Universitat Autònoma de Barcelona

2023/2024

Biotechnology and Society

Code: 100970
ECTS Credits: 3

Degree	Type	Year	Semester
2500253 Biotechnology	OB	3	1

Contact

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Teaching groups languages

You can check it through this link. To consult the language you will need to enter the CODE of the subject. Please note that this information is provisional until 30 November 2023.

Prerequisites

There are no prerequisites to follow the course successfully.

Objectives and Contextualisation

The main objective of this course is to systematically reflect on some of the main social debates generated by the new biotechnologies and their applications. More specifically, it is intended to learn:

- Basic sociological concepts.

- Theorizing the type of society in which the biotechnologies appear and develop.

- Learning theoretical knowledge to interpret social responses to biotechnology.

- Analyzing the political, economic, social or cultural constraints that influence the development of biotechnologies.

- Reflecting on the relationship between science, technology and society.

- Basics of bioethics.

Other objectives of the course are:

- Sociological reasoning, discussion and exposition of ideas about social reality in a clear and precise way.

- Developing team work skills.

Competences

- Act with ethical responsibility and respect for fundamental rights and duties, diversity and democratic values.
- Adopt clear, objective scientific criteria in order to project a positive, transparent image of biotechnology to economic, political and social agents.
- Introduce changes in the methods and processes of the field of knowledge to provide innovative responses to the needs and demands of society.
- Make an oral, written and visual presentation of one's work to a professional or non-professional audience in English or in one's own language.
- Read specialised texts both in English and one's own language.
- Reason in a critical manner
- Search for and manage information from various sources.
- 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.
- Think in an integrated manner and approach problems from different perspectives.
- Work individually and in teams

Learning Outcomes

1. Act with ethical responsibility and respect for fundamental rights and duties, diversity and democratic values.
2. Analyse the social context, the social structure and the principal social actors involved in biotechnology and its application.
3. Explain the debates on the risk society and the social perception of science and technology, and the systems of cultural and ideological values in which these take place.
4. Introduce changes in the methods and processes of the field of knowledge to provide innovative responses to the needs and demands of society.
5. Make an oral, written and visual presentation of one's work to a professional or non-professional audience in English or in one's own language.
6. Read specialised texts both in English and one's own language.
7. Reason in a critical manner
8. Search for and manage information from various sources.
9. Take account of social, economic and environmental impacts when operating within one's own area of knowledge.
10. Take sex- or gender-based inequalities into consideration when operating within one's own area of knowledge.
11. Think in an integrated manner and approach problems from different perspectives.
12. Work individually and in teams

Content

The course will provide knowledge and learning on the following topics:

1- Basic concepts of sociology and characterization of contemporary society

1.1. Nature and society. Individual and society. Social structure, norms and values. Social inequality and power. Ideological paradigms and political systems.

1.2. From traditional society to industrial and post-industrial society. The risk society and the information society. Globalization and the emergence of new biotechnologies.

1.3. Social perception of new biotechnologies: Applications to health, reproduction, food, environment, military, arts, etc.

1.4. Map of social conflicts and biotech controversies

2- The social perception of risks of new biotechnologies

2.1. Risk, danger and uncertainty. Conceptual definitions.

2.2. Main 'actors' of conflicts around biotech risks.

2.3. The social perception of risk: dimensions of health, environment, economic, socio-cultural and political-institutional.

2.4. Science and policy in risk management: Risk assessment and the debate on the precautionary principle.

3- Proposals from bioethics

3.1. Technoscience and bioethics.

3.2. Religious bioethics and secular bioethics. Conceptions of life and society in dispute.

3.3. Principality, definitions and critiques. The principles of bioethics.

3.4. International conventions and regulation of bioethics.

4- Social conflicts around biotechnology: Human health and reproduction

4.1. Predictive medicine. Genetic testing and diagnosis. Genetic counselling and the debate on eugenics and social discrimination.

4.2. The debate on human nature (culture / upbringing). Perfection, genetic improvement, hyperpaternity and transhumanism.

4.3. Regenerative medicine. Stem cells, cloning and reprogramming. Impacts on family configuration and embryo status debate.

4.4. Replacement of human organs, cell banks and supernumerary embryos. Gene therapy.

5- Social conflicts around new biotechnologies: Agri-food system

4.1. Transgenic plants and seeds. Genetic engineering, recombinant DNA and genetic editing. The debate on coexistence.

4.2. Impacts on health and the environment vs socio-economic, political and cultural impacts.

4.3. Biopiracy and extractivism. Exploitation of individuals and groups. The debate over the patent system and the commercialization of life.

4.4. Controversies over agri-food models. Sustainability, agroecology and food sovereignty vs. export agro-industrial system.

Methodology

The subject will have the following teaching methodology:

1- Theoretical classes

Throughout the course, the teacher will make presentations of the main concepts and theoretical proposals for each unit of study.

