Universitat Autònoma de Barcelona

2022/2023

Human Biology

Code: 101889
ECTS Credits: 6

Degree	Type	Year	Semester
2501230 Biomedical Sciences	OT	4	1

Contact

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Use of Languages

Principal working language: catalan (cat)
Some groups entirely in English: No
Some groups entirely in Catalan: Yes
Some groups entirely in Spanish: No

Teachers

María Pilar Aluja París
Maria Eulàlia Subira de Galdacano

Prerequisites

A working knowledge of the material of the courses genetics is required.

Objectives and Contextualisation

The science of Human Biology studies the variability of the species Homo sapiens sapiens, both from the morphological aspect, as well as from the development and genetics of our species. The subject of Human Biology is structured in two well differentiated parts:

A) the knowledge of the origin and evolution of our species, i

B) current human variability, both morphological and physiological and genetic.

Competences

- Act with ethical responsibility and respect for fundamental rights and duties, diversity and democratic values.
- Display knowledge of the basic life processes on several levels of organisation: molecular, cellular, tissues, organs, individual and populations.
- Display knowledge of the concepts and language of biomedical sciences in order to follow biomedical literature correctly.
- Display theoretical and practical knowledge of the major molecular and cellular bases of human and animal pathologies.
- Make changes to methods and processes in the area of knowledge in order to provide innovative responses to society's needs and demands.
- Read and critically analyse original and review papers on biomedical issues and assess and choose the appropriate methodological descriptions for biomedical laboratory research work.

- Students must be capable of applying their knowledge to their work or vocation in a professional way and they should have building arguments and problem resolution skills within their area of study.
- Students must be capable of collecting and interpreting relevant data (usually within their area of study) in order to make statements that reflect social, scientific or ethical relevant issues.
- Students must be capable of communicating information, ideas, problems and solutions to both specialised and non-specialised audiences.
- Students must develop the necessary learning skills to undertake further training with a high degree of autonomy.
- Students must have and understand knowledge of an area of study built on the basis of general secondary education, and while it relies on some advanced textbooks it also includes some aspects coming from the forefront of its field of study.
- Take account of social, economic and environmental impacts when operating within one's own area of knowledge.
- Take sex- or gender-based inequalities into consideration when operating within one's own area of knowledge.
- Work as part of a group with members of other professions, understanding their viewpoint and establishing a constructive collaboration.

Learning Outcomes

1. Act with ethical responsibility and respect for fundamental rights and duties, diversity and democratic values.
2. Correctly use the terminology of genetics and its text and reference books
3. Describe and understand the genetic bases of sex determination and differentiation in humans.
4. Describe the organisation, evolution, inter-individual variation and expression of the human genome.
5. Design methodologies for the experimental study of genetic diseases.
6. Identify the genetic bases of human development.
7. Make changes to methods and processes in the area of knowledge in order to provide innovative responses to society's needs and demands.
8. Recognise and identify the distribution of genetics-based diseases in a particular population, taking the origin into account.
9. Students must be capable of applying their knowledge to their work or vocation in a professional way and they should have building arguments and problem resolution skills within their area of study.
10. Students must be capable of collecting and interpreting relevant data (usually within their area of study) in order to make statements that reflect social, scientific or ethical relevant issues.
11. Students must be capable of communicating information, ideas, problems and solutions to both specialised and non-specialised audiences.
12. Students must develop the necessary learning skills to undertake further training with a high degree of autonomy.
13. Students must have and understand knowledge of an area of study built on the basis of general secondary education, and while it relies on some advanced textbooks it also includes some aspects coming from the forefront of its field of study.
14. Take account of social, economic and environmental impacts when operating within one's own area of knowledge.
15. Take sex- or gender-based inequalities into consideration when operating within one's own area of knowledge.
16. Understand scientific texts on genetics and development, and write review papers on them.
17. Work as part of a group with members of other professions, understanding their viewpoint and establishing a constructive collaboration.

