

IDENTIFICATION DETAILS

Degree:	Biotechnology			
Scope	Biology and Genetics			
Faculty/School:	Experimental Sciences			
Course:	ETHICS AND BIOETHICS			
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Туре:	Compulsory		ECTS credits:	6
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Year:	3		Code:	2033
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Teaching period:	Fifth semester			
Subject:	Social Aspects of Biotechnology			
Module:	Social, Historical and Economic Aspects of Biotechnology			
Teaching type:	Classroom-based			
Language:	Spanish			
Total number of student study hours:	150			

SUBJECT DESCRIPTION

The subject of Ethics and Bioethics of Biotechnology will deal with the social dimension of biotechnology. The scientist cannot remain oblivious to the ethical and social implications that arise from his work and from the development of new technologies applied to the field of life. That is why this course will serve as an introduction to the study of bioethics, as an academic discipline.

Biotechnology is currently one of the fastest evolving scientific and economic sectors. The new applications that this science develops have a direct impact on the fields of health, food and the economy, among others, all of them directly affecting people's lives. This capacity of biotechnology to influence so many aspects of society clearly indicates that scientists cannot remain oblivious to the ethical consequences that their activities entail on a personal and social level. Consequently, students of the degree in Biotechnology must be trained to be able to

detect the possible implications (beyond the purely technical-scientific ones) of their work and acquire sufficient knowledge to be able to evaluate them from an ethical-social point of view.

GOAL

Capture the human dimension of biotechnology and its prudent application in accordance with ethical/legal principles and norms and thus form an ethical criterion that guides personal and professional life based on these principles to understand the ethical implications of personal and professional activity and to assume them with responsibility.

The specific aims of the subject are:

To provide students with a framework of the main bioethical issues from a triple perspective: scientific, philosophy/ethical and social/legal.

Identify the fundamental principles of ethics and bioethics.

Show the biological foundations that serve as a starting point for bioethical reflection.

Present and analyze current regulations and legislation that regulate biotechnological products and processes.

PRIOR KNOWLEDGE

The student must have basic knowledge of cellular and molecular biology, classical and molecular genetics and philosophical anthropology in order to be able to take advantage of the subject.

COURSE SYLLABUS

The course is divided into two parts: the first of them corresponds to the analysis of the main bioethical issues of interest to biotechnologists from a scientific and legal point of view, the second corresponds to the analysis of these issues from an anthropological and ethical point of view.

FIRST PART OF THE SUBJECT - SCIENTIFIC AND LEGAL ANALYSIS:

Theme 1: Foundations of Bioethics. Definition of bioethics, epistemological status, the triangular method and the role of law. Historical origin of bioethics: relevant milestones and causes. Deontological codes and general notes (social relevance, main institutions, C.E.A. and C.E.I.C.). Main bioethical trends.

Theme 2: Bioethics and Integral Ecology. Concept of nature. Ecology and environmentalism. Magnitude, causes and extent of ecological problems. Environmental ethics: an approach to the relationship between man and nature. Theme 3: Human Genome. Origin and development of the Human Genome Project and its ethical implications. Bioethical issues in synthetic biology. Brief analysis of the main problems associated with the development of PGH: biological reductionism, eugenics, genetic modification of the human genome, gene therapy, transhumanism... Legislation: biopatents, confidentiality of genetic information,...

Topic 4: Biological status of the human embryo. Early stages of embryonic development from gametogenesis to the fetal phase. Features of the embryonic development process. The Warnock Committee, the term pre-embryo and its implications. Legislation associated with embryos in its different fields.

Topic 5: Stem cells and cloning. Types of stem cells: ES cells, adult stem cells, iPS cells. Characteristics and applications of the various types of stem cells and their legislation. Types of cloning depending on the technology to be used and its purpose. The case of Dolly the sheep. Biological consequences of clone generation. Legislation: experimentation with embryos, assisted human reproduction,...

Theme 6: Ethics of the pharmaceutical industry and experimentation with animals and human beings. Use of animals in experimentation: animal models and legislation. Historical approach to experimentation with human beings. Experimentation early in life. Experimentation in adult stages of life. Clinical Trials. Legislation: traceability, sample treatment, toxicity testing.

SECOND PART OF THE COURSE - ANTHROPOLOGICAL AND ETHICAL ANALYSIS:

Theme 1: The human person. Identity, value-dignity, fundamental rights.

