COURSE DETAILS
"HUMAN HISTOLOGY AND EMBRYOLOGY"
SSD BIO/17

DEGREE PROGRAMME: MEDICINE AND SURGERY (P11)
COORDINATOR: PROF. Giovanna Giuseppina Altobelli
ACADEMIC YEAR: 2024-2025

GENERAL INFORMATION – TEACHER REFERENCES

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GENERAL INFORMATION ABOUT THE COURSE

TEACHING LANGUAGE: ENGLISH
YEAR OF THE DEGREE PROGRAMME: I
SEMESTER: II
CFU: 6

Faculty member	Position	Scientific Fields	Phone	Reception	E-mail
Giovanna G. Altobelli	Assistant Professor	Histology	3427 - 2257	Thursday 14.00 pm-16.00 pm (bldg 20, room 240)	ggaltobe@unina.it

REQUIRED PRELIMINARY COURSES (IF MENTIONED IN THE COURSE STRUCTURE "REGOLAMENTO")

"there are no required preliminary courses"

PREREQUISITES (IF APPLICABLE)

"there are no prerequisites"

LEARNING GOALS

By the end of the course, the student will be able to:

1. Identify various cellular organelles by relative size and morphology, as seen with light and electron microscopy.

2. Gain the ability to interpret correctly data from both light and electron micrographs.

3. Identify the morphological features of the human four primary tissues and recognize their interplay in forming organs.

4. Describe the histology of the cyclic changes in the human male and female reproductive systems, and know the cellular and tissue basis of the human reproduction mechanisms.

5. Understand the different stages of human embryonic development and the relevance of relationships between embryology and medical practice.

6. Focus on the relevance of cellular and histological structures as basis of organism normal functioning, and as target of variations that can lead to the disease.

EXPECTED LEARNING OUTCOMES (DUBLIN DESCRIPTORS)

Knowledge and understanding

The student would be able to:

1. know the morphology of cells, tissues and their classifications

2. know the main relationships between the structure and the functions

3. identify cytotypes and differentiated tissues by using specific morphological methods

4. discuss the role of tissues in the formation of complex structures

Applying knowledge and understanding

The student would be able to:

1. integrate the morphological and functional characteristics of cells and tissues, in the course of development, differentiated state and their role in the normal functioning of organs and systems.

2. identify the relationships between the main stages of differentiation and development, and recognize their importance in medical practice

COURSE CONTENT/SYLLABUS

Cell membranes. Endocytosis and exocytosis. Cytosol. Ribosomes. Nucleus. Nucleolus. Nuclear Lamina. Chromatin. Mitochondria. Endoplasmic reticulum. Smooth endoplasmic reticulum. Rough endoplasmic reticulum. Protein producing cells. Steroid producing cells. Golgi. Golgi hydrolase vesicles. Endosome. Peroxisomes. Cytoskeleton. Microfilaments. Intermediate filaments. Microtubules.

Stem cells and differentiation. Polarization. For each tissue is required a general knowledge and the specific organisations: cell types, extracellular matrix and its components, histogenesis, histodifferentiation, regeneration possibility.

Epithelium: classification. Surface, lateral and basal specializations of epithelial membranes. Examples of lining epithelia: endothelium, mesothelium, epidermis. Mucous and serous membrane.

Exocrine and endocrine glands. Endocrine glands. Histological and cytological classification.

Connective tissue: matrix, fibers and cells of the connective tissue. Types of connective tissue. Mucous, reticular, elastic. Adipose tissue. Cartilage. Growth and histodifferentiation. Articular cartilage. Bone tissue. Histogenesis, bone remodeling and repair.

Blood. Hemopoietic tissues: bone marrow and lymphoid tissue.

Smooth, cardiac and skeletal muscle.

Nerve tissue: classification. Nerve cell structure. Neuroglia.

Biology of reproduction: Endocrine role of the gonads. Male gonads. Seminiferous tubules. Spermatogenesis. Spermatozoa. Sertoli cells and hemato-testicular barrier. Leydig cells. Histophysiology. Female reproductive system. Ovarian cycle. Vaginal cycle. Endometrium and uterine cycle. Tubal epithelium.

Fertilization. Cleavage and implantation. Formation of germ layers and early derivatives. Embryonic-fetal annexes. Placenta. Morphogens. Main genes involved in development, induction and differentiation.

READINGS/BIBLIOGRAPHY

Textbooks

Stevens and Lowe's Human Histology by James S. Lowe and Peter G. Anderson. Elsevier

Langman's Medical Embryology by Thomas W. Sadler. Lippincott Williams & Wilkins

Supplemental textbooks

Histology: A text and atlas by Michael H. Ross and Wojciech Pawlina. Lippincott Williams & Wilkins

Weather's Functional Histology. A text and colour atlas by B. Young, J.S. Lowe, A. Stevens and J.W. Heath. Fifth edition. Elsevier.

TEACHING METHODS

a) *Slide presentations will be used for lectures for approximately 60 hours*
b) *Practical histology will be performed with virtual microscopy and light microscopy for approximately 15 hours*

EXAMINATION/EVALUATION CRITERIA

a) Exam type:

The exam includes written and oral:

Exam type	
written and oral	x
only written	
only oral	
project discussion	
other	***Discussion of light and electron micrographs***

In case of a written exam, questions refer to: (*)	**Multiple choice answers**	x
	Open answers	
	Numerical exercises	

(*) multiple options are possible

b) Evaluation pattern:

A test with multiple choice questions on all arguments listed in the program is preliminary to oral examination. The test must be passed (almost 18/30) for the access to oral examination. The final mark will be an evaluation of the oral exam and other tests

SCHEDULE OF THE COURSE

HUMAN HISTOLOGY and EMBRYOLOGY

Academic year: 2024-2025; I Year, 2° Semester

Week	Day Hour	Prof.	Formal Lectures
1 **March** 10th - 14th			
2 **March** 17th – 21st	19th 13-17 21st 14-17	Altobelli Altobelli	Introduction to Human Histology and Human Embryology. Stem cells. Basic Histological methods of tissue processing: light and electron microscopy. Cytology
3 **March** 24th – 28st	26th 13-17	Altobelli	Cytology
4 **March** 31st **April** 1st-4th	31st 13-15 2nd 13-17	Altobelli Altobelli	Epithelial Tissue Epithelial Tissue
5 **April** 7th – 11st	7th 13-15 9th 13-17	Altobelli Altobelli	Epithelial Tissue/Connective Tissue Connective Tissue**/ADI**
6 **April** 14th - 16th 23th - 24th	23rd 13-17 24th 13-15	Altobelli Altobelli	Connective Tissue/**ADI** Connective tissue
7 **April** 28th – 30th **May** 2nd	28th 13-15 30th 13-17	Altobelli Altobelli	Blood and hematopoietic tissue Blood and hematopoietic tissue **ADI**
8 **May** 5th - 9th	5th 13-15 7th 13-17	Altobelli Altobelli	Muscle tissue Muscle tissue/ Nervous tissue **ADI**
9 **May** 12th – 16th	12nd 13-15 14th 13-17	Altobelli Altobelli	Nervous tissue Male and Female Reproductive System **ADI**
10 **May** 19th-23rd	19th 13-15 21th 13-17	Altobelli Altobelli	Male and Female Reproductive System Human Embryonic Development **ADI**
11 **May** 26th -30th	26th 13-15 28th 13-17	Altobelli Altobelli Altobelli	Human Embryonic Development Human Embryonic Development **ADI**
12 **June** 2nd-6th	4th 13-17	Altobelli	Human Embryonic Development **ADI**

ADI additional learning interactive activity