

Main course information	
Academic subject	Cytology and Histology
Degree course	Biological Science (triennial degree)
Degree class	L-13
ECTS credits (CFU)	8
Compulsory attendance	Yes
Teaching language	Italian
Accademic Year	2019/2020

Professor/Lecturer	
Name & SURNAME	Maria Mastrodonato
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Tutorial time/day	Monday from 9 to 11; Friday from 11 to 13. It is recommended to contact the teacher by e-mail

Course details	Pass-fail exam/Exam with mark out of 30	SSD code	Type of class
	Exam with mark out of 30	BIO/06	Lecture/workshop

Teaching schedule	Year	Semester
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Lesson type	CFU/ECTS	Lessons (hours)	CFU/ECTS lab	Lab hours	CFU/ECTS tutorial/workshop	Tutorial/workshop hours	CFU/ECTS field trip	Field trip Hours
		7,5	60	0,5	6	0	0	0

Time management	Total hours	Teaching hours	Self-study hours
	200	66	134

Academic Calendar	First lesson	Final lesson
	October 2019	January 2020

Syllabus	
Course entry requirements	Secondary school knowledge of cell biology and tissues
Expected learning outcomes (according to Dublin Descriptors) (it is recommended that they are congruent with the learning outcomes contained in A4a, A4b, A4c tables of the SUA-CdS)	
<i>Knowledge and understanding</i>	Acquire knowledge on the composition of living matter, the morphology and structure of the cell, the main functions performed by cellular organelles, cell division processes, and tissue organization.
<i>Applying knowledge and understanding</i>	Use of microscopes and main techniques applied for the morphological study of cells and tissues
<i>Making informed judgements and choices</i>	Students are able to identify the different tissues and recognize the microanatomy of the various organs.
<i>Communicating knowledge and understanding</i>	The student should be able to express himself competently on topics related to the study of cells and tissues, also demonstrating good communication skills.
<i>Capacities to continue learning</i>	The student should be able to relate competently with morpho-functional approach to the cell and animal tissues

Syllabus	
Course content	Cytology: The cell theory. Eukaryotic and Prokaryotic cell. Light and electronic

	<p>microscopes. Shape and dimensions of the cells. Viruses: reproduction and life cycle General organization of the cell. Covalent bonds and interactions. Polar and non-polar molecules. Water properties. Macromolecules: carbohydrates, lipids proteins and nucleic acids . Transcription: major steps, regulation and functions mRNA, tRNA and rRNA. Protein synthesis. DNA structure and replication mechanism. Plasma membrane structure and function. Membrane transport across the membranes: diffusion and active transport. Endo-esocytosis and caveolae. The glycocalyx. The rough endoplasmic reticulum. The ribosomes. The smooth endoplasmic reticulum. The Golgi complex and co- and post-translational modifications. N- and O-glycosylation. Sorting of proteins in different cell compartments. Vesicular trafficking. The lysosomes and.peroxisomes. The mitochondria. general structure and function. ATP, metabolism and oxidative phosphorylation. Cytoskeleton: microfilaments, intermediate filaments and microtubules. Structure and function. Cilia and flagella. The motor proteins: myosin, dynein, kinesin and the related mechanisms. Cell junctions: tight junctions, adhaerens junctions, desmosomes, hemidesmosomes, gap junctions. The nucleus. The nuclear envelope. The nuclear matrix. The chromatin. The nucleolus. The cell division cycle. The chromosomes. Centrioles and spindle apparatus. Mitotic and meiotic division. The cell differentiation.</p> <p>Histology: Epithelia classification: Lining (Simple, Stratified, Transitional and Pseudostratified), Glandular (exocrine, endocrine, development morphology, secretion mode. hormone acting) and sensory epithelia. Tissues cartilage (hyaline, elastic, fibrous and articular) and bone (compact and spongy bone). Direct and indirect ossification. Blood: erythrocytes, leukocytes, blood platelets antibody responses and cell-mediated immune responses Haematopoiesis and general characteristics of lymphatic system. Organization of the skeletal muscle. Myofibrils. Actin and myosin. The sarcoplasmatic reticulum. Muscular contraction. Smooth muscular tissue. Cardiac muscular tissue. Nervous tissue. Neurons and glial cells (forms and varieties of neurons). The nerve fiber and the myelin sheath. Conduction and transmission of the nerve impulse. Neuroglia.</p> <p>Laboratory: Use of microscopes and main histological techniques. Cell and tissue recognition. Interpretation of ultrastructural images.</p>
Course books/Bibliography	R. Colombo e E. Olmo –Biologia- Cellula e Tessuti- Edi-Ermes Liquori, Mastrodonato, Ferri - Atlante di Citologia e Istologia - Waveng Ed., Bari
Notes	
Teaching methods	Lectures with power point and Lab practices
Assessment methods (indicate at least the type written, oral, other)	Oral
Evaluation criteria (Explain for each expected learning outcome what a student has to know, or is able to do, and how many levels of achievement there are	The final vote is attributed on the basis of the completeness of the answer and the ability of the student to demonstrate mastery of the topic, with clarity of exposition, with specific and appropriate scientific terminology and on the ability to link different topics in the programme.
Further information	