1. BASIC INFORMATION

Course	Cell Biology and Human Genetics
Degree program	Dentistry
School	Faculty of Health Sciences
Year	First year
ECTS	6 ECTS
Credit type	Basic
Language(s)	English/Spanish
Delivery mode	Campus-based mode
Semester	First Semester
Academic year	2025/2026
Coordinating professor	Nicla Flacco

2. PRESENTATION

With this course students are expected to acquire the methodological skills and conceptual understanding necessary for the study of the cell as the fundamental unit of living beings. The cell is the place where unique vital functions are carried out and integrated, and it reflects pathologies and the response of the living being to internal anomalies and environmental aggressions. The molecular and cytological concepts that form the structural basis of the cell and its processes of proliferation and differentiation are studied, thus allowing the understanding and study of tissues, the next level of organization of living beings. The basic genetic mechanisms associated with cell dynamics are also studied.

3. COMPETENCIES AND LEARNING OUTCOMES

Core competencies:

- CB1: Students must demonstrate to have gained a better knowledge in the studied field. The basis for these studies come from general secondary education and reach levels that, whilst supported by advanced textbooks, includes some aspects that imply knowledge of the forefront of their field of study.
- CB2: Students must use their knowledge in their work or vocation in a professional manner. They must be able to sustain arguments and solve problems within their field of study.
- CB3: Students may have the ability to gather and interpret relevant data (usually within their field of study) to inform judgments that include reflection of relevant social, scientific or ethical nature.
- CB5: Students will have developed those learning skills needed to undertake further study with a high degree of autonomy.

General competencies:

- CG7: Ability to promote autonomous learning of new knowledge and techniques, as well as motivation for quality.
- CG11: Ability to understand the basic biomedical sciences on which Dentistry is based in order to ensure a correct dental care.
- CG14: Knowledge of the general processes of the disease, including infection, inflammation, alterations of the immune system, degeneration, neoplasia, metabolic disorders and genetic disorders.

- CG18: Knowledge to assess critically and understand how to use the sources of clinical and biomedical information to obtain, organize, understand and communicate scientific and health information.

Cross-curricular competencies:

- CT1: Responsibility: The student must be able to bear the consequences of the actions taken and account for his/her own actions.
- CT5: Interpersonal Understanding: Students will be able to perform active listening in order to reach agreements using an assertive communication style.
- CT7: Teamwork: Students will be able to participate actively in the achievement of a common goal, listening, respecting and valuing the ideas and proposals of the other members of their team.
- CT9: Planning: The student will be able to effectively determine his/her goals and priorities, defining actions, deadlines and optimal resources required to achieve those goals.

Specific competencies:

- CE1: Understanding the basic biomedical sciences underlying the Dentistry to ensure proper dental care. These sciences must include appropriate contents of Embryology, Anatomy, Histology and Physiology of the human body, Genetics, Biochemistry, Molecular and Cellular Biology, and Microbiology and Immunology.

Learning outcomes:

- LO1: Understanding of the biological processes of the human body.
- LO2: Knowledge of cellular components.
- LO3: Knowledge of the processes of cell division and gametogenesis.
- LO4: General knowledge of human genetics and understanding of diseases of genetic origin.
- LO5: Knowledge of the development of molecular tools with current application in dentistry.

The following table shows the relationship between the competencies developed during the course and the learning outcomes pursued:

Competencies	Learning outcomes
CB1, CB5, CG7, CG11, CG18, CT1, CT9, CE1	**LO1:** Understanding of the biological, physiological and pathophysiological processes of the human body.
CB1, CB5, CG7, CG11, CG14, CG18, CT1, CT9, CE1	**LO2:** Knowledge of cellular components.
CB1, CB2, CB5, CG7, CG11, CG18, CT1, CT9, CE1	**LO3:** Knowledge of the processes of cell division and gametogenesis.
CB1, CB2, CB3, CB5, CG7, CG11, CG14, CG18, CT1, CT5, CT7, CT9, CE1	**LO4:** General knowledge of human genetics and understanding of diseases of genetic origin.
CB1, CB2, CB5, CG7, CG11	**LO5:** Knowledge of the development of molecular tools with current application in dentistry.
CB1, CB5, CG7, CG11, CG18, CT1, CT9, CE1	**LO1:** Understanding of the biological, physiological and pathophysiological processes of the human body.