2- Seminars and debates

The seminars will consist of the discussion and debate of cases of biotechnological conflicts or controversies. At the beginning of the course, the professor will provide the statement of the cases and readings to be able to prepare the debates. The class will be divided into two groups and each group will have to do the debates on specific dates that will be announced at the beginning of the course.

3- Expositions

From the seminars, the different groups will have to expose the reasoning made collectively. In each seminar session, each group must appoint a spokesperson to defend their positions in the debate.

4- Autonomous student work

Each student must carry out an individual work based on the texts discussed in class, complemented with other sources obtained by the themselves.

5- Team work

The students will be organized in groups of 4 people to carry out various reading discussions, search for information, participation in debates and public presentations throughout the course.

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			
Theoretical classes	18	0.72	2, 3
Type: Supervised			
Public presentations	1	0.04	5
Seminars	4	0.16	5, 6, 7
Type: Autonomous			
Self-organized work of the student	30	1.2	8, 7
Team work	21	0.84	2, 3, 11, 12

Assessment

The evaluation of the subject will consist of:

a) Participation in group debates and presentation of arguments (20% of the final mark)

b) Group delivery of a written synthesis based on the readings and discussions (30%)

c) An individual work of analysis of readings and theoretical reflection (50%)

At the beginning of the course, the teacher will give detailed instructions on how to carry out each activity.

To participate in the recovery, students must have been previously evaluated in a set of activities whose weight is equivalent to a minimum of two thirds of the total mark for the subject. Therefore, students will obtain the grade "Not Assessable" when the evaluation activities carried out have a weighting of less than 67% in the final grade.

In accordance with article 117.2 of the UAB Academic Regulations, the evaluation of repeating students may consist of a single summary test. Repeating students who want to avail themselves of this possibility must contact the teaching staff at the beginning of the course.

Single evaluation:

The single evaluation consists of two parts:

- An exam on the whole syllabus of the subject (50% of the grade), which will be held on the date set in the calendar for the last continuous assessment test.

- An individual work of analysis of readings and theoretical reflection, as planned for continuous evaluation (50% of the mark), which must be delivered on the same date of the exam.

The same recovery system will be applied as for the continuous evaluation.

Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Debates and presentations in the classroom	20%	1	0.04	1, 10, 2, 3, 11, 12
Deliberative team work	30%	0	0	5, 4, 12
Individual reflection on reading works	50%	0	0	9, 2, 8, 6, 7

Bibliography

Main references:

Casado, M. & López Baroni, M.J. (2018) *Manual de bioética laica (I). Cuestiones clave*. Barcelona: Edicions de la Universitat de Barcelona.

Espluga, J. (2005) *Els debats socials de la biotecnologia*. Barcelona: Fundació R. Campalans. https://fcampalans.cat/uploads/publicacions/pdf/paper_biotecnologia.pdf

Hubbard, R.; Wald, E. (1999) *El mito del gen*. Madrid: Alianza.

Jasanoff, S. (2021) *La arrogancia de la biología*. Madrid: Alianza.

Mukherjee, S. (2016) *El gen. Una historia personal*. Madrid: Debate.

Macip & Willmott (2015) *Jugar a ser Dios*. València: Publicacions de la Universitat de València.

Riechmann, J. & Tickner, J. (coords.) (2001) *El principio de precaución*. Barcelona: Icària.

Rifkin, J. (1999) *El siglo de la biotecnología*. Barcelona: Crítica.

Complementary references:

Adam, B.; Beck, U.; Van Loon, J. (2000) *The Risk Society and Beyond*. London: Sage. [cap. 3, cap. 5, cap. 8]

Alvarez-Uría, F.; Varela, J. (2009) *Sociología de las instituciones. Bases sociales y culturales de la conducta.* Madrid: Morata.

Beck, U. (1998) *La sociedad del riesgo*. Barcelona: Paidós.

Beck, U. (1998) *¿Qué es la globalización? Falacias del globalismo, respuestas a la globalización*. Barcelona: Paidós.

Beck, U. (1998) *Políticas ecológicas en la edad del riesgo*. Barcelona: El Roure.

Bestard Camps, J. (2004) *Tras la biología: La moralidad del parentesco y las nuevas tecnologías de reproducción*. Barcelona: Universitat de Barcelona.

Bruce, S. (1999) *Sociology. A very short introduction*. Oxford: Oxford University Press.

Capra, F. (2002) *Las conexiones ocultas. Implicaciones sociales, medioambientales, económicas y biológicas de una nueva visión del mundo*. Madrid: Anagrama.

Dausset, J.; Tomás Salvá, M. (2006) *Hacia el hombre responsable. Diálogos sobre evolución genética y cultural*. Barcelona: Publicacions i edicions de la UB.

Fenoll, C. & González Candelas, F. (eds.) *Transgénicos*. Madrid: CSIC-La Catarata.

Gómez-Heras, J.M. (coord.) (2002) *Dignidad de la vida y manipulación genética*. Madrid: Biblioteca Nueva.

