sciencedirect.com/ (scientific web search engine)
- https://www.nature.com/ncb/ (Nature cell Biology)
- http://www.fecyt.es/fecyt/home.do (Spanish Foundation for Science and Technology)
- http://www.nature.com/scitable (Educational website by Nature group)
- http://www.dnalc.org/ (DNA Learning Center, Cold Spring Harbor Laboratory. Web very useful to see videos and interactive areas on the molecular bases of DNA).
- http://ghr.nlm.nih.gov/glossary=contig (Dictionary NIH scientist)
- https://histologyguide.org/ (online histology atlas. Sorenson)
- https://mmegias.webs.uvigo.es/inicio.html (histology atlas of the University of Vigo)

10. EDUCATIONAL GUIDANCE AND DIVERSITY UNIT

At the Educational Guidance and Diversity Unit (ODI) we offer support to our students throughout their university life to help them achieve their academic goals. The pillars of our action are the inclusion of students with specific educational support needs, universal accessibility in the different university campuses and equal opportunities.

Services offered:

1. Support and follow-up through personalized advice and plans for students who need to improve their academic performance.
2. In terms of attention to diversity, non-significant curricular adjustments are made. These adjustments are made at methodology and evaluation level, in those students with specific educational needs, thereby pursuing equal opportunities for all students.
3. We offer students different extracurricular training resources to develop various skills that will enrich their personal and professional development.
4. Vocational guidance, by providing tools and advice to students with vocational doubts or who believe they have made a mistake in choosing a degree.

Students who need educational support can e-mail us at:

Students in need of educational support can e-mail us at:

orientacioneducativa@universidadeuropea.es

11. SATISFACTION SURVEYS

Your opinion matters!

The Universidad Europea encourages you to participate in our satisfaction surveys to detect strengths and areas for improvement regarding the teaching staff, the degree and the teaching-learning process.

The surveys will be available in the survey space of your virtual campus or via your e-mail.

Your feedback is necessary to improve the quality of the degree.

Thank you very much for your participation.