Theme 2: Ethics and Bioethics: What is Ethics? What is bioethics? Bioethical principles.

Theme 3: Ethics of Science and Technology: Ethical Judgment and Technical Judgment. Ethical risk assessment. Theme 4: Nature and identity of the human embryo.

Theme 5: Abortion: Freedom and Rights. Ethics of abortion: spontaneous, indirect, direct. Abortion and ideologies. Theme 6: Research and experimentation with embryos: leftover embryos IVF, gene therapy and manipulation, gene editing.

Theme 7: Research and experimentation with embryos: agamic embryo, cloning, stem cells, iPS.

EDUCATION ACTIVITIES

The course will follow a methodology articulated in several elements:

- Participatory exhibition class.
- Seminars, round tables, workshops, tutorials, debates, etc.
- Practical classes: exercises and case studies.
- Autonomous study: theoretical study and preparation of face-to-face activities.
- Evaluation.

DISTRIBUTION OF WORK TIME

TEACHER-LED TRAINING ACTIVITIES	INDIVIDUAL WORK
60 Horas	90 Horas

SKILLS

Basic Skills

Students must have demonstrated knowledge and understanding in an area of study that is founded on general secondary education. Moreover, the area of study is typically at a level that includes certain aspects implying knowledge at the forefront of its field of study, albeit supported by advanced textbooks

Students must be able to apply their knowledge to their work or vocation in a professional manner and possess skills that can typically be demonstrated by coming up with and sustaining arguments and solving problems within their field of study.

Students must have the ability to gather and interpret relevant data (usually within their field of study) in order to make judgments that include reflections on pertinent social, scientific or ethical issues

Students must be able to convey information, ideas, problems and solutions to both an expert and non-expert audience

Students must have developed the learning skills needed to undertake further study with a high degree of independence

To be familiar with and apply current legislation governing biotechnological processes and products.

To understand the ethical implications of professional and personal activity.

Capacity for teamwork and group management.

To have acquired the ability for analytical, synthetic, reflective, critical, theoretical and practical thought.

Capacity for problem-solving and decision-making.

To recognize the mutual influence existing between science, society and technological development in order to strive for a sustainable future.

To develop oral and written communication skills.

General Skills

To be familiar with and apply current legislation governing biotechnological processes and products.

To understand the ethical implications of professional and personal activity.

Capacity for teamwork and group management.

To have acquired the ability for analytical, synthetic, reflective, critical, theoretical and practical thought.

Capacity for problem-solving and decision-making.

To recognize the mutual influence existing between science, society and technological development in order to strive for a sustainable future.

To develop oral and written communication skills.

Manage current regulations and legislation that regulate biotechnological processes and products.

Identify the basic principles of ethics and bioethics and apply them in personal and professional life.

Understand the meaning and foundation of human dignity, the fundamental dimensions of the human being, the evolution of different anthropologies throughout history and their practical implications.

Develop habits of rigorous thinking.

Ability to communicate the knowledge acquired orally and in writing.

Know how to apply the theoretical knowledge acquired to solving problems and practical cases related to different subjects.

Know how to work as a team in an effective and coordinated way.

Analyze and synthesize the main ideas and contents of all types of texts; discover the theses contained in them and the issues they raise, and critically judge their form and content.

Develop criteria for problem solving and decision-making both in the professional and personal spheres.

Know how to apply the bases and conceptual tools to establish a dialogue between different positions as a guarantee of healthy civil coexistence.

LEARNING RESULTS

RA1 - Describe the main current scientific issues with a clear bioethical dimension.

RA2 - Analyze the biological, anthropological and ethical aspects involved in the various topics studied.

RA3 - Discuss (individually or as part of a group of several people) in the light of the data provided by scientific and philosophical reflection the main bioethical issues.

RA4 - Confronting diverse positions and bioethical options.

RA5 - Describe and apply current regulations to the analysis of biotechnological and bioethical cases.

RA6 - Critically analyze the theses proposed in scientific or philosophical texts related to the topics of bioethics discussed in the classroom.

RA7 - Analyze from a multidisciplinary perspective real or hypothetical cases related to bioethical issues developed in the classroom.

LEARNING APPRAISAL SYSTEM

I. Criteria valid for the entire subject in both parts:

1. In the evaluation of the subject, 50% corresponds to each of the two parts (scientific/legal and

anthropological/ethical), both in the ordinary and in the extraordinary call.

