

History of Genetics

Code: 101962
ECTS Credits: 3

2024/2025

Degree	Type	Year
2500890 Genetics	OT	4
2504235 Science, Technology and Humanities	OT	4

Contact

Name: Carlos Taberero Holgado

Email: carlos.taberero@uab.cat

Teaching groups languages

You can view this information at the [end](#) of this document.

Prerequisites

None.

Objectives and Contextualisation

Objectives and contextualization

History of Genetics is taken in the 4th year of the Degree of Genetics and is part of the group of optional subjects.

The main objectives are:

Introduce the student to the consideration and experimentation of history as a vehicle for reflection and cultural construction, as an instrument of research, documentation and popularization, and as a pedagogical tool in the field of science.

Within the specific scope of the history of genetics, give the student the necessary tools to identify and critically analyze the main historiographical currents related to genetics.

Introduce the student to the knowledge of the processes of generation, circulation, communication and management of scientific (genetic) knowledge, as well as his impact on socio-cultural transformations throughout history.

Introduce the student to the analysis of the role and the situation of genetics and their social relations today and throughout history.

Consider the social, cultural, strategic and economic importance of genetics and genomics in the life sciences, health and society.

And thus, give the student the necessary tools to synthesize, from the historical consideration of genetics, a perspective of the current and future reach of this science.

Competences

Genetics

- Be able to analyse and synthesise.
- Be able to communicate effectively, orally and in writing.
- Develop self-directed learning.
- Perceive the strategic, industrial and economic importance of genetics and genomics to life sciences, health and society.
- Reason critically.
- Use and manage bibliographic information or computer or Internet resources in the field of study, in one's own languages and in English.

Science, Technology and Humanities

- Identify the various philosophical, ethical and sociological conceptions of science and technology and recognise their evolution throughout history.
- Recognise the political, social and cultural dimension of science and technology development in the different historical periods.
- 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.

Learning Outcomes

1. Be able to analyse and synthesise.
2. Be able to communicate effectively, orally and in writing.
3. Communicate effectively orally and in writing.
4. Develop self-directed learning.
5. Explain that in the past genetics was used unlawfully to foster racist ideologies.
6. Know that in the past, an illicit use of genetics has been made to promote racist ideologies.
7. Reason critically.
8. Synthesise, based on historical progress in genetics, a perspective of the current and future scope of this science.
9. Synthesize, based on the historical advance of genetics, a perspective of the current and future scope of this science.
10. Use and manage bibliographic information or computer or Internet resources in the field of study, in one's own languages and in English.
11. Use and manage bibliographic information, or computer- or internet-based resources within the area of study, in the first languages and in English.

Content

Blocks

- A. Introduction to the history of genetics and the field of the history of sci
- B. Inheritance throughout history. Concepts and sociocultural relations (u
- C. The two cultures and the pillars of contemporary biology (19th century
- D. From Mendel to the Synthetic Theory of Evolution. Genetics and the h
- E. The development of molecular biology: individuals, society and inform
- F. Genetics, genomics, sociobiology: debates and challenges.

Activities and Methodology

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Theoretical classes / Discussion sessions with TIC support	20.25	0.81	1, 5, 6, 7, 8, 9
Type: Supervised			
Solving problems and tasks autonomously, participation in discussions	11.25	0.45	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11
Type: Autonomous			
Independent study, consultation of bibliography and realization of works	39.75	1.59	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11

Directed activities (26.7% = 20 hours): Theoretical classes / discussion sessions with ICT support.

Supervised activities (15% = 11.25 hours): Individual problem solving and participation in the discussions.

Autonomous activities (53.3% = 40 hours): Individual study, bibliography consultation and performance of works.

Description (directed and supervised activities: theoretical classes and discussion sessions; problem solving):

Block A. Introduction to the history of genetics within the scope of the history of science and, in particular, of biology: 1 class of 2 hours.

Bloc B. Inheritance throughout history. Concepts and socio-cultural relationships (until the 18th century): 2 classes of 2 hours.

Bloc C. The two cultures and the pillars of contemporary biology (nineteenth century): 2 classes of 2 hours.

Bloc D. From Mendel to the Synthetic Theory of Evolution. Genetics and the historical vision of life: 2 classes of 2 hours.

Bloc E. The development of molecular biology: individual, society and information: 2 classes of 2 hours.

Bloc F. Genetics, genomics, sociobiology: debates and challenges: 1 class of 2 hours.

Deliveries: Final written essay in relation to a specific topic integrated in the contents and competences of the subject, to be delivered on the exam date via virtual campus or email.

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.

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.

