VIDZEMES AUGSTSKOLA

FACULTY OF ENGINEERING
STUDY COURSE DESCRIPTION

Course Title:	**Computer Architecture I**				
Course code (LAIS):	*The course will be registered in the study administration system after accreditation*				
Study programme:	**Mechatronics**				
Level of Study programme:	☐ 1st level professional higher education				
	☒ Professional Bachelor				
	☐ Professional Master				
	☐ Academic Master				
	☐ PhD level				
Type of Study programme:	☐ Compulsory course (Part A)				
	☒ Professional specialization courses (Part B, compulsory)				
	☐ Professional specialization optional courses (Part B, optional)				
	☐ Elective courses (Part C)				
Course Workload:	**Credits**	**ECTS**	**Academic hours**	**Contact hours**	**Independent work hours**
	2	3	80	32	48
Course Author/ Tutor:	**Alvis Sokolovs**				
	Lecturer, Dr.sc.ing.				
	alvis.sokolovs@va.lv				
	Consultation: according to the schedule for each semester				
Study Form:	Full time studies				
Study year, semester:	2nd t year 4th Semester				
Language:	Latvian				
Prerequisites for the Course:	Physics II, Electrical Engineering, Electronics				
Course Summary:	The aim of the study course is to acquire theoretical and practical knowledge of the basics of computing, logical elements, their structures, the basics of computer memory and processors. During the course, students will gain the skills to create logic circuits using discrete elements, create simple memory cells, counters and decoders, etc. elements of digital electronics. Students will be given practical skills in chip selection, circuit design, simplification and debugging.				
Assessment:	Exam				
Requirements for Credits:	Students must submit completed homework, practical work and an exam to pass the course. The course mark consists of three parts: 1. Submission of practical lesson papers - constitutes 25% of the final grade. 2. Homework assessment – makes up 25% of the final assessment. 3. Exam grade - makes up 50% of the final grade. Submitted works will be evaluated in a 10-point system, taking into account the following criteria: excellent (10) - knowledge, skills and competence exceed the knowledge to be acquired during the course; excellent (9) - knowledge, skills and competence fully correspond to the knowledge to be acquired during the course; very good (8) - the requirements of the task are fully fulfilled, however, in some nuances of its execution there is not a deep enough understanding; good (7) - the requirements of the task are generally met, however, sometimes there is an inability to use the acquired knowledge in accordance with the given task; almost good (6) - the requirements of the task have been fulfilled, however, at the same time insufficiently deep understanding of the task and inability to use the acquired knowledge can be established;				

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	average (5) - the requirements of the task have been fulfilled, however, insufficient knowledge of some skills in the performance of the task and inability to use the acquired knowledge have been established; almost mediocre (4) - poorly fulfilled task requirements, however, insufficient understanding of basic concepts is observed, there are significant difficulties in the practical application of the acquired knowledge; weak (3) - knowledge is superficial and incomplete, the student is not able to use it in performing a specific task; very weak (2) - has superficial knowledge only about certain problems, most of the requirements of the task have not been mastered; very, very weak (1) - no understanding of the basic problems of the task, almost no knowledge of the topics covered in the course.	
Abiding by the Academic Ethics	Students must abide by the academic and research ethics, Vidzeme University of Applied Sciences Ethics Regulations, incl.: – study papers must be independently developed; – the study work should reference all statements, ideas and data used that have been authored by someone else; – appropriate data acquisition methods should be used in the acquisition of data, the research ethics must be respected, empirical data must be collected independently and cannot be distorted or falsified; – the examination must be carried out by the student independently, without the use of supporting materials and/or consultations with other students, unless the lecturer states otherwise. In the event of non-compliance with the academic and research ethics, punishment is imposed in accordance with the ViA Ethics Regulations and the study course must be re-taken, unless the punishment is extramarital.	
Learning Outcomes; the evaluation methods and criteria	**Learning Outcomes**	**The evaluation methods and criteria**
	Knowledge	
	Knowledge necessary for performing the basic tasks of professional activity at the level of concept	Works submitted by practical classes and homework.
	Labour protection and ergonomics	Works submitted by practical classes and homework.
	Logical elements and their functions	Works submitted by practical classes and homework.
	Designations of circuits, coding of chips	Works submitted by practical classes and homework.
	Understanding of the basic principles of operation of microcontrollers and processors	Submitted homework.
	Skills	
	A logical scheme for solving the task	Works submitted by practical classes and homework.
	Choose the necessary components for creating the scheme	Works submitted by practical classes and homework.
	Perform circuit operation testing and debugging	Works submitted by practical classes and homework.
	Use information search and selection tools	Works submitted by practical classes and homework.
	Follow labour protection requirements	Works submitted by practical classes and homework.
	Make simple logic circuits and signal conversion systems.	Works submitted by practical classes and homework.
	Competency	
	Ability to design by analysing various technical solutions and choosing the most suitable one	Works submitted by practical classes and homework.

	Ability to specify requirements by analysing the possibilities of requirements implementation	Works submitted by practical classes and homework.
	Ability to understand and apply basic algorithms	Works submitted by practical classes and homework.
Course Compulsory literature:	1. Aldis Baums. Datoru arhitektūra un organizācija, 2010, 236 p. 2. Scott Mueller. Upgrading and Repairing PCs 22nd Edition. Que corp., Indianapolis, USA, 2015, 1161 p.	
Course additional literature:	-	
Course confirmation date:	08.12.2022	
Date of course description update:		

Study Course Plan for Full Time Students:

Date	Theme	Academic hours		Study Form/ Organization of independent work of students and task description
		Contact hours	Independent work hours	
The date is specified before the implementation of the course	Introductory Lecture	2	2	Lecture
	Logical elements and operations, Boolean algebra	4	6	Lecture, practical work
	Binary counting	4	8	Lecture
	Compilation and simplification of logical schemes	4	8	Lecture
	Triggers	2	4	Lecture
	Binary counters	4	6	Lecture
	Encryptors, decryptors	6	8	Lecture
	Processor architecture	4	6	Lecture and test
	Exam	2	0	Exam
	Hours total:	***32***	***48***	