2. Each part will be evaluated independently; this implies that a final exam of the subject that brings together both parts will not be carried out.

3. To successfully pass the course, it will be necessary to obtain a minimum final grade of 2.5 out of 5 in each of the parts (both in the ordinary call and in the extraordinary call).

4. If in the ordinary call one of the parts of the subject is passed while the other is not, the student will be kept the grade corresponding to the part passed for the extraordinary call. Therefore, only the part that will remain pending should be examined in the latter.

5. Plagiarism, as well as the use of illegitimate means in evaluation tests, will be sanctioned in accordance with those established in the Evaluation Regulations and the University's Coexistence Regulations.

(a) Regular evaluation system:

1. Evaluation of the theoretical content of the subject: Theory evaluation tests using partial/final exams: 70%. You will evaluate learning outcomes RA1, 2, 5 and 7.

2. Seminar evaluation: carrying out and presenting exercises, case studies, debates, tutorials, etc.: Oral or written public presentation of bioethical cases, seminar exercises, monitoring and participation in the development of face-to-face and virtual classroom classes through tasks, evaluation of forums, etc.: 30%. You will evaluate learning outcomes RA3, 4, 6 and 7.

b) Alternative evaluation system: Students in second or subsequent enrollment must contact the teacher to request to take advantage of this system. Students in second or subsequent enrollment will be evaluated the same as the rest of their classmates. If they are unable to attend classes regularly, they should contact the teacher to request a series of follow-up tutorials.

II. Criteria for evaluating the first part (scientific/legal)

The grade will be divided between a written exam that will include the evaluation of the contents of the course (80%) and a seminar with the subject of Molecular Genetics and Regulation of Gene Expression (20%). In order to calculate the average grade, it will be essential to obtain a minimum score of 5 both in the written exam and in the delivery of the seminar. If you do not pass either of the two parts, the grades approved for the extraordinary call will be kept, waiting to pass only the suspended part.

III. Criteria for the evaluation of the second part (anthropological/ethical)

a) Monitoring and participation in the virtual classroom through tasks, forums, etc. (20%). b) Oral and written public presentation of bioethical cases, as well as in seminar activities (20%). c) Final exam on the entire subject program (60%).

ETHICAL AND RESPONSIBLE USE OF ARTIFICIAL INTELLIGENCE

1.- The use of any Artificial Intelligence (AI) system or service shall be determined by the lecturer, and may only be used in the manner and under the conditions indicated by them. In all cases, its use must comply with the following principles:

a) The use of AI systems or services must be accompanied by critical reflection on the part of the student regarding their impact and/or limitations in the development of the assigned task or project.

b) The selection of AI systems or services must be justified, explaining their advantages over other tools or methods of obtaining information. The chosen model and the version of AI used must be described in as much detail as possible.

c) The student must appropriately cite the use of AI systems or services, specifying the parts of the work where they were used and describing the creative process followed. The use of citation formats and usage examples may be consulted on the Library website(<u>https://www.ufv.es/gestion-de-la-informacion_biblioteca/</u>).

d) The results obtained through AI systems or services must always be verified. As the author, the student is responsible for their work and for the legitimacy of the sources used.

2.- In all cases, the use of AI systems or services must always respect the principles of responsible and ethical use

upheld by the university, as outlined in the <u>Guide for the Responsible Use of Artificial Intelligence in Studies at UFV</u>. Additionally, the lecturer may request other types of individual commitments from the student when deemed necessary.

3.- Without prejudice to the above, in cases of doubt regarding the ethical and responsible use of any AI system or service, the lecturer may require an oral presentation of any assignment or partial submission. This oral evaluation shall take precedence over any other form of assessment outlined in the Teaching Guide. In this oral defense, the student must demonstrate knowledge of the subject, justify their decisions, and explain the development of their work.

BIBLIOGRAPHY AND OTHER RESOURCES

Basic

LUCAS LUCAS, Ramon. Bioethics for all/2nd ed. Mexico:Trillas, 2004.

(LUCAS LUCAS, Ramon. Bioethics for all/2nd ed. Mexico:Trillas, 2004., ||LUCAS LUCAS, Ramón. Explain the person to me/Roma:Edizioni Art, 2010.)

SGRECCIA, Elio (1928-) Manual of Bioethics.1,: Foundations and Biomedical Ethics/Madrid:Library of Christian Authors, 2009.