González García, M.I.; López Cerezo, J.A.; Luján, J.L. (1997) *Ciencia, tecnología y sociedad*. Barcelona: Ariel.

González Valenzuela, J. (2005) *Genoma humano y dignidad humana*. Barcelona: Anthropos.

González Valenzuela, J. (2007) *Dilemas de bioética*. Madrid: Fondo de Cultura Económica.

Habermas, J. (2002) *El futuro de la naturaleza humana ¿Hacia una eugenesia liberal?.* Barcelona: Paidós.

Harris, J. (1998) *Supermán y la mujer maravillosa. Las dimensiones éticas de la biotecnología humana*. Madrid: Tecnos.

Herrera, R., Cazorla, M.J. (eds.) (2004) *Aspectos legales de la agricultura transgénica*. Almería: Universidad de Almería.

Horlick-Jones, T.; Walls, J.; Rowe, G.; Pidgeon, N.; Poortinga, W.; Murdock, G.; O'Riordan, T. (2006) *The GM Debate. Risk, politics and public engagement*. London: Routledge.

Ibarra, A. & LópezCerezo, J.A. (2001) *Desafíos y tensiones actuales en Ciencia, Tecnología y Sociedad.* Madrid: Biblioteca Nueva.

Lalueza-Fox, C. (2023) *Desigualdad. Una historia genética.* Barcelona: Crítica.

Lash, S.; Szerszynski, B; Wynne, B. (eds.) (1996) *Risk, Environment and Modernity. Towards a New Ecology*. London: Sage. [cap. 2]

Lemkow, L.; Espluga, J. (2017) *Sociología ambiental*. Barcelona: Icària.

Lewontin, R.C.; Rose, S.;Kamin, L.J. (1987) *No está en los genes. Racismo, genética e ideología*. Barcelona: Crítica.

López Cerezo, J.A.; Luján, J.L. (2000) *Cienciay política del riesgo*. Madrid: Alianza.

Marris, C.; Wynne, B.; Simmons, P.; Weldon, S. (2002) *Public Perceptions of Agricultural Biotechnologies in Europe. Final Report of the PABE research project*. Commission of European Communities. [www.pabe.net]

Méndez Baiges, V. (2007) *Bioètica i Dret*. Barcelona: UOC.

Mosterín, J. (2006) *La naturaleza humana*. Madrid: Espasa Calpe.

Muñoz, E. (2001) *Biotecnología y sociedad. Encuentros y desencuentros*. Madrid: Cambridge University Press.

Murphy, T.F. (2004) Case studies in biomedical research ethics. Cambridge (Mass): MIT.

Ocariz-Braña, J. (1988) *Historia sencilla del pensamiento político*. Madrid: Rialp.

Osset, M. (2000) *Ingeniería genética y derechos humanos*. Barcelona: Icària.

Parker, J. (ed.) (2003) *Social Theory. A basic Tool Kit*.Basingstoke, Hampshire:Palgrave Macmillan.

PEALS (2003) *The People's report on GM crops*. Newcastle-upon-Tyne: Policy Ethics and Life Sciences Research Institute. [www.gmjury.org]

Petersen, A. & Bunton, R. (2002) *The new genetics and the public's health*. London: Routledge.

Puyol, A. (2019) *Political Fraternity: Democracy Beyond Freedom and Equality*. London: Routledge.

Ramírez, S. (2006) *La sociologia*. Barcelona: UOC.

Resnik, D.B. (2004) *Owning the Genome. A moral analysis of DNA patenting*. Albany: State Unniversity of New York Press.

Ridley, M. (2004) *¿Qué nos hace humanos?.* Madrid: Santillana.

Riechmann, J. (2004) *Transgénicos: el haz y el envés. Una perspectiva crítica*. Madrid: La Catarata.

Robin, M.M. (2008) *El mundo según Monsanto*. Barcelona: Península.

Sàdaba, J. (2004) *Principios de bioética laica*. Barcelona: Gedisa.

Sandel, M. (2007) *Contra la perfección*. Barcelona: Marbot.

Sapolsky, R.M. (2007) *El mono enamorado*. Barcelona: Paidós.

Shiva, V. (2001) *Biopiratería. El saqueo de la naturaleza y del conocimiento*. Barcelona: Icària.

Shiva, V. (2003) *Cosecha robada. El secuestro del suministro mundial de alimentos*. Barcelona: Paidós.

Thompson, P. B. (2015) *From Field to Fork. Food Ethics for Everyone*. Oxford University Press.

Trefil, J. (2004) *Gestionemos la naturaleza*. Barcelona: Antoni Bosch Editor.

Valls, R. (2003) *Ética para la bioética*. Barcelona: Gedisa.

Vallverdú, J. (2009) *Bioética computacional. E-Biotecnología: simbiosis de valores*. Madrid: Fondo de Cultura Económica.

Software

Not necessary