UNIVERSITÀ DEGLI STUDI DI PALERMO

DEPARTMENT	Scienze e Tecnologie Biologiche, Chimiche e Farmaceutiche
ACADEMIC YEAR	2018/2019
BACHELOR'S DEGREE (BSC)	BIOLOGICAL SCIENCES
SUBJECT	CYTOLOGY AND HISTOLOGY WITH PRACTICE
TYPE OF EDUCATIONAL ACTIVITY	B
AMBIT	50026-Discipline botaniche, zoologiche, ecologiche
CODE	10995
SCIENTIFIC SECTOR(S)	BIO/06
HEAD PROFESSOR(S)	DI LIEGRO CARLO MARIA — Professore Associato — Univ. di PALERMO LUPARELLO CLAUDIO — Professore Ordinario — Univ. di PALERMO
OTHER PROFESSOR(S)	
CREDITS	9
INDIVIDUAL STUDY (Hrs)	149
COURSE ACTIVITY (Hrs)	76
PROPAEDEUTICAL SUBJECTS	
MUTUALIZATION	
YEAR	1
TERM (SEMESTER)	1° semester
ATTENDANCE	Not mandatory
EVALUATION	Out of 30
TEACHER OFFICE HOURS	**DI LIEGRO CARLO MARIA** Monday 14:30 15:30 stanza 403, ed. 16, viale delle scienze Wednesday 14:30 15:30 stanza 403, ed. 16, viale delle scienze Friday 14:30 15:30 stanza 403, ed. 16, viale delle scienze **LUPARELLO CLAUDIO** Monday 09:30 10:30 Studio Docente, Dip. STEBICEF, viale delle Scienze, Ed. 16, piano -1. Previo accordo via e-mail il ricevimento puo essere effettuato tramite la piattaforma Microsoft Teams

DOCENTE: Prof. CARLO MARIA DI LIEGRO- *Lettere L-Z*

PREREQUISITES	Minimal knowledge required for the access test
LEARNING OUTCOMES	Knowledge of the structural and functional organization of animal cells and tissues and of the utilization of the light microscope. Comprehension of the biological terminology related to this discipline. Ability to use the light microscope, perform simple cytological stainings and recognize the main tissues and their constituents in histology slides. Ability to describe in a clear and rigorous way the morpho-physiological aspects of cells and tissues. Ability to show the acquired knowledge of cell biology by performing an "in itinere" test aimed to the auto-evaluation of the personal level of learning and to the identification of failings, if any.
ASSESSMENT METHODS	Oral exam. The minimum number of questions is two and the exam is aimed to evaluate the level of self-reliance and in-depth examination shown by student in the description and interconnection of different aspect of cell and tissue biology. The part of the program dealing with cell biology will be the object of an "in itinere" evaluation of the acquired knowledge and the obtained result, expressed in marks, may be taken into account as 50% in the final evaluation. The threshold of sufficiency will be reached when the student shows knowledge and comprehension of the topics at least in their outline with limited autonomous assessment, also operating the slightest connections between the topics and expressing with sufficient vocabulary for communication. The more the student will successfully interact with the examiner through various lines of arguments and his/her exposition ability, and the more his/her knowledge and application abilities (recognition of cyto-histological structures in light and electron microscopical images published in atlases) get into details, the more the evaluation will be positive, achieving a 30/30 cum laude mark when reaching the intended objective with excellent results.
EDUCATIONAL OBJECTIVES	The study of animal cells from a morpho-physiological, ultrastructural and molecular point of view. The study of the structural and functional properties of differentiated cells and of their mode of association in the different tissues.
TEACHING METHODS	Oral lessons, Tutorials, Evaluation of the acquired knowledge via written test "in itinere"
SUGGESTED BIBLIOGRAPHY	Karp – Biologia cellulare e molecolare - Edises Becker – Il mondo della cellula – Edises Adamo et al. – Istologia di V. Monesi - Piccin Gartner, Hiatt – Istologia – Edises