Assessment

Continous Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Final assay	40%	1.75	0.07	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11
Short essay 1	30%	1	0.04	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11
Short essay 2	30%	1	0.04	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11

The course evaluation is continued in relation to:

Active participation in class discussions, which will include two short essays to be assigned during the semester (30% of the final grade each written essay).

A final and brief assay preparation (40% of final grade) about some concrete topic of the course's themes and competences, in which the students have to evidence their capacity of historically locating and critically analyzing any issue related with the history of genetics.

For the evaluation to be effective, the students must pass each of the different tests separately. Otherwise, they will be considered as "non-assessable". Students who have not passed the course may be submitted to a resit. To participate in the resit the student must have been previously evaluated of the thematic blocks, whose weight equals a minimum of two thirds of the total grade of the subject. In addition, to participate in the resit the student must have obtained at least 3.5 in the total grade of the subject.

Students who do not take the theoretical and practical assessment tests will be considered as not evaluated and will exhaust the rights of the registration of the subject.

On carrying out each evaluation activity, lecturers will inform students (on Moodle) of the procedures to be followed for reviewing all grades awarded, and the date on which such a review will take place.

Students will obtain a "Not assessed/Not submitted" course grade unless they have submitted more than 30% of the assessment items.

In the event of a student committing any irregularity that may lead to a significant variation in the grade awarded to an assessment activity, the student will be given a zero for this activity, regardless of any disciplinary process that may take place. In the event of several irregularities in assessment activities of the same subject, the student will be given a zero as the final grade for this subject.

Single evaluation:

If necessary, a single assessment test will be carried out for those students who, for justified reasons, cannot take the continuous assessment tests of the subject (essays and participation in class debates). This test will

consist of the preparation, in person, at a date, time and classroom to be determined, of a brief final written essay (in this case 100% of the mark) in relation to a specific topic integrated into the contents and competences of the subject, and in which the student must demonstrate his/her ability to historically situate and critically analyze any problem related to the history of genetics. The teaching staff will assist students who require a single assessment with a specific tutorial related to each of the main blocks.

The students who take advantage of the single evaluation and who do not take the indicated test will be considered as "Not evaluated", exhausting the rights to enroll in the subject.

Bibliography

Bibliographic sources of digital access will be provided during the semester. However, below are reference works

Essential references

BARONA, J.L. *Història del pensament biològic*. València, Universitat de València, Col·lecció Educació-Materials, 2003 (1998)

GIORDAN, A. (coord.) *Conceptos de Biología, vols. 1&2*. Madrid, Labor, 1988

JAHN, I., LOTHER, R. y SENGLAUB, K. *Historia de la biología*. Barcelona, Labor, 1990

MORANGE, M. *A history of molecular biology*. Harvard: Harvard University Press; 2000.

Additional references (1)

BOWLER, Peter J. (1995) *Charles Darwin, el hombre y su influencia*. Madrid: Alianza..

DARWIN, Charles (1985) *The Origin of Species*. London: Penguin Classics (1859).

DARWIN, Charles (1988) *L'origen de les espècies*. Barcelona : Edicions 62 (1859).

DARWIN, Charles. *The Complete Works of Charles Darwin online* <<http://darwin-online.org.uk/>>

DOBZHANSKY, T., AYALA, F.J., STEBBINS, G.L., VALENTINE, J.W. (1983) *Evolución*. Barcelona: Omega

GLICK, Thomas (ed.) (1988) *The Comparative Reception of Darwinism*. Chicago : The University of Chicago Press (1ª ed. 1974).

MAYNARD-SMITH, J. y SZATHMÁRY, E. (2001) *Ocho hitos de la evolución*. Barcelona: Tusquets (Metatemas) (1ª ed. 1999).

TEMPLADO, Joaquín (1982) *Historia de las teorías evolucionistas*. Madrid: Alhambra, (1ª ed. 1974)

DE CHADAREVIAN, Soraya. (2002) *Designs for Life: Molecular Biology after World War II*. Cambridge: Cambridge University Press.

FABIAN, A.C. (ed.) (2001) *Evolución: sociedad, ciencia y universo*. Barcelona: Tusquets (Metatemas) (1ª ed. 1998).

JACOB, François (1973) *La lógica de lo viviente: una historia de la herencia*. Barcelona: Laia (1ª ed. 1970).

JACOB, François (1975) *Lógica de lo viviente e historia de la biología*. Barcelona: Laia (1ª ed. 1970).

KEVLES, Daniel; HOOD, Leroy (eds) (1992) *The code of codes. Scientific and social issues in the Human Genome Project*. Cambridge, MA: Harvard University Press.

