COURSE UNIT DESCRIPTION

Course unit title	Code
Operating systems	

Annotation
The concept of Operating system. Its purpose, evolution, and design. Memory management. Process management. Dispatching. Deadlocks. Device management. File systems, Real-time and embedded OS. Operating system security. Programable management of OS. Scripting.

Lecturer(s)	Department, Faculty
Coordinating: Assoc. prof. dr. Vaidas Giedrimas	Šiauliai Academy

Study cycle	Type of the course unit
First cycle studies	Compulsory

Mode of delivery	Semester or period when it is delivered	Language of instruction
Face-to-face	Autumn semester	Lithuanian/English

Requisites	
Prerequisites:	**Co-requisites (if relevant):**

Number of ECTS credits allocated	Student's workload (total)	Contact hours	Individual work
5	133	48	85

Purpose of the course unit: programme competences to be developed

Introduce to the students operating systems and their families, structure and principles.
Competences to be developed:
• BK1 Application of knowledge
• DK2 Ability to conduct research on software systems
• DK3 SE Special Abilities.

Learning outcomes of the course unit	Teaching and learning methods	Assessment methods
Will know the structure and principles of operating systems	Case study (case studies), Interactive lecture	Exam
Will know the essential differences of operating system families, will be able to classify them and select the optimal OS as a component of a business information system.	Case study (case studies), Interactive lecture	Exam, Defense of laboratory work, Presentation of personal project.
Will be able to automate essential OS management tasks	Case study (case studies), laboratory work	Defense of laboratory work

Course content: breakdown of the topics	Contact hours							Individual work: time and assignments	
	Lectures	Tutorials	Seminars	Workshops	Laboratory work	Internship/work placement	**Contact hours, total**	**Individual work**	**Assignments**
1. The concepts of the operating systems	2	0	0	0	0	0	**2**	**8**	Personal project
2. Memory management	2	0	0	0	0	0	**2**	**8**	Personal project
3. Process management and dispatching	2	0	0	0	6	0	**8**	**8**	Defense of laboratory work, Personal project
4. Deadlock	2	0	0	0	2	0	**4**	**8**	Personal project
5. Device management	2	0	0	0	2	0	**4**	**8**	Defense of laboratory work, Personal project
6. File systems	2	0	0	0	2	0	**4**	**8**	Defense of laboratory work, Personal project
7. Real-time operating system	2	0	0	0	2	0	**4**	**8**	Defense of laboratory work, Personal project
8. OS security	4	0	0	0	4	0	**8**	**12**	Defense of laboratory work, Personal project
9. Programmable management of the operating systems	6	0	0	0	6	0	**12**	**17**	Defense of laboratory work,
Total	**24**				**24**		**48**	**85**	

Assessment strategy	Weight %	Deadline	Assessment criteria
Personal project	20%	16th week of studies	Appointed in the first week of studies, performed in stages. The following aspects of the work are assessed: Structure and scope of the work: the structure of the report of personal project is clear and logical, there are all the necessary parts (introduction, goals, objectives, methods, experiment data; presentation, where the analysis and interpretation of empirical material is presented; conclusions), the work is of appropriate scope (0.5 points); Analysis and conclusions: the analysis is very detailed, the conclusions are well grounded, formulated on the basis of experimental results (2 points); if the analysis is performed but not complete, the conclusions are not always substantiated, 1 point is awarded, no points are awarded for a superficial analysis. Scientific style and research culture: references and citations are done properly; formulations and style meet the requirements of scientific work (0.5 points). If the project not made - 0 points.
Defense of laboratory work,	30%	Each week	Laboratory work performed and its defense is evaluated. A total of 8 laboratory works
Exam	50%	Exam‘s session	The exam test in the Moodle environment consists of 20 open-ended and closed-ended questions, each scored half a point. The exam score is equal to the sum of the points scored.

Author	Publishing year	Title	Issue of a periodical or volume of a publication; pages	Publishing house or internet site
Required reading				
Tanenbaum A. S.	2016	Modern operating systems		Pearson Education
Robbins A.	2009	Unix in a Nutshell		O'Reilly
Stallings, W.	2008	Operating systems: internals and design principles		Prentice Hall
Recommended reading				
Yosifovich, P. et al.	2021	Windows Internals 7th edition		Microsoft Press
Pogue D.	2008	Switching to the Mac: The Missing Manual, Leopard Edition.		O'Reilly