



REPRODUCTION BIOTECHNOLOGIES

Enrollment year	2021/2022
Academic year	2021/2022
Regulations	DM270
Academic discipline	BIO/05 (ZOOLOGY)
Department	DEPARTMENT OF BIOLOGY AND BIOTECHNOLOGY "LAZZARO SPALLANZANI"
Course	ADVANCED BIOTECHNOLOGY
Curriculum	PERCORSO COMUNE
Year of study	1°
Period	1st semester (01/10/2021 - 14/01/2022)
ECTS	6
Lesson hours	48 lesson hours
Language	Italian
Activity type	ORAL TEST
Teacher	MERICO VALERIA (titolare) - 6 ECTS
Prerequisites	Knowledge of Developmental Biology
Learning outcomes	<p>The objective of the course is to provide the theoretical bases and methodological knowledge related to the application of assisted reproduction techniques (ARTs) in the zootechnical and human fields. The course provides the student with a background on the structure, function and endocrine, cellular and molecular mechanisms that regulate the maturation of gametes, fertilization and embryonic development. On these biological bases a theoretical preparation will be developed on:</p> <ol style="list-style-type: none">1) methodological approaches for the collection, evaluation of gametes, in vitro maturation and fertilization of the oocyte and cryopreservation of gametes and embryos.2) Main molecular biology techniques applied to the analysis of pre-implantation gametes and embryos and pre-implantation diagnosis

	3) Production in culture and application of stem cells.
Course contents	Outline of gametogenesis and fertilization. The endocrine control of the spermatogenesis and oogenesis. Intrinsic and extrinsic causes of male and female infertility. Female and male genesis of the gamete, transference of gametes, fertilization therapies of induction and control of ovulation. Biotechnologies applied to reproduction. Assisted Reproductive Technologies (ARTs). Ethical and legal aspects in ARTs. Cloning. Techniques of cryopreservation of gametes and embryos. Derivation and differentiation of stem cells. Prenatal diagnosis (pre and post-treatment)
Teaching methods	Frontal lessons held in the classroom. Practical lessons could be organized to better know some of the most used techniques in the field of Reproductive Biotechnology and their specific use.
Recommended or required readings	<ul style="list-style-type: none"> - Biologia e Tecnologie della riproduzione umana. R. Talevi-R. Gualieri Piccin - Biotecnologie della Riproduzione Umana. L. Gandini e A. Lenzi; Carocci Faber. Didactic material provided by the Professor
Assessment methods	Oral exam. The exam includes a short presentation (a power point presentation of max 10 min) on a topic of the program chosen by the student and 2/3 questions chosen by the teacher
Further information	none
Sustainable development goals - Agenda 2030	The goals