COURSE UNIT (MODULE) DESCRIPTION

Course unit (module) title	Code
Cell Structure	

Lecturer(s)	Department(s) where the course unit (module) is delivered
Coordinator: dr. Kristina Daniūnaitė **Other(s):**	Institute of Biosciences, Life Sciences Center

Study cycle	Type of the course unit (module)

Mode of delivery	Period when the course unit (module) is delivered	Language(s) of instruction
Face-to-face, virtual learning environment, individual learning; Lectures, seminars, exercises, laboratory activities	Autumn and spring semesters	English

Requirements for students	
Prerequisites: Biochemistry, basics of Genetics and Cytology	**Additional requirements (if any):**

Course (module) volume in credits	Total student's workload	Contact hours	Self-study hours
5 ECTS	140 hours	32 hours	108 hours

Purpose of the course unit (module): programme competences to be developed

- Knowledge about cell structure and extracellular matrix
- Competence to discuss and evaluate scientific arguments in the field of structural cell biology

Learning outcomes of the course unit (module)	Teaching and learning methods	Assessment methods
Knowledge of cell's structural elements and understanding of their functions	Lectures (problem-based teaching), group discussions, interactive exercises, individual study assignments	Completion of practical assignments (3 written colloquiums/tests, completion of exercises), completion of laboratory works, performance in group discussions, written examination
Comprehension of the issues assessed in scientific publications and ability to propose solutions to the analyzed problems	Group discussions, self-study assignments, report preparation, interactive exercises	Completion of exercises, performance in group discussions, written short report on a particular topic, written examination

Content: breakdown of the topics	Contact hours	Self-study work: time and assignments

	Lectures	Tutorials	Seminars	Exercises	Laboratory work	Internship/work placement	**Contact hours**	**Self-study hours**	**Assignments**
History of structural cell biology as a discipline, breakthroughs							**0**	**6**	Self-study of the most recent achievements in the field of structural cell biology
Structural differences of prokaryotic and eukaryotic cells; variety of cell morphology, types of cells in tissues	2				2		**4**	**6**	Self-study of the related topics, analysis of the recent scientific publications, interactive exercises, preparation for seminar topics, and test 1
Plasma membrane, its structure, features, and functions; principles of membrane transport; cell wall	2		1				**3**	**12**	A critical review of scientific publications on particular topics (to be discussed during the seminar); preparation for test 1
Intracellular compartments and their functions in cells (nucleus, mitochondria, chloroplasts, endoplasmic reticulum, Golgi apparatus, lysosomes, peroxisomes, secretory vesicles, etc.)	4		1		2		**7**	**20**	Self-study of the related topics, analysis of the recent scientific publications, interactive exercises, preparation for seminar topics and test 2
Cytoskeleton and its functions; structural elements, cell polarization, and migration	2		1				**3**	**16**	Self-study of the related topics, analysis of the recent scientific publications, individual exercises, preparation for seminar topics, and test 3
Cell-cell interactions; cell junctions, cell adhesion, cell wall, extracellular matrix; comparison of animal and plant cells in the context	2		1	1			**4**	**16**	Self-study of the related topics, analysis of the recent scientific publications, individual exercises, preparation for seminar topics, and test 3
Overview of fundamental cellular processes (cell cycle, cell death, differentiation, tissue renewal, development of multicellular organisms) and related pathologies (cancer, infection, inflammation, metabolic disorders)	2		1	1			**4**	**8**	Self-study of the related topics, analysis of the recent scientific publications, individual exercises, preparation for seminar topics, and test 3
Cell analysis techniques; cellular imaging, functional cell analysis methods	2			1	2		**5**	**22**	Written report on particular topics with a focus on experimental and analysis methods
Guest lecture and/ or excursion to Lithuanian science institution			2				**2**	**2**	Self-study of the related topics, analysis of the recent scientific

									publications
Total	**16**		**7**	**3**	**6**		**32**	**108**	

Assessment strategy	**Weight, %**	**Deadline**	**Assessment criteria**
Written colloquiums/tests (compulsory)	3 x 25%	During the semester	Cumulative score. A test is passed if a student receives at least half of the maximum points.
Completion of exercises (compulsory)	10%	During the semester	Cumulative score.
Written short report, its oral presentation (compulsory)	15%	During the semester	Cumulative score.
Laboratory work (compulsory)	Pass/fail	During the semester	Pass/fail. Attendance in laboratory work is compulsory.
Additional exercises (optional)	Extra points	During the semester	Cumulative score.
Written examination	100%	During the exam session	If a student achieves ≥50.0% of the cumulative score, passes laboratory activities, and completes all other compulsory activities: • The cumulative score is recalculated proportionally into a 10-point system as a preliminary mark; • a student is allowed not to take the exam; in that case, the preliminary mark is considered the final mark; • if a student chooses to take the exam, the latter's evaluation is considered the final mark. If a student achieves <50.0% of the cumulative score or fails two or three tests but completes laboratory activities and all other compulsory activities, he/she must take the exam. The exam score is then considered the final grade. If a student fails laboratory activities or does not complete at least one compulsory activity, he/she does not receive a preliminary mark and is ineligible to take the exam. The examination consists of 3-6 open questions covering all topics discussed throughout the course.

Author	**Year of publication**	**Title**	**Issue of a periodical or volume of a publication**	**Publishing place and house or weblink**
Compulsory reading				
Alberts B, Johnson A, Lewis J, Raff M, Roberts K, Walter P	2008 (or newer)	Molecular Biology of The Cell (selected chapters)	5th edition (or newer)	Garland Science
Optional reading				
Lodish H, Berk A, Kaiser CA, Krieger M, Bretscher A, Ploegh H, Amon A, Martin KC	2012 (or newer)	Molecular Cell Biology	7th edition (or newer)	W. H. Freeman
Pollard TD, Earnshaw WC, Lippincott-Schwartz J, Johnson G	2016	Cell Biology E-Book	3rd edition	Elsevier