4. CONTENT

- Introduction to the Study of Cell Biology
- Plasma Membrane
- Cytoskeleton
- Protein Synthesis and Degradation: Ribosomes and Proteasomes
- Endomembrane System
- Mitochondria
- The Interphase Nucleus
- Cell Division: Mitosis
- Gametogenesis: Meiosis
- General Aspects of Human Genetics
- Mendelian and Non-Mendelian Inheritance
- Monogenic, Polygenic, and Multifactorial Inheritance
- Analytical Techniques in Human Genetics

5. TEACHING-LEARNING METHODOLOGIES

The types of teaching-learning methodologies used are indicated below:

- Master classes/Lectures
- Cooperative learning
- Problem-based learning (PBL)

6. LEARNING ACTIVITIES

Listed below are the types of learning activities and the number of hours the student will spend on each one:

Campus-based mode:

Learning activity	Number of hours
Tutorials	18 h
Master classes	24 h
Virtual master classes	12 h
Group work	3 h
Problem resolution	8 h
Practical exercises	20 h
Laboratory practices	18 h
Study and independent work	45 h
In-person tests of knowledge	2 h
TOTAL	**150 h**

7. ASSESSMENT

Listed below are the assessment systems used and the weight each one carries towards the final course grade:

Campus-based mode:

Evaluable block	Assessment system	Weight
1. Tests	Objective tests of knowledge: - First Knowledge test - Second Knowledge test	60%
2. Practices	Laboratory practices	15%
3. Activities	Oral Presentations	10%
	Learning folder	15%

When you access the course on the *Campus Virtual*, you'll find a description of the assessment activities you have to complete, as well as the delivery deadline and assessment procedure for each one.

7.1. First assessment period

To pass the course in the first assessment period, you must obtain a grade greater than or equal to 5.0 out of 10.0 in the final grade (weighted average) of the course. In any case, it will be necessary to obtain a grade greater than or equal to 5.0, independently, in each of the evaluation systems that make up the course (including the knowledge tests separated into partials). It may be assessed that a grade equal to or greater than 4 is needed in the knowledge tests when separated into partial exams.

The Universidad Europea de Valencia establishes continuous assessment as a system of evaluation of knowledge, skills and core, general, cross-curricular and specific competences of the degree in Dentistry, in accordance with the provisions of the Regulations for the evaluation of undergraduate degrees. In this regard and for the purposes of the use of calls the student should be aware that, if any evaluation system provided in the Learning Guide, in the first assessment period the student will have an overall grade of the subject, thus using up one call.

According to the aforementioned Regulations, students taking face-to-face degree courses are required to justify at least 50% of class attendance, as a necessary part of the evaluation process and in the case of theoretical or practical classes determined as mandatory by the teacher in the schedules of the subject, the student must register an attendance of 90%, whether the absence is justified or not. The lack of accreditation by the means proposed by the University will entitle the professor to grade the subject as failed in the first assessment period, according to the grading system.

Punctuality will be required, 3 delays of more than 15 minutes or departures before class will be counted as a lack of attendance.

The student must consult in the schedule of the course in the Virtual Campus the sessions of compulsory attendance in the classroom.

The mention of "Matrícula de Honor" will be awarded to students who have obtained a grade equal to or higher than 9.0. Their number may not exceed 5% of the students enrolled in each subject in the corresponding academic year, unless the number of students enrolled is less than 20, in which case only one honorary registration may be awarded.

7.2. Second assessment period

To pass the course in the second assessment period, you must obtain a grade higher or equal to 5.0 out of 10.0 in the final grade (weighted average) of the course.
In any case, it will be necessary to obtain a grade greater than or equal to 5.0 in the final test, so that it can be averaged with the rest of the activities.

