MEĐIMURSKO VELEUČILIŠTE U ČAKOVCU
MEĐIMURJE UNIVERSITY OF APPLIED SCIENCES IN ČAKOVEC

COURSE SYLLABUS

ACADEMIC YEAR: 2024/2025

1. GENERAL COURSE INFORMATION

1.1 Course name	Digital electronic circuits			
1.2 Study program/s	UNDERGRADUATE PROFESSIONAL STUDY PROGAMME COMPUTER ENGINEERING			
1.3 Course status (O,E)	O	**1.6 Mode of instruction (number of hours)**	**Lectures**	30
1.4 Course code			**Exercises**	45
1.5 Course abbreviation			**Seminars**	
1.6 Semester	II		**E-learning**	Merlin
1.7 ECTS	6	**1.7 Place and time of instruction**	The premises of the Međimurje University of Applied Sciences in Čakovec, according to the schedule published on the website	

2. TEACHING STAF.F

2.1 Course leader/s-title	Jurica Trstenjak/ senior lecturer	**contact**	jtrstenjak@mev.hr
		contact	
2.2 Assistant/s- title		**contact**	
		contact	
2.3 Instruction held by- title	Jurica Trstenjak/ senior lecturer	**contact**	jtrstenjak@mev.hr
2.4 Course leader/s-title		**contact**	

3. COURSE DESCRIPTION

3.1. Course goals	Student should acquire a functional overview of the basic components of modern digital electronic circuits, learn the basics of digital technique, logical algebra and the realization of more complex logical functions.
3.2 Prerequisites	It is necessary to have passed the subject Basics of Electrical Engineering and Electronics.
3.3 Course outcomes	After successfully completing the course, students will be able to: O1 - Use different number systems and codes O2 - Apply minimization of logic functions and basic logic circuits O3 - Explain the operation of basic types of bistables O4 - explain the operation of basic combinational and arithmetic circuits O5 - use combinational circuits, registers and counters in the design of synchronous sequential circuits O6 - explain AD and DA conversion
3.4 Contribution of the course to the study program	Apply the acquired learning skills, basic knowledge of the profession and problem solving necessary for continuing studies at a higher level. Analyze the basic elements of electrical engineering and digital circuits and identify the structure of the computer.
3.5 Course content	

