



# POLYTECHNIC OF MEĐIMURJE IN ČAKOVEC

## COURSE SYLLABUS

ACADEMIC YEAR: 2020/2021

### 1. GENERAL COURSE INFORMATION

<b>1.1 Course name</b>	<b>Software Engineering and Information Systems</b>			
<b>1.2 Study program/s</b>	Computing			
<b>1.3 Course status (O,E)</b>	O	<b>1.6 Mode of instruction (number of hours)</b>	<b>Lectures</b>	30
<b>1.4 Course code</b>	5140		<b>Exercises</b>	30
<b>1.5 Course abbreviation</b>	PIIS		<b>Seminars</b>	
<b>1.6 Semester</b>	5.		<b>E-learning</b>	
<b>1.7 ECTS</b>	5	<b>1.7 Place and time of instruction</b>	Polytechnic of Međimurje	

### 2. TEACHING STAFF

<b>2.1 Course leader/s-title</b>	Josip Nađ, PhD	<b>kontakt</b>	josip.nad@mev.hr
		<b>contact</b>	
<b>2.2 Assistant/s- title</b>		<b>contact</b>	
		<b>contact</b>	
<b>2.3 Instruction held by- title</b>		<b>contact</b>	

### 3. COURSE DESCRIPTION

<b>3.1 Course goals</b>	Acquiring basic knowledge of software engineering. Introduction to the role and importance of information systems in business. Getting to know the software development life cycle. Introduction to the main functionalities of business information systems. An overview of trends in software engineering and information systems.								
<b>3.2 Prerequisites</b>	Object Oriented Programming 1 Data Base 1								
<b>3.3 Course outcomes</b>	After successfully completing the course, students will be able to: O1 - Present methods of user requests collecting and processing O2 - Justify the need for systematic software testing O3 - Analyze the role of information systems in business management O4 - Present the project of information system preparation and implementation								
<b>3.4 Course content</b>	The course presents contents related to the basic aspects of software engineering and information systems. Through the project task, students actively go through the life cycle of software, in parallel learning about the problems of industrial information systems.								
<b>3.5 Types of coursework</b>	X	Lectures	X	Exercises		Blended e-learning	X	Individual activities	Laboratory
		Seminars and workshops	X	Distant learning	X	Field classes		Multimedia and network	Mentorship
		Other							
<b>3.6 Language of instruction</b>	Croatian								

<b>3.7 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)</b>	1	Class attendance		Seminars		Essay																																																								
	1,0	Class activity	1,5	Project		Report/paper																																																								
	1,5	Midterm exams		Practical task		Continuous knowledge check																																																								
		Written exam		Experimental work																																																										
		Oral exam		Research																																																										
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	Grading of outcomes (in order to pass the mid-term exam/exam the student must achieve at least 50% points for each learning outcome)																																																													
Points      Grade																																																														
89 – 100    excellent (5)																																																														
76 – 88     very good (4)																																																														
63 – 75     good (3)																																																														
50 – 62     pass (2)																																																														
0 – 49      fail (1)																																																														
<b>3.10 Specific features related with taking the course</b>	<p>A student cannot take the exam if he / she has not submitted the Project Readiness Report (submitted at least 5 days before the exam deadline). The final grade is obtained on the exam period and is the sum of points earned during classes.</p> <p>Students who did not take the midterm exams, access the written part of the exam where all learning outcomes are checked.</p>																																																													
<b>3.11 Students obligations</b>	<p>Full-time students are required to attend at least 70% of the total number of hours of lectures and exercises in order to exercise the right to take the exam. Part-time students are required to attend at least 30% of the total number of hours of lectures and exercises in order to exercise the right to take the exam. If the student has not fulfilled all the obligations set by the course, he is obliged to attend the lectures again and meet the conditions for taking the exam.</p>																																																													

