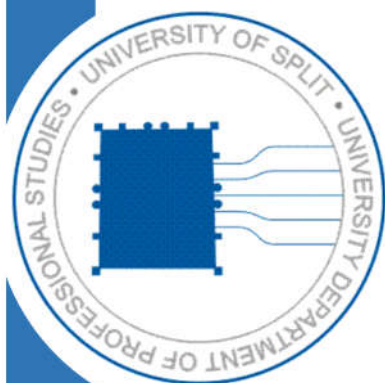


Course syllabus

Digital and Microprocessor Technology



COURSE DETAILS		
<i>Type of study programme</i>	Undergraduate professional study programme- 180 ECTS	
<i>Study programme</i>	INFORMATION TECHNOLOGIES	
<i>Course title</i>	Digital and Microprocessor Technology	
<i>Course code</i>	SIT104	
<i>ECTS (Number of credits allocated)</i>	6	
<i>Course status</i>	Core	
<i>Year of study</i>	First	
<i>Course Web site</i>	https://moodle.oss.unist.hr/course/category.php?id=21	
<i>Total lesson hours per semester</i>	Lectures	45
	Practicals	15
	Laboratory exercises & practical demonstration	30
<i>Prerequisite(s)</i>	None	
<i>Lecturer(s)</i>	Department of Information technologies: Ivan Kedžo, PhD, lecturer	

COURSE DESCRIPTION

<i>Course Objectives:</i>	• understanding basic knowledge of Boolean algebra and automaton theory as a core of computer science • theoretical and practical knowledge about synthesis of combinational and sequential circuits, and programmable structures.
<i>Learning outcomes</i> <i>On successful completion of this course, student should be able to:</i>	1. define basic logical circuits, Boolean algebra, minimization methods, methods for writing Boolean functions, combinational and sequential circuits, flip-flops, digital automaton, programmable structures 2. describe operation methods of combinational and sequential circuits, similarities and differences of writing the Boolean functions and minimizations 3. select appropriate methods for realization and circuit minimization 4. pattern recognition for specific circuit realization and error discovery during circuit design process 5. synthesis of appropriate combinational and sequential logic circuits 6. evaluation of own solutions and error discovery
<i>Course content</i>	Representation of information in digital systems. Numerical systems. Modulo arithmetic. Elementary logic gates. Boolean algebra. Boolean functions. Algebraic normal forms. Complete set of functions. Minimization and normal forms. Minimization procedures and implementation of NAND and NOR gates. Medium-scale integrated combinational circuits. Realization of Boolean functions with multiplexer. Realization of Boolean functions with demultiplexer. Multiplexer – demultiplexer (MD) structure. Programmable logic structures. Sequential logic circuits. Discrete time circuit operation. Flip-flop circuit. Synthesis of general flip-flops. Complex circuits with flip-flops. Digital automaton. Abstract model of digital automata. Classification of automata. Equivalence of automata. Structural synthesis of automata. Automata and algorithms. The basic structure of microcomputers. Computer memory. Input and output computer circuits.

CONSTRUCTIVE ALIGNMENT – Learning outcomes, teaching and assessment methods

Alignment of students activities with learning outcomes		
Activity	Student workload ECTS credits	Learning outcomes
<i>Lectures</i>	45 hours / 1,5 ECTS	1,2,5,6
<i>Practicals</i>	15 hours / 0,5 ECTS	3,4
<i>Laboratory work</i>	30 hours / 1 ECTS	3,4
<i>Seminar</i>	30 hours / 1 ECTS	3,4,5
<i>Self-study</i>	78 hours / 2,6 ECTS	1,2,3,4,5,6
<i>Office hours and final exam</i>	12 hours / 0,4 ECTS	1,2,4,5,6
TOTAL:	210 hours / 7 ECTS	1,2,3,4,5,6

CONTINUOUS ASSESSMENT		
Continuous testing indicators	Performance A_i (%)	Grade ratio k_i (%)
<i>Class attendance and participation</i>	70 – 100	0
<i>Laboratory work</i>	100	0

FINAL ASSESSMENT		
Testing indicators – final exam (first and second exam term)	Performance A_i (%)	Grade ratio k_i (%)
<i>Practical exam (written and/or oral)</i>	50 - 100	25
<i>Theoretical exam (written and/or oral)</i>	50 – 100	75
<i>Previous activities (include all continuous testing indicators)</i>	50 – 100	0
Testing indicators – makeup exam (third and fourth exam term)	Performance A_i (%)	Grade ratio k_i (%)
<i>Practical exam (written and/or oral)</i>	50 - 100	25
<i>Theoretical exam (written and/or oral)</i>	50 - 100	75

PERFORMANCE AND GRADE		
Percentage	Criteria	Grade
50% - 61%	<i>basic criteria met</i>	sufficient (2)
62% - 74%	<i>average performance with some errors</i>	good (3)
75% - 89%	<i>above average performance with minor errors</i>	very good (4)
90% - 100%	<i>outstanding performance</i>	outstanding (5)

ADDITIONAL INFORMATION

Teaching materials for students (scripts, exercise collections, examples of solved exercises), teaching record, detailed course syllabus, application of e-learning, current information and all other data are available by MOODLE system to all students.