



Degree Course	Bachelor's Degree in Scienze Biologiche
Course	Cytology and histology
Credits	9
Semester	II
Teacher	Marina Paolucci
PhD students / research assigners who carry out teaching activities to support the course	Dr. Elena Coccia
Reception hours	Always by appointment via email
Address	via Port'Arsa, 11

PRESENTATION OF THE COURSE

The cytology and histology course deals with the study of cell and tissue. The course organization includes a first part (about 1/3 of the course) focused on cell study, focusing on the cell's dynamic aspects of its ability to form tissues and organs. In the second part of the course (2/3), the study of the main human tissues is addressed. During the course, practical activities will be held for the recognition of histological preparations. The knowledge provided by the course of Cytology and Histology is to be considered fundamental for the student who deals with the study of Biology, since it represents the natural cultural foundation indispensable for dealing with the subjects of the following years.

THE FORMATIVE OBJECTIVES

Understanding the knowledge of the cell organization, aimed at the tissue organization;
Understanding of tissue morpho-functional correlations.

Ability to recognize the main tissues and their morphological characteristics using the optical microscope.

PREREQUISITES

None required. However, it would be preferable to have a knowledge of chemistry and basic cell organization.

FREQUENCY OF LESSONS

Frequency is not mandatory but recommended. The course attendance allows the student to practice in the laboratory frame the theoretical knowledge gained during the lectures. It will be also possible for the student to access the mid-term exams and exam simulations.

CONTENTS OF THE COURSE

CYTOLOGY

The dynamic aspects of the cell will be emphasized with particular reference to those characteristics that are of particular relevance to tissue formation. The following topics will be discussed: cellular communication, membrane and intracellular receptors, extracellular membrane, signal transduction, cell joints, vesicular flux, exocytosis, pinocytosis, phagocytosis, receptor mediated endocytosis, secretion proteins biosynthesis, cytoskeleton, Cilia and flagella, transport of molecules through the nuclear membrane.

HISTOLOGY

Epithelial tissue: generality. Classification of epithelia. Cytological features of epithelia. The basal membrane. Microvilli. Exocrine glands and endocrine glands. Classification of exocrine glands. Endocrine Glands: histological structure and classification.

Properly said connective tissue. Connective tissue fibers: collagen, tropocollagen, elastic and reticular fibers. The amorphous substance. The cells of the connective tissue properly said. Variety of connective tissue properly said.

Cartilage tissue: generality. Types of cartilage: hyaline, elastic and fibrous.

Bone tissue: generality. Types of bone tissue: lamellar and non-lamellar. Macroscopic organization of the bones. Microscopic and submicroscopic structure and chemical composition of compact and spongy bone tissue.

Blood and lymph: generality. Blood Composition: Plasma and Elevated Elements. General Immunity Concepts.

Nervous tissue: generality. Types of neurons: unipolar, bipolar, multipolar, pseudounipolar. Adhesive coatings. The synapse. General organization of the central and peripheral nervous system. The nevroglia.

Muscle tissue: generality. Types of muscle tissue: skeletal, smooth and cardiac. Structure of the sarcomere. The mechanism of muscular contraction. The neuro-muscular junction.

DIDACTIC METHODS

Lectures, practical laboratory activity. The theoretical lessons provide theoretical knowledge that will then be put into practice during practical laboratory activity, complying with the achievement of the above training goals.

REFERENCE TEXTS

Histology by V. Monesi, Publisher Piccin;

Cytology and Histology by Cardellini et al., Idelson-Gnocchi;

Histology by Gartener - Hiatt, Edises Publisher;

Cytology, Histology and Microscopic Anatomy of Zaccheo and Pestarino, Pearson Publisher;

Histology by Donne et al. Edises Publisher;

Any text at university level of cytology and histology as long as it is recent.

The teaching material illustrated during the lessons is available to students who are registered on the personal site of Prof. Marina Paolucci. (www.marinapaolucci.bio)

PROFIT EXAMINATION

Written exam (test) with multiple-choice questions. The test consists of 25 questions, 20 questions are worth 1 point each and 5 questions are worth 2 points each for a total of 30 points. The time available is 30 minutes. Incorrect and unanswered answers are not penalized and do not match the final score. There are three mid-term tests for attending students. Each test consists of 15 multiple-choice questions. Any question is worth two points for a total of 30 points. The time available is 30 minutes. Incorrect and unanswered answers are not penalized and do not match the final score. Upon completion, the student who has reached an average score of the three tests, greater than or equal to 18 may, if wished, accept the vote with subsequent verbalisation of the exam.

CALENDAR OF THE EXAMS

Go to the link

RESERVATION OF THE EXAMS

Go to the link

SYLLABUS

Subjects	Duration (hours)	Bibliographical references	Type of lesson
Cellular communication, membrane and intracellular receptors, glycolysis, signal transduction, cell junctions, vesicular flux, exocytosis, pinocytosis, phagocytosis, receptor-mediated endocytosis, secretion proteins biosynthesis, cytoskeleton, eyelashes and scarring, transport of molecules through the membrane nuclear	24 hours	Scientific texts, publications in scientific magazines, material available on foreign university websites (eg virtual microscope) and movies.	Theoretical
Epithelial tissue: Exocrine and endocrine glands. Connective tissue. Variety of connective tissues. Cartilage tissue. The bone tissue. Blood and lymph. Nervous tissue. General organization of the central and peripheral nervous system. The neuroglia. Muscle tissue: generality. Types of muscle tissue: skeletal, smooth and cardiac.	40 hours of theory and 8 hours of practice	Scientific texts, publications in scientific magazines, material available on foreign university websites (eg virtual microscope) and movies.	Theoretical and practical