DIPARTIMENTO DI SCIENZE

COURSE: **Reproductive Biology and Technology in mammals**	
ACADEMIC YEAR: **2016-2017**	
TYPE OF EDUCATIONAL ACTIVITY: (Basic, Characterizing, Affine, Free choice, Other) **BASIC**	
TEACHER: **Prof. Raffaele BONI**	
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Language: **Italian**	

ECTS: **6** (**5** lessons & tutorials/**1** practice)	n. of hours: **52** (**40h** lessons & tutorials/**12h** practice)	Campus: **Potenza** **Dept. Sciences:** **Master Degree in Biotechnology for the diagnostics in Medical, Pharmaceutical and Veterinary Sciences (LM-9)**	Semester: **I**

EDUCATIONAL GOALS AND EXPECTED LEARNING OUTCOMES

This course is aimed to:

- provide basic information on anatomical and physiological features of female and male genitalia;
- describe the main mechanisms involved in the growth and maturation of gametes as well as in fertilization, embryonic and fetal growth, pregnancy and parturition;
- describe the sexual cycle functionality and dysfunctions as well as the sexual cycle synchronization and induction;
- describe the application of assisted reproduction techniques (oocyte collection, in vitro fertilization, embryo culture) as well as cloning techniques and production of transgenic animals;
- evaluate the quality of male and female germ cells;
- provide information on gamete and embryo cryopreservation;
- describe new frontiers of reproductive biology as stem cells.

PRE-REQUIREMENTS

None

SYLLABUS

Anatomy of the reproductive tract in human and domestic mammals
Elements of endocrinology in reproductive biology
Gametogenesis
Follicle growth and dynamics
Collection and evaluation of semen
Oocyte and follicle maturation
Mechanisms of fertilization
Embryo development
Sexual cycle: dynamics, dysfunction and manipulation (i.e., synchronization and induction)
Developmental biology and organogenesis
Pregnancy and childbirth
Assisted reproduction techniques
Superovulation and embryo transfer
In vitro embryo production - IVF
Ovum Pick-up
Micromanipulation, nuclear transfer, Transgenic animals
Stem Cells
Diagnostic techniques applied to the reproduction
Pregnancy diagnosis

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Monitoring hormone dynamics

TEACHING METHODS

Theoretical lessons, Classroom and Laboratory tutorials.

EVALUATION METHODS

Oral examination

TEXTBOOKS AND ON-LINE EDUCATIONAL MATERIAL

- *Lenzi e Gandini "Biotecnologie della riproduzione umana", Carrocci Ed*
- *Czyba e Montella "Biologia della Riproduzione umana", Piccin ed*
- *Seren E. "Riproduzione negli animali d'allevamento" (di Hafez & Hafez). Libreria Universitaria (ed) Bologna*
- *Class material*
- *Tosti E. e Boni R. Oocyte maturation and fertilization. A long history for a short event. Bentham Ed. Open access at http://www.benthamscience.com/ebooks/9781608051823/index.htm*
- *Knobil and Neill "Physiology of Reproduction" Academic Press, Elsevier.*
- *Gordon I "Laboratory production of cattle embryos" CAB 2003*
- *WHO laboratory manual for the Examination and processing of human semen FIFTH EDITION Open access at http://apps.who.int/iris/bitstream/10665/44261/1/9789241547789_eng.pdf?ua=1*

INTERACTION WITH STUDENTS

At the beginning of the course, after describing the objectives, the program and the verification procedures, the teacher collects the names and the e-mail addresses of the students. It is a task of the teacher to build a mail-list with which invite students to log in to one of the educational material sharing site, which will be available from the end of the first lesson. Such material can be enriched with in-depth material on the basis of specific needs required by the course.

Weekly reception

day	***from***	***to***	***at***
Tuesday	*16:30*	*18:30*	*Teacher's room*
Wednesday	*16:30*	*18:30*	*Teacher's room*
Thursday	*9:30*	*11:30*	*Teacher's room*

This schedule may be changed due to teaching or academic duties. However, in addition to the scheduled weekly reception, the teacher is always available, when present in his room or lab, for personalized explanations with students, which may be done either by the students receiving as well as by email or phone service.

EXAMINATION SESSIONS (FORECAST)[1]

18/01/2017, 08/02/2017, 22/02/2017, 15/03/2017, 12/04/2017*, 03/05/2017, 07/06/2017, 05/07/2017, 20/09/2017, 18/10/2017*, 08/11/2017*, 20/12/2017.*

SEMINARS BY EXTERNAL EXPERTS YES *X* NO □

FURTHER INFORMATION

[1] Subject to possible changes: check the web site of the Teacher or the Department/School for updates.

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