COURSE UNIT (MODULE) DESCRIPTION

Course unit (module) title	Code
Model Organisms and Database Resources in Genetics	

Lecturer(s)	Department(s) where the course unit (module) is delivered
Coordinator: Prof. habil. dr. Izolda Pašakinskienė	Life Sciences Centre, Vilnius University, Saulėtekio 7, 10221 Vilnius, Lithuania

Study cycle	Type of the course unit (module)
Full-time studies	Optional

Mode of delivery	Period when the course unit (module) is delivered	Language(s) of instruction
Lectures, seminars	Autumn semester	English

Requirements for students	
Prerequisites:	**Additional requirements (if any):**
Biochemistry; Structural Cell Biology, Genetics	Molecular Biology

Course (module) volume in credits	Total student's workload	Contact hours	Self-study hours
5	135	48	87

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

The course unit aims to develop:

Specific competences:

- Basic knowledge in principles of model organisms in Genetics
- Basic knowledge in diversity of online resources in Genetics and Genomics
- Practical skills in use of the interactive tools and purposive management of information from the databases addressing issues at molecular, cellular and organism level

General competences:

- Skills to acquire and summarize information
- Oral presentation skills, creativity
- Learning skills in order to study general scienific information

Learning outcomes of the course unit (module)	Teaching and learning methods	Assessment methods
• will know the main principles of model organisms' use in animal and plant genetics • will be acquainted with the scope of databases of the model organisms • will understand principles and structure of species –specific databases and integrative biological databases • will be able to annotate genes and gene products, relate them to molecular function and biological processes in the cell • will be able transcribe and translate a gene into protein and predict its 3-D structure • will be able to understand biological data from metagenomics projects	Lectures, practical work using online, reading of textbooks and research papers	Accumulative score based on the oral presentations on selected topic
• will know how to select and access biological databases and find necessary information	Practical work using online, reading of textbooks and research papers	Accumulative score based on the oral presentations on selected topic

• will be able to summarize and present acquired information in systemic, clear way		

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**
1. Introduction	2						2		Reading lecture material
2. Animal model organisms in genetics	2						2	8	Reading lecture material, self-study
3. Animal genetics database resources		4					4	10	Practical exercises on line in class, self-study
4. Mouse model in human genetics	2	4	2				8	10	Practical exercises on line in class, self-study, defense of the self -study project
5. Analysis tools in NCBI, KEGG, COGs, GO and other database , protein 3-D prediction tools		6					6	15	Practical exercises on line in class, self-study
6. Plant model organisms in genetics	2						2	8	Reading lecture material, self-study
7. Plant species-specific database		4					4	8	Practical exercises on line in class, self-study
8. *Arabidopsis thaliana* in plant genetics	2	4	2				8	10	Practical exercises on line in class, self-study, defense of the self -study project
9. Plant integrative database resources	2	4					6	8	Reading lecture material, self-study
10. Metagenomics, microorganism biotechnology and online resources		4	2				6	10	Practical exercises on line in class, self-study, defense of the self -study project
Total	**12**	**30**	**6**				**48**	**87**	

Assessment strategy	**Weight (%)**	**Assessment period**	**Assessment criteria**
Oral presentation and defense of the self -	100	During the	Three practical self-study projects

study project, activity during seminars		term	presented as PPT in class. Assessment of the quality of the oral presentations: depth of knowledge, ability to express thoughts in clear manner, ability to address questions, creativity. 10-point assessment system defined in the Study achievement assessment methods of Vilnius University.