SYLLABUS

Hrs	Frontal teaching
6	Introduction to cytology. The general organization of animal cells. Chemical composition of cells. Microscopy techniques for the study of cells and tissues
8	The cell membrane: composition, properties and functions. Passive and active transport. Mass transport (endocytosis, pinocytosis, phagocytosis). Membrane receptors and their role in signal transduction.
4	The nucleus: morphology and functions. Chromatin. DNA replication and transcription in brief.
2	The nucleolus. The ribosomes and the translation in brief.
4	Mitochondria: structure, energy transduction and mechanism of protein import. The theory of endosymbiosis.
6	Smooth and rough endoplasmic reticulum, Golgi apparatus: structural and functional aspects. Vesicle trafficking.
4	Exocytosis. Lysosomes and proteasome. Peroxysomes. Melanosomes.
5	Cytoskeleton and cell locomotion. Microfilaments, microtubules and intermediate filaments.
3	Cell cycle and mitosis. Meiosis and apoptosis in brief.
4	The epithelial tissue: overlay and glandular epithelia
4	The connective tissue: cells and extracellular matrix
2	Cartilage and bone tissues: morpho-functional aspects and histogenesis.
5	Blood: properties and function. Blood cells. The immunity system. Platelets and clotting. Haematopoiesis: the bone marrow. Primary and secondary lymphopoietic organs: thymus, lymph nodes and spleen
3	Striated, smooth and cardiac muscle tissues: morphological, ultrastructural and functional aspects
4	The nervous tissue. Neurons and glia: morphological, ultrastructural and functional aspects. The nerve fiber. Histology of the central and peripheric nervous system. The meninges

Hrs	Practice
12	Utilization of the light microscope. Performing of simple cytological stainings and observation under the microscope. Recognition of tissues and their constituents in microscopy slides. Verification of the acquired knowledge

DOCENTE: Prof. CLAUDIO LUPARELLO- *Lettere A-K*

PREREQUISITES	Minimal knowledge required for the access test
LEARNING OUTCOMES	Knowledge of the structural and functional organization of animal cells and tissues and of the utilization of the light microscope. Comprehension of the biological terminology related to this discipline. Ability to use the light microscope, perform simple cytological stainings and recognize the main tissues and their constituents in histology slides. Ability to describe in a clear and rigorous way the morpho-physiological aspects of cells and tissues. Ability to show the acquired knowledge of cell biology by performing and "in itinere" test aimed to the auto-evaluation of the personal level of learning and to the identification of failings, if any.
ASSESSMENT METHODS	Oral exam. The minimum number of questions is two and the exam is aimed to evaluate the level of self-reliance and in-depth examination shown by student in the description and interconnection of different aspect of cell and tissue biology. The part of the program dealing with cell biology will be the object of an "in itinere" evaluation of the acquired knowledge (optional) through three open questions and the obtained result, expressed in marks, may be taken into account as 50% in the final evaluation. The threshold of sufficiency will be reached when the student shows knowledge and comprehension of the topics at least in their outline with limited autonomous assessment, also operating the slightest connections between the topics and expressing with sufficient vocabulary for communication. The more the student will successfully interact with the examiner through various lines of arguments and his/her exposition ability, and the more his/her knowledge and application abilities (recognition of cyto-histological structures in light and electron microscopical images published in atlases) get into details, the more the evaluation will be positive, achieving a 30/30 cum laude mark when reaching the intended objective with excellent results.
EDUCATIONAL OBJECTIVES	The study of animal cells from a morpho-physiological, ultrastructural and molecular point of view. The study of the structural and functional properties of differentiated cells and of their mode of association in the different tissues.
TEACHING METHODS	Oral lessons, Tutorials, Evaluation of the acquired knowledge via written test "in itinere"
SUGGESTED BIBLIOGRAPHY	Becker – Il mondo della cellula – Edises AA.VV (Colombo, Olmo Ed.) - Biologia: cellula e tessuti - Edi Ermes Karp – Biologia cellulare e molecolare - Edises Adamo et al. – Istologia di V. Monesi - Piccin Stevens, Lowe - Istologia Umana - CEA Gartner, Hiatt – Istologia – Edises

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