The activities that were not handed in or passed in the first assessment period must be submitted, after having received the corresponding corrections from the teacher.

The Universidad Europea de Valencia establishes the continuous evaluation as a system of assessment of knowledge, skills and core, general, cross-curricular, and specific competences of the degree in Dentistry, in accordance with the provisions of the Regulations for the evaluation of undergraduate degrees. In this regard and for the purposes of using calls, the student should be aware that in the second assessment period the Objective Test of Knowledge (OTK) which determines whether or not the call was used. In the exceptional case that the student only needs to pass evaluation system /s that are not the OTK, it will be considered NP if not presented and will obtain a numerical grade if the student was examined of, at least, one of them.

Pursuant to the aforementioned Regulations, students taking face-to-face degree courses are required to justify at least 50% of class attendance, as a necessary part of the evaluation process, and in the case of theoretical or practical classes determined as mandatory by the teacher in the schedules of the subject, the student must register an attendance of 90%, whether the absence is justified or not. Those students who, due to non-compliance with this requirement, must take the second assessment period, need to perform as many activities or knowledge tests determined by the teacher to recover this part successful completion will be based on the specified rubric.

8. SCHEDULE

This table shows the delivery deadline for each assessable activity in the course:

Assessable activities	Deadline
First test of knowledge	Week 12
Second test of knowledge	January 2026
Practical laboratory sessions	See the *Campus Virtual*
Oral presentations	Week 6
Genetic problems	Week 13
Virtual simulations	Week 9-12

This schedule may be subject to changes for logistical reasons relating to the activities. The student will be notified of any change as and when appropriate.

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9. BIBLIOGRAPHY

The main reference work for this subject is:

- KRAP, G (2014). **Biología celular y molecular**: **conceptos y experimentos**. México: Mc Graw-Hill. 7ª Edición.
- ALBERTS, B. (2015). **Molecular biology of the cell.** New York; Abindgog UK: Garland Science, cop. 6th edition.
- GOODMAN, S.R. (2008). **Medical cell biology**. Burlington, MA: Elsevier Academic Press. 3rd edition.
- KLUNG, W.S. & CUMMINGS, M.R. (2013). **Conceptos de Genética**. Madrid: Prentice Hall, D.L. 10ª edición.
- KLUNG, W.S. (2019). **Concepts of genetics**. NY: Editorial Pearson. 12th edition.

The recommended Bibliography is:

- LODISH, H.F. (2016). **Biología celular y molecular**. Editorial Médica Panamericana. 7ª edición.
- LODISH, H.F. (2016). **Molecular cell biology**. New York: W.H Freeman-Macmillan Learing. 8th edition.
- BRUCE, A. (2016). **Biología molecular de la célula**. Barcelona: Editorial Omega. 6ª Edición.
- CHANDAR, N. (2010). **Cell and molecular biology.** Philadelphia: Wollters Kluwer Health / Lippincott Williams & Wilkins.
- URRY, L.A. (2020). **Campbell Biology**. New York, NY: Pearson. 12th edition.

10. EDUCATIONAL GUIDANCE AND DIVERSITY UNIT

From the Educational Guidance and Diversity Unit (ODI) we offer support to our students throughout their university life to help them reach their academic achievements. Other main actions are the students inclusions with specific educational needs, universal accessibility on the different campuses of the university and equal opportunities.

From this unit we offer to our students:

1. Accompaniment and follow-up by means of counselling and personalized plans for students who need to improve their academic performance.
2. In terms of attention to diversity, non-significant curricular adjustments are made in terms of methodology and assessment for those students with specific educational needs, pursuing an equal opportunities for all students.
3. We offer students different extracurricular resources to develop different competences that will encourage their personal and professional development.

4. Vocational guidance through the provision of tools and counselling to students with vocational doubts or who believe they have made a mistake in their choice of degree.

Students in need of educational support can write to us at:
orientacioneducativa.uev@universidadeuropea.es