INSTITUTO POLITÉCNICO DE BRAGANÇA

Course Unit	Animal biotechnology			Field of study	Biology and biochemistry/Animal and agrarian production		
Bachelor in	Biology and Biotechnology			School	School of Agriculture		
Academic Year	2022/2023	Year of study	2	Level	1-2	ECTS credits	6.0
Type	Semestral	Semester	1	Code	9029-510-2102-00-22		

Workload (hours)	162	Contact hours	T	30	TP	-	PL	30	TC	-	S	-	E	-	OT	4	O	-

T - Lectures; TP - Lectures and problem-solving; PL - Problem-solving, project or laboratory; TC - Fieldwork; S - Seminar; E - Placement; OT - Tutorial; O - Other

Name(s) of lecturer(s)	Teresa Maria Montenegro Araújo A. Correia, Vasco Augusto Pilão Cadavez

Learning outcomes and competences

At the end of the course unit the learner is expected to be able to:
1. Animal Biotechnology is the use of science and engineering to modify living organisms and animal production systems or processing animal products.
2. Understand how biotechnology operates at the level of technological processing of animal products
3. Students should know the main reproductive technologies used in animals, their use and their limitations.
4. Learn about the latest advances and use in transgenic animals.

Prerequisites

Before the course unit the learner is expected to be able to:
1. Computer skills.
2. Knowledge of biology.
3. Knowledge of classical and molecular genetics.
4. Knowledge of genetic engineering.

Course contents

Animal Biotechnology intends to implement new biotechnology in four main areas: 1- Improvement of animal products 2- Improve animal health and welfare 3- Increased reproductive efficiency of animals. 4- Use of transgenic animals for different purposes.

Course contents (extended version)

1. Guidelines for the curricular unit
2. The technology of animal reproduction
    - Female genital tract and estrous cycles
    - Male genital tract
    - Control of ovarian activity
    - Semen technology
    - In vitro fertility
    - Preservation and embryo transfer
    - Cloning
3. Transgenic Animals. Different purposes
4. Biotechnology in livestock production: An overview
5. Current Status and Options for Livestock Biotechnologies
6. Current Status and Options for Biotechnologies in Aquaculture and Fisheries
7. Current Status and Options for Biotechnologies in Food Processing and in Food Safety
8. Biotechnology Applied to Food Engineering

Recommended reading

1. Seneda, M; Silva Santos, K. and Marinho, L. , 2016 Biotecnology of Animal Reproduction. nova Science Publishere. New York.
2. Safety of Genetically Engineered Foods: approaches to Assessing Unintend Health Effects. Institute of Medicine (US) commitee on identifying and assessing Unintended
3. Shenoy M. (2007) Animal Biothecnology by Firewall Media. 01/01/2007
4. Xiaoling, C. ; Zhiqing, H. Gang, J. Xiuqun, W. , &Caimei, W. (1 of april, 2012). Biblioteca do conhecimento on line Http: //dx doi. otg/10. 1080/104953982011. 630897
5. Tizard, M. ; Hallerman, E. ; Fahrenkung, S. . . . . 2016. Strategies to enable the adoption of animal biotecnhology to sustainably improve global food safety and security. Transgenic Research, 575-595

Teaching and learning methods

Theoretical lessons on fundamental concepts with complemented illustrative examples. Practical lessons with conducing protocols depicting some of the techniques used in biotechnology. TIC, namely virtual, and both auditory and visual stimuli are used to promote augmented learning.

Assessment methods

1. Continuous evaluation - (Regular, Student Worker) (Final)
    - Intermediate Written Test - 50% (Minimum mark 8. 5.)
    - Presentations - 30% (Presentation of a development theme.)
    - Final Written Exam - 50% (Minimum mark 8. 5.)
2. Final exam - (Regular, Student Worker) (Final, Supplementary, Special)
    - Final Written Exam - 100% (Final exam with theoretical part (80%) and practical (20%).)

Language of instruction

Portuguese, with additional English support for foreign students.

Electronic validation

Teresa Maria Montenegro Araújo A. Correia, Vasco Augusto Pilão Cadavez	Marieta Amélia Martins Carvalho	Altino Branco Choupina	Ramiro Corujeira Valentim
21-12-2022	21-12-2022	21-12-2022	22-12-2022