MONOD, Jacques (2000) *El Azar y la Necesidad*. Barcelona, Tusquets (Metatemas) (1ª ed. 1970).

SCHRÖDINGER, Erwin (2001) *¿Qué es la vida?* Barcelona: Tusquets (Metatemas) (1ª ed. 1944).

WATSON, J.D. (STENT G.S., ed.) (1980) *The Double Helix*. Nueva York: Norton (1ª ed. 1968)

WATSON, J.D. (2004) *La Doble Hélice*. Barcelona: RBA (1ª ed. 1968)

APPLE, Rima D.; APPLE, Michael W. (1993) Screening Science. *Isis* 84(4): 750-754.

CRICHTON, Michael (1991) *Jurassic Park*. Londres: Arrow (1ª ed. 1990).

CRICHTON, Michael (1994) *Parque Jurásico*. Barcelona: Plaza & Janés (1ª ed. 1990).

ELENA, Alberto. (2002) *Ciencia, Cine e Historia: de Méliès a 2001*. Madrid: Alianza

FONT-AGUSTÍ, Jordi (coord.) (2002) *Entre la Por i l'Esperança: Percepció de la Tecnociència en la Literatura i el Cinema*. Barcelona: Proa.

NIETO GALAN, Agustí (2011) *Los públicos de la ciencia. Expertos y profanos a través de la historia*. Madrid: Marcial Pons.

SECORD, James (2004) Knowledge in Transit, *Isis* 95, 654-672

SHINN, Terry; WHITLEY, Richard (eds.) (1985) *Expository Science. Forms and Functions of Popularization*. Reidel: Dordrecht., pp. 3-28.

SNOW, Charles P. (1965) *Les dues cultures i la Revolució Científica*. Barcelona: Ediciones 62 (1ª ed. 1959).

SNOW, Charles P. (1993) *The Two Cultures*. Cambridge: Cambridge University Press (1ª ed. 1959).

SPIELBERG, Steven (1993) *Jurassic Park*. Universal Pictures [DVD].

VV.AA. (1983). *Journal of Contemporary History* 18(3). [Monográfico sobre "cine e historia"].

VV.AA. (1989). *Sylva Clus* 8. [Monográfico sobre "cine e historia de la ciencia"].

VV.AA. (2006). *Fotogrames de ciència. Mètode* 48: 57-108. / *Anuario* 2006: 198-237 [Monográfico sobre "ciencia y cine"].

VV.AA. (2009). Focus: Historicizing 'Popular Science'. *Isis* 100(2): 310-368.

Additional references (2)

Rothfels, Nigels. *Savages and beasts. The birth of the modern zoo*. Baltimore: The Johns Hopkins University Press; 2002.

Cittadino, Eugene. *Nature as the laboratory. Darwinian plant ecology in the German empire, 1880-1900*. Dordrecht (Holland): Reidel publishing company; 1990.

Farber, Paul Lawrence. *The emergence of ornithology as a scientific discipline: 1760-1850*. Cambridge: Cambridge University Press; 1982.

Bowler, Peter J. *Theories of human evolution. A century of debate, 1844-1944*. Baltimore: The Johns Hopkins University Press; 1986.

Kay, Lily E. *Who wrote the book of life? A history of the genetic code*. Stanford, California: Stanford University Press; 1993

Worster, Donald. *Nature's economy. A history of ecological ideas*. 2nd edition. Cambridge: Cambridge University Press; 1994.

Bud, Robert. *The uses of life. A history of biotechnology*. Cambridge: Cambridge University

Weindling, Paul. *Health, race and German politics between national unifications and Nazism, 1870-1945*. Cambridge: Cambridge University Press; 1989.

Ellegard, Alvar. *Darwin and the general reader. The reception of Darwin's Theory of evolution in the British periodical press, 1859-1872*. Chicago: The University of Chicago Press; 1990.

Olby, Robert. *Origins of mendelism*. Chicago: The University of Chicago Press; 1985.

Turney, Jon. *Frankenstein's footsteps. Science, genetics and popular culture*. New Haven: Yale University Press; 1998.

Marouf Arif Hasian, Jr. *The rhetoric of eugenics in Anglo-American thought*. Georgia: The University of Georgia Press; 1996.

Bashford Alison, Levinell Philippa, Eds. *The Oxford handbook of the history of eugenics*. Oxford; New York: Oxford University Press; 2010.

Software

In addition to web and Office tools, such as the campus online, email, Google docs, word, powerpoint and excel, tools such as wetransfer, dropbox or the VLC audiovisual file reader will be used.

Language list

Name	Group	Language	Semester	Turn
(TE) Theory	101	Catalan/Spanish	second semester	morning-mixed