



ΕΛΛΗΝΙΚΗ ΔΗΜΟΚΡΑΤΙΑ

HELLENIC REPUBLIC

ΕΘ . Α . Α . Ε .

Η . Α . Η . Ε .

ΕΘΝΙΚΗ ΑΡΧΗ ΑΝΩΤΑΤΑΤΗΣ ΕΚΠΑΙΔΕΥΣΗΣ

HELLENIC AUTHORITY FOR HIGHER EDUCATION

University of West Attica

School of Health and Care Sciences

Department of Biomedical Sciences and Midwifery

Postgraduate Studies

“Applications of Biomedical Technology in Infertility - Male and Female Factor”

Course Outline

IN VITRO EMBRYO DEVELOPMENT-CELL CULTURES



ATHENS 2023



COURSE OUTLINE

(1) GENERAL

SCHOOL		School of Health and Care Sciences	
ACADEMIC UNIT		Biomedical Sciences and Midwifery	
LEVEL OF STUDIES		Postgraduate Studies	
COURSE CODE		MY 2.1	SEMESTER Second
COURSE TITLE		Genetics of infertility	
INDEPENDENT TEACHING ACTIVITIES <i>if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits</i>		WEEKLY TEACHING HOURS	CREDITS
Review of existing literature		2	7
Experimental procedure			
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).			
COURSE TYPE <i>general background, special background, specialised general knowledge, skills development</i>	Skills development		
PREREQUISITE COURSES:			
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes		
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/		

(2) LEARNING OUTCOMES

<p>Learning outcomes</p> <p><i>The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.</i></p> <p>Consult Appendix A</p> <ul style="list-style-type: none"> • Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area • Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B • Guidelines for writing Learning Outcomes
<p>The purpose of the course is to understand assisted reproduction and modern developments in the biomedical sciences. It is an innovation, a real revolution that moves the arrival of a person into the world from the level of purely interpersonal relations of a couple to the level of an impersonal laboratory, replacing the natural laws of reproduction with individual choices of expert scientists. After successfully completing the course, students will be able to:</p> <ul style="list-style-type: none"> • Understand the whole process of assisted reproduction technology • Understand treatment protocols, sperm or egg collection and donation, the selection of healthy embryos, the use of borrowed eggs and embryos, up to the institution of surrogate motherhood and the legislative regulations of child-parent relationships. • Understand the quality of the methods, as well as the healthy profile of the embryos, the basic conditions for the successful outcome of the whole project.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology

Adapting to new situations

Decision-making

Working independently

Team work

Working in an international environment

Working in an interdisciplinary environment

Production of new research ideas

Project planning and management

Respect for difference and multiculturalism

Respect for the natural environment

Showing social, professional and ethical responsibility and sensitivity to gender issues

Criticism and self-criticism

Production of free, creative and inductive thinking

.....

Others...

.....

- Search, analysis and synthesis of data and information, using the necessary technologies
- Work in an interdisciplinary environment
- Adaptation to new situations
- Project planning
- Autonomous work
- Teamwork
- Generation of new research ideas

(3) SYLLABUS

1. Quality Control of In vitro Fertilization (IVF) Laboratory
2. Oocyte collection and evaluation of oocyte quality and morphology
3. In vitro culture of gametes and embryos
4. In vitro egg fertilization method
5. Cryopreservation of eggs and embryos
6. Cryopreservation of testicular and ovarian tissue
7. Preimplantation diagnosis-Indications
8. Immunology of Reproduction
9. Technical maternal spindle transfer
10. Donation of gametes-Surrogate mother
11. Monitoring using a camera (time lapse) of the in vitro stages of embryo development
12. IVF Lab Design-Operation
13. Logistics Equipment-Human Scientific potential of IVF unit

Laboratory/Tutorial Exercises

1. In vitro culture of gametes and embryos
2. In vitro egg fertilization methods
3. Cryopreservation of eggs and embryos

Educational Software

-

(4) TEACHING and LEARNING METHODS - EVALUATION

<p>DELIVERY <i>Face-to-face, Distance learning, etc.</i></p>	<p>In the classroom and in the Lab face to face.</p>	
<p>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY <i>Use of ICT in teaching, laboratory education, communication with students</i></p>	<ul style="list-style-type: none"> ➤ CytoScape, GenMAPP, SeqMap, FASTA, DNADot ➤ Learning process support through the electronic platform e-class, Microsoft Teams, Skype Business 	
<p>TEACHING METHODS <i>The manner and methods of teaching are described in detail.</i> <i>Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.</i></p> <p><i>The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS</i></p>	<p>Activity</p>	<p>Semester workload</p>
	<p>Lectures</p>	<p>42</p>
	<p>Laboratory/Tutorial Exercises</p>	<p>20</p>
	<p>Interactive Teaching</p>	<p>13</p>
	<p>Study and Analysis of the Literature</p>	<p>26</p>
	<p>Preparation of Study</p>	<p>26</p>
	<p>Writing Assignment</p>	<p>26</p>
	<p>Independent Study</p>	<p>47</p>
	<p>Course total</p>	<p>200</p>
<p>STUDENT PERFORMANCE EVALUATION <i>Description of the evaluation procedure</i></p> <p><i>Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other</i></p> <p><i>Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</i></p>	<ol style="list-style-type: none"> 1. Written final exam (50%) which includes: <ul style="list-style-type: none"> • Multiple choice questions • Short Answer Questions • Problem solving 2. Internship (20%) 3. Presentation of Individual or Group Work (20%) 	

(5) ATTACHED BIBLIOGRAPHY

Suggested bibliography:

1. A History of Developments to Improve in vitro Fertilization, Ashley M. Eskew, MD
2. Emily S. Jungheim, MD *Mo Med*. 2017 May-Jun; 114(3): 156–159. -In Vitro Fertilization Technology and Child Health Risks, mechanisms and possible consequences *Dtsch Arztebl Int* 2020; 117: 23-30.
3. Success of In Vitro Fertilization: A Researched Science or a Performance Indicator Mahmoud Salam *J Clin Gynecol Obstet*. 2017;6(3-4):53-57.
4. Pregnancies after intracytoplasmic injection of single spermatozoon into an oocyte. *Lancet* 1992; 340:17.
5. Palermo G, Joris H, Devroey P, Van Steirteghem AC. Predictive factors in in vitro fertilization (IVF): a systematic review and meta-analysis. *Hum Reprod Update* 2010; 16:577.
6. van Loendersloot LL, van Wely M, Limpens J, et al. Follicular flushing during oocyte retrieval in assisted reproductive techniques. *Cochrane Database Syst Rev* 2018; 4:CD004634. Georgiou EX, Melo P, Brown J, Granne IE.

Related academic journals:

-