<table>
<tr><td>3.6 Types of coursework</td><td>x</td><td>Lectures</td><td>X</td><td>Exercises</td><td></td><td>Blended e-learning</td><td>X</td><td>Individual activities</td><td>x</td><td>Laboratory</td></tr>
<tr><td></td><td></td><td>Seminars and workshops</td><td></td><td>Distant learning</td><td></td><td>Field classes</td><td></td><td>Multimedia and network</td><td></td><td>Mentorship</td></tr>
<tr><td></td><td></td><td>Other</td><td colspan="8"></td></tr>
<tr><td>3.7 Language of instruction</td><td colspan="10">Croatian</td></tr>
<tr><td>3.8 Monitoring students' work (enter the number of ECTS credits for each activity so that the total number of ECTS credits is equal to the total ECTS value of the course, 1 ECTS = 30 hours)</td><td colspan="10">
<table>
<tr><td>2,5</td><td>Class attendance</td><td></td><td>Seminars</td><td></td><td>Research</td></tr>
<tr><td>2,5</td><td>Midterm exams/written exam</td><td></td><td>Project</td><td></td><td>Essay</td></tr>
<tr><td>0,5</td><td>Oral exam</td><td>0,5</td><td>Practical task</td><td></td><td></td></tr>
</table>
<table>
<tr><th>Activity specification</th><th>Percent %</th><th>Points</th></tr>
<tr><td colspan="3">Assessment during instruction</td></tr>
<tr><td>Lesson assignments</td><td>10%</td><td>10</td></tr>
<tr><td>Midterm exam 1</td><td>20%</td><td>20</td></tr>
<tr><td>Midterm exam 2</td><td>20%</td><td>20</td></tr>
<tr><td>Midterm exam 3</td><td>20%</td><td>20</td></tr>
<tr><td>Oral exam</td><td>15%</td><td>15</td></tr>
<tr><td>Practical task</td><td>15%</td><td>15</td></tr>
<tr><td colspan="3">Exam assessment for the students who failed to fullfil all the obligatory requirements during the semester</td></tr>
<tr><td>Written exam</td><td>60%</td><td>60</td></tr>
<tr><td>Oral exam</td><td>15%</td><td>15</td></tr>
<tr><td>Total:</td><td>100%</td><td>100</td></tr>
</table>
Points Grade
89 – 100 excellent (5)
76 – 88 very good (4)
63 – 75 good (3)
50 – 62 pass (2)
0 – 49 fail (1)
</td></tr>
<tr><td>3.9 Specific features related to taking the course</td><td colspan="10">If a student collects 50% of the points of each outcome he/she directly accesses the oral exam. If a student does not achieve a sufficient number of points on the midterm exam, he/she cannot take the next midterm exam, and has to take the written exam.
If he/she passes the written exam, he/she will proceed to the oral part of the exam.
The seminar paper is submitted within the agreed deadline, and certainly before the exam term.
The final grade is given on the oral part of the exam.</td></tr>
<tr><td>3.10 Students obligations</td><td colspan="10">• a full-time student has the right to sit for the exam if he attends classes for a minimum of 70% of the total prescribed number of hours
• a full-time student who attends classes from 50 to 70% of the total prescribed number of hours can exercise the right to take the exam by completing additional teaching activities in agreement with the course teacher
• a full-time student who attends a certain course for less than 50% of the prescribed number of hours enrolls in the course the following academic year</td></tr>
</table>

	• a part-time student has the right to sit for the exam if he/she attends classes for a minimum of 30% of the total prescribed number of hours • a part-time student who attends classes for 20 to 30% of the total prescribed number of hours can exercise the right to sit for the exam by completing additional teaching activities in agreement with the course teacher • a part-time student who attends the classes of a certain course for less than 20% of the prescribed number of hours re-enrolls in the course the following academic year
3.11 Written assignments	
3.12 Required reading	
3.13 Additional reading	Anil K. Maini: Digital Electronics: Principles, Devices and Applications 1st Edition, Wiley, West Sussex, 2007.

4. ADDITIONAL INFORMATION ABOUT THE COURSE	
4.1 Quality control	The quality of the program, teaching process, teaching skills and level of mastery of the material will be established by conducting a written evaluation based on questionnaires, and in other standardised ways and in accordance with the by-laws of the Međimurje University of Applied Sciences in Čakovec.
4.2 Contact the teacher	Students can contact the teacher during the office hours and during classes. All other methods of communication are arranged with the teacher. It is also possible to ask questions by e-mail, which will be answered in 48 hours at the latest. It is desirable for students to come as often as possible for any possible questions during the teacher's office hours.
4.3 Information about the course	It is the obligation of each student to be regularly informed about the course. All notifications about the classes or possible postponement of classes will be posted on the bulletin board and on the website of the University at least 24 hours in advance.

5. ELABORATION OF THEMATIC UNITS

Week	Topic	Course outcome
1.	Introduction. Number systems and codes	O1
2.	Boolean algebra	O1,O2
3.	Logic circuits	O2
4.	Complex logic circuits	O2
5.	1st midterm exam	
6.	Multivibrators in digital electronics	O3
7.	Registers	O3,O4
8.	Counters	O3,O4
9.	2nd midterm exam	
10.	Complex combination circuits. Adder circuits Multiplexer, demultiplexer	O5
11.	Coders/Decoders	O5
12.	Memories	O5
13.	D/A converter with weighted resistors, A/D converter (Wilkinson converter)	O6
14.	3rd midterm exam (+oral part)	
15.	Repetition of material for the exam	O1-O6