Content

T. 1. Mechanisms of human evolution

T. 2. Biodemography of human populations

T. 3. Human variability: Levels of analysis

T. 4. Human blood groups: characteristics and geographical distribution

T. 5. Evolution of the life cycle

T. 6. The physical environment

T. 7. Human nutritional stress and disease

T. 8.. Urban Ecology

T. 9. Primates and Human Evolution

T. 10. Techniques applied to human evolution

T. 11. Miocene Period

T. 12. Bipedalism

T. 13. ***Homo***

T. 14. Neanderthals

Methodology

The development of the formative activities of Human Biology subject will realize through: theory classes, seminars, realization of a work and practical laboratory sessions. Each one of these typologies with its own methodology. These activities will be complemented by a series of tutoring sessions.

Theoretical classes: In these classes the students acquire the scientific knowledge of the subject. These are master classes with ICT support, which are complemented by personal study of the topics presented. The audiovisual material used in class can be found by students in the "teaching material" tool of the Virtual Campus. These classes are conceived as a fundamentally unidirectional method of transmitting knowledge from teachers to students that forces them to develop autonomous learning strategies outside the classroom.

Seminars: In advance, teachers will provide students with the necessary documentation to discuss in the seminars; the students must have prepared them from the material delivered previously to the Virtual Campus (contribution of material by the students and the teacher, debate).

Practical laboratory sessions: Students come into contact with laboratory equipment and techniques. The results will be discussed at the end of each practice and / or the evaluable materials will be collected. Students will be able to access the protocols and practice guides through the Virtual Campus. The knowledge acquired in theory classes and in personal study is applied to the resolution of practical cases. Students work in small groups, enabling them to acquire the ability to work in groups, analyze and synthesize. It also allows you to apply statistical resources in the interpretation of data.

Tutorials: The aim of these sessions is multiple: to resolve doubts, to carry out debates on topics that have been proposed in class, to orient on the sources consulted by the students and to explain the use of the tools of the Virtual Campus necessary for the proposed activities. These sessions are not expository nor do they advance the subject matter, but they are sessions of debate and discussion. Much of the content of the tutorial sessions is based on the work done by the student autonomously.

Work: The first day of class, a list of works will be provided to the students. Each one must choose a work from the list. Throughout the execution of the work, students will be tutored and supervised. The work will have to be exposed and will be evaluable.

Annotation: Within the schedule set by the centre or degree programme, 15 minutes of one class will be reserved for students to evaluate their lecturers and their courses or modules through questionnaires.

Activities

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Theory classes	35	1.4	16, 3, 4, 5, 6, 8, 17, 2
seminars	4	0.16	16, 3, 4, 6, 8, 17, 2
Type: Supervised			
Laboratory practices	12	0.48	3, 4, 5, 17, 2
preparation of scientifical work	40	1.6	17
Type: Autonomous			
individual study	59	2.36	16, 2

Assessment

In the case of a continuous assessment, the participation of the students, the preparation of the seminars, the practice materials and the score of the controls will be taken into account. In order to attend, the student must justify having passed the biosafety and safety tests found on the Virtual Campus and be knowledgeable and accept the operating rules of the laboratories of the Faculty of Biosciences.

For the evaluation of the subject there will be two eliminatory controls with a weight each of 20% of the subject. Students who have not passed any of the controls through continuous assessment will have a recovery check of the part they have not passed.

The minimum grade for each of the assessable parts will be 4. To pass the course the grade must be equal to or greater than 5.

Students who pass both tests will be allowed to raise the grade with an integrative control of the entire subject. In this case, the grade to be considered will be the latter regardless of whether it is higher or lower than the one obtained previously.

The work itself will have a weight of 35% of the grade and will be done following the guidelines that will be published on the virtual campus.

With regard to laboratory practices, attendance is compulsory and the attitude, skill and various materials that the teacher will give to the students according to the practice (problems, questionnaire, ...) are valued. Attendance at practical sessions is mandatory. Students will be graded as "Not Evaluable" when the absence exceeds 20% of the scheduled sessions. The weight of the practices in the final note of the asignatura is of 15%.

The seminars will be worked on in class and will be assessed with the delivery of questions and problems delivered on the same day of the seminar. The weight will be 10%.

To participate in the recovery, students must have been previously assessed in a set of activities whose weight is equivalent to a minimum of two thirds of the total grade of the subject or module. Therefore, students will obtain the grade of "Not assessable" when the assessment activities performed have a weighting of less than 67% in the final grade.

Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
exams	40%	0	0	16, 3, 4, 6, 13, 12, 9, 8, 2
material of practices	15%	0	0	1, 15, 16, 3, 4, 5, 7, 10, 17, 2
seminar material	10%	0	0	1, 15, 14, 4, 7, 12, 11, 10, 2
work	35%	0	0	1, 15, 14, 16, 3, 4, 5, 6, 7, 12, 11, 10, 8, 17, 2

Bibliography

LITERATURE

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David N. COOPER, i Hildegard KEHRER-SAWATZKI. 2008. *Handbook of Human Molecular Evolution*. Wiley.

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Geoff DANIELS. 2013. H*uman Blood Groups*. Blackwell Science. A John Wiley & Sons, Ltd., Publication.

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Mark A. JOBLING, Mathew HURLES i Chris TYLER-SMITH. 2004. *Human Evolutionary Genetics - origin, peoples & disease*. Garland Science.

Marina LOZANO i Xose Pedro RODRÍGUEZ. 2010. *D'on venim? l'origen de l'Homo sapiens.* Ed: Rafael Dalmau, col·lecció evoluciona núm 2.

Robert JURMAIN, Lynn KILGORE, Wenda TREVATHAN I Eric BARTELINK 2009. *Essentials of Physical Anthropology*. Wadsworth Cengage Learning.

Mark LUCOCK. 2007. *Molecular Nutrition and Genomics Nutrition and the Ascent of Humankind*. Wiley-Liss.

Emilio F. MORAN. 2008. *Human Adaptability - An introduction to Ecological Anthropology*. Westview press.

Michael P. MUEHLENBEIN. 2010. *Human Evolutionary Biology*. Cambridge University Press.

Michael PARK. 2013. *Biological Anthropology*. Publishedby Mc Graw-Hill. Seventh Edition.

Esther M. REBATO, Charles SUSANNE i Brunetto CHIARELLI. 2005.*Para comprender la antropología biológica. Evolución y Biología Humana* . Ed Verbo Divino

von Marion E. REID, Christine LI OMAS-FRANCIS i Martin L. OLSSON. 2012. *The Blood Group Antigen*. FactsBook. Elsevier Ltd.

Herve SELIGMANN i Ganesh WARTHI. 2018.*Mitochondrial DNA: New Insights*. University of Chicago, United States.

Mark STONEKING. 2016. *An Introduction to Molecular Anthropology*. John Wiley & Sons, Incorporated.

Michael P. WEINER, *RainDance Technologies, Inc., Guilford, Connecticut;* Stacey B. Gabriel, *The Broad Institute, Massachusetts Institute of Technology, Cambridge;* J. Claiborne Stephens, *Motif BioSciences, New York* (Editors). 2007. *Genetic variation: a laboratory manual.* Ed Cold Spring Harbor: Cold Spring Harbor Laboratory Press, cop.

SPECIFIC LITERATURE

It will be given during the course.

Software

Becoming Human: www.becominghuman.org

The surprising science of alpha males - Frans de Waal: https://www.youtube.com/watch?v=BPsSKKL8N0s

Cognició i memòria en ximpanzés: https://www.youtube.com/watch?v=ktkjUjcZid0

Article: Andrews (2020) Last Common Ancestor of Apes and Humans: Morphology and Environment. *Folia Primatologica* 91:122-148. https://www.karger.com/Article/Pdf/501557

Models de cranis 3D: https://www.morphosource.org

Models de cranis i eines de pedra 3D: https://africanfossils.org/

A timeframe for human evolution:
https://natureecoevocommunity.nature.com/posts/a-timeframe-for-human-evolution

Origen i adaptacions al bipedisme: https://www.youtube.com/watch?v=3bFtotU0of4

The evolution of human mating - David Puts: https://www.youtube.com/watch?v=OXQwtTOnLvg

Homo erectus - The First Humans: https://www.youtube.com/watch?v=MP00uxg-274

The Neanderthals That Taught Us About Humanity: https://www.youtube.com/watch?v=h777yfE39O8

One Species, Many Origins: https://www.shh.mpg.de/1474609/pan-african-origins

Evolutionary ecology of primates and hominids https://human-evolution.blog/