INFORMATION TECHNOLOGIES
2020-2021

Course title	ECTS	Degree	Course code	Prerequisites	Subject area
Computer Elements and Architecture	6	B	T120B114	Mathematics, physics, electronics, digital logic.	Information technologies
Databases	6	B	P175B617	Information Technology, Mathematics (relational algebra), Data structures, Programming Basics	Information technologies
LINUX Operation System	6	B	T170B167	Information Technology	Information technologies

Subject area: Information technologies

Status	Course code: **T120B114** Course title: **COMPUTER ELEMENTS AND ARCHITECTURE** Taught by: **assoc. professor dr. Gražvydas Felinskas**		
Semester	**ECTS credits**	**Languages**	**Duration**
Spring	6	Lithuanian, English	1 semester
Study hours	**Assessment**	**Prerequisites**	**Examination**
Lectures – 48 h Laboratory work – 32 h Self-study – 80 h	10-point scale	Mathematics, physics, electronics, digital logic.	Control work – 7 % Paper – 4 % Reporting for laboratory work – 25 % Exam – 50 % Control work – 7 % Control work – 7 %

Subject content	Students are introduced to the basic logic functions and their simplification, familiar with the general logic schemes taught synthesis of simple finite automata, introduced to the static and dynamic memory cell structure and a computer memory system trained to distinguish between computer organization and architecture concepts. Students analyze different structures of a computer, system buses, performance assessment tools, learning how to understand the internal and cache memory, and interruption management. It also analyzes the structure of the CPU registers, the instruction cycle, the command system, address translation mechanisms, the basic input-output system, students are introduced to modern computer architecture. Laboratory work, using the logic of analysis and simulation software, learn to implement various logical functions, the general logic devicesal computing devices, and sequential schemes. With CPU simulator , execute programms written in assembly language, analyze the CPU architecture, addressing techniques, branching commands, interrupt system, arithmetic and logical operations.
Learning Outcomes	• Simplification and realization of logical functions;; • Functioning of general logic devices; • Methods of synthesis and implementation of simple finite automata; • Input / output systems functioning; • Internal and cache memory organization techniques, an interrupt system principles; • Structure of CPU and control unit; • Instruction set, their classification methods, ways of addressing operands; • Modern processor architecture features.
Literature	1. E William Stallings. Computer Organization and Architecture: Designing for Performance 2. Computer Architecture, Fifth Edition: A Quantitative Approach (The Morgan Kaufmann Series in Computer Architecture and Design) (5th Edition), 2011. 3. Modern Processor Design: Fundamentals of Superscalar Processors (Waveland Press) (1st Edition), 2005, reissued 2013. John P. Shen and Mikko H. Lipasti

Subject area: Information technologies

Status	Course code: **P175B617** Course title: **DATABASES** Taught by: **assoc. prof. dr. Kęstutis Žilinskas**		
Semester	**ECTS credits**	**Languages**	**Duration**
Spring	6	Lithuanian, English	1 semester
Study hours	**Assessment**	**Prerequisites**	**Examination**
Lectures – 32 h Laboratory work – 32 h Self-study – 96 h	10-point scale	Information Technology, Mathematics (relational algebra), Data structures, Programming Basics	Reporting for laboratory work – 30 % Colloquium – 25 % Course Project – 20 % Exam – 25 %

Subject content	Introducing to the usage of databases in information systems. Analysis the database physical and logical structure. Introducing to the hierarchical, network, object-oriented and relational models of database. Advanced analysis of relational database model. Study design process of relational databases and using database management systems make application for its support.
Learning Outcomes	• Data types and characteristics, concept, evolution and architecture of database; • Hierarchical, network, object oriented and relational models of database; • Application of Three-level architecture in databases design; • Database management systems, its purpose, structure, classification and possibilities.
Literature	1. Gavin PowellIan. Beginning Database Design. Wiley Publishing, Inc. 2006 2. Rod Stephens. Beginning Database Design Solutions. Wrox. 2010 3. Clare Churcher. Beginning Database Design, 2nd Edition. Apress.2012 4. A. Jorgensen , J. Segarra, P. LeBlanc, J. Chinchilla, A. Nelson. Microsoft SQL Server 2012 Bible. Wiley. 2012 5. MySQL Documentation: MySQL Reference Manuals. Online http://dev.mysql.com/doc/ 6. PostgreSQL documentation. Online http://www.postgresql.org/docs/ 7. Oracle Database Documentation. Online https://docs.oracle.com/en/database/ 8. IBM DB2 database product documentation. Online http://www-01.ibm.com/support/docview.wss?uid=swg27009474

Subject area: Information technologies

Status	Course code: **T170B167** Course title: **LINUX Operation System** Taught by: **dr. Donatas Dervinis**		
Semester	**ECTS credits**	**Languages**	**Duration**
Spring,	6	Lithuanian, English	1 semester
Study hours	**Assessment**	**Prerequisites**	**Examination**
Lectures – 32 h Laboratory work – 32 h Self-study – 96 h	10-point scale	Information Technology	Reporting for laboratory work – 30 % Course Project – 40 % Exam – 40 %

Subject content	Operation system (OS) LINUX distributions. File systems. OS LINUX installation into the personal computer. Most frequently used console commands. Hardware and drivers. X Windows environment. OS LINUX network configuration. Computer networks software. Server configuration. Servers security and auditing
Learning Outcomes	• Operating system principles and structure. • Knowledge how to install and administrate OS Linux. • Servers (FTP, Http, SAMBA, DHCP etc.) administration. • OS Linux Security and Auditing
Literature	1. The Linux Command Line: A Complete Introduction, William Shotts 2019. 2. Linux Bible, Christopher Negus 2015. 3. Linux Server Security, Chris Binnie 2016.. 4. Linux Administration: A Beginner's Guide, Wale Soyinka 2015.