Universitat Autònoma de Barcelona

2021/2022

Human Biology

Code: 101975
ECTS Credits: 6

Degree	Type	Year	Semester
2500890 Genetics	OT	4	0

The proposed teaching and assessment methodology that appear in the guide may be subject to changes as a result of the restrictions to face-to-face class attendance imposed by the health authorities.

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 Subirà i de Galdàcano

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,

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

Competences

- Appreciate the importance of quality and a job well done.
- Assume ethical commitment
- Be able to communicate effectively, orally and in writing.
- Define mutation and its types, and determine the levels of genic, chromosomal and genomic damage in the hereditary material of any species, both spontaneous and induced, and evaluate the consequences.
- Describe and interpret the principles of the transmission of genetic information across generations.
- Describe the diversity of living beings and interpret it evolutionally.
- Describe the organisation, evolution, inter-individual variation and expression of the human genome.

- Design and interpret studies associating genetic polymorphisms and phenotypical characters to identify genetic variants that affect the phenotype, including those associated to pathologies and those that confer susceptibility to human illnesses or those of other species of interest.
- Measure and interpret the genetic variation in and between populations from a clinical, conservational and evolutionary perspective, and from that of the genetic improvement of animals and plants.
- Use and interpret data sources on the genomes and macromolecules of any species and understand the basics of bioinformatics analysis to establish the corresponding relations between structure, function and evolution.

Learning Outcomes

1. Appreciate the importance of quality and a job well done.
2. Assume ethical commitment
3. Be able to communicate effectively, orally and in writing.
4. Describe the structure and variation of the human genome from a functional, clinical and evolutionary perspective.
5. Determine the genetic basis and calculate the risk of recurrence of human illnesses.
6. Enumerate and describe the different techniques for analysing DNA polymorphisms that can be applied to studies of genetic variation associated to human pathologies.
7. Evaluate and interpret genetic variation in human populations and from a clinical and evolutionary perspective.
8. Evolutionally describe and interpret the diversity of hominids.
9. Recognise genic, chromosomal and genomic anomalies in humans and evaluate the clinical consequences.
10. Use data sources on the human genome and interpret them.

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

"*Unless the requirements enforced by the health authorities demand a prioritization or reduction of these contents."

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.

"*The proposed teaching methodology may experience some modifications depending on the restrictions to face-to-face activities enforced by health authorities."

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			
seminars	4	0.16	2, 3, 1
theory	35	1.4	8, 4, 5, 6, 9, 10
Type: Supervised			
Practices	10	0.4	2, 3, 1
Preparation of group work	40	1.6	2, 3, 1
field practices	3	0.12	2, 1

Type: Autonomous			
Study	58	2.32	2, 7, 5, 6, 9, 10

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.

"*Student's assessment may experience some modifications depending on the restrictions to face-to-face activities enforced by health authorities."

Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
exam	40%	0	0	2, 7, 8, 4, 5, 6, 9, 3, 10
practices	15%	0	0	2, 3, 1
seminars	10%	0	0	3, 1
work	35%	0	0	2, 3, 1

Bibliography

LITERATURE

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COSTA, L.G. i EATON D.L. (2006). Gene-Environment interactions - Fundamentals of Ecogenetics.Wiley-Liss.

FLEAGLE JG (2013) Primate adaptation & Evolution. Academic Press.

DANIELS, G. (2013). Human Blood Groups. Blackwell Science. . A John Wiley & Sons, Ltd., Publication. First published:28 January 2013. Print ISBN:9781444333244 |DOI:10.1002/9781118493595. Copyright © 2013 Geoff Daniels. https://onlinelibrary.wiley.com/doi/book/10.1002/9781118493595

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SUSANNE, Ch. i POLET, C. (2005). Dictionnaire d'Anthropobiologie. Ed. DeBoeck supérieur. ISBN:978-2-8041-4842-3.

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von Marion E. Reid; Christine Lomas-Francis; Martin L. Olsson (2012). The Blood Group Antigen. FactsBook. Elsevier Ltd. ISBN: 978-0-12-415849-8. https://books.google.de/books?hl=de&lr=&id=5YYwS-iVPDgC&oi=fnd&pg=PP1&ots=f7cT9Irad8&sig=w2d0t0ULl

WEINER, M.P. et al. (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.

Burkle, A. and Grune, T. (2015) Biomarkers of Human Ageing Volume 151

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/