	Attendance can be offset by online tuition, organised webinars and added assignments given by teachers. One lesson lasts 45 minutes, and several hours form a teaching unit. Absence from one teaching unit is counted as one absence. Delays and apologies are recorded separately. In that case, if the student missed more than 50% of classes, and has a justifiable reason/apology, the request should be submitted to the Department Council, which then decides on the justification of student absences with the obligatory opinion of the course leader.
<b>3.12 Written assignments</b>	The project readiness report must be written by computer (Times New Roman, font 12). It is delivered electronically. It must contain project requirements and all supporting documentation that will be defined during the course.
<b>3.13 Required reading</b>	1. Alan Jović, Nikolina Frid, Danko Ivošević: Procesi programskog inženjerstva; FER, skripta, 2019.
	2. Gabriele Piccoli, Federico Pigni: Information Systems for Managers 4.0; Prospect Press, 2019.
	3. Alan Jović, Marko Horvat, Igor Grudenić: UML dijagrami, zbirka primjera i riješenih zadataka; Graphis, 2014.
<b>3.14 Additional reading</b>	1. Rod Stephens: Beginning Software Engineering; Wrox, 2015.
	2. Amiya Kumarrath, Hitesh Mohapatra: Fundamentals of Software Engineering, BPB Publications, 2020.
	3. American Journal of Software Engineering and Applications
<b>4 ADDITIONAL COURSE INFORMATION</b>	
<b>4.1 Quality control</b>	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 Polytechnic of Međimurje in Čakovec.
<b>4.2 Contact the teacher</b>	Students can contact the teacher during the office hours and during classes, while for short questions and explanations they can contact him/her any day during working hours by coming in person or by landline. 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.
<b>4.3 Information about the course</b>	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 Polytechnic at least 24 hours in advance.
<b>4.4 Course contribution to the study program</b>	OS6 - Analyze user needs (explore and detect data sources, currently present business systems, technological constraints, specifics of the business environment) OS13 - Develop applications using an object-oriented paradigm in solving program tasks OS17 - Select the appropriate programming language and technology when solving programming tasks

**5. ANALYSIS OF COURSE TOPICS (the number of hours is equal to the number of lectures and exercises of the course)**

<b>LECTURES</b>																																																																		
<b>Hours</b>	<b>Topic and description</b>	<b>Method</b>	<b>Learning outcomes</b>	<b>Course outcome</b>																																																														
1.	Introduction	Direct teaching Power Point	Distinguish software engineering from programming	O1, O3																																																														
2.					3.	Basic Business Functions	Direct teaching Power Point	Explain basic business functions	O3	4.	5.	Basic of Software Engineering	Direct teaching Power Point	Explain the purpose of software engineering	O1, O2	6.	7.	Requirement gathering	Direct teaching Case study Power Point	Analyze business requirements and present them via different kind of diagrams	O1	8.	9.	Software Engineering processes	Direct teaching Power Point	Explain the main processes of software engineering	O1, O2	10.	11.	Testing and implementation	Direct teaching Power Point	Understand the importance of software testing and good implem. planning	O2	12.	13.	Midterm Exam 1	Written exam	Check of outcomes O1 and O2		14.	15.	Digital Business	Field work	Understand the importance of timely involvement of companies in the digitalization process	O1, O3	16.	17.	Basic of Information Systems	Direct teaching Power Point	Explain the role of IS in Management	O3	18.	19.	IS: Create or Buy	Direct teaching Power Point	Explain the criteria for deciding on the procurement of IS	O4	20.	21.	Value creation with IS	Direct teaching Power Point	Learn the main ways IS affects value creation	O3	22.	23.	New IS implementation project
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		Power Point	implementation project	
25.	IS trends	Direct teaching	Get an insight into current IS trends	03, 04
26.		Power Point		
27.	Recapitulation	Group learning	Preparation for Midterm Exam 2	03, 04
28.				
29.	Midterm Exam 2	Pismeni test	Check of outcomes 03 and 04	
30.				
<b>EXERCISES / SEMINARS</b>				
<b>Hours</b>	<b>Topic and description</b>	<b>Method</b> <ul style="list-style-type: none"> <li>• Direct teaching (lecture, instruction, pp presentation)</li> <li>• Discovery learning (individual, lead, discussion)</li> <li>• Group learning</li> <li>• Case study</li> <li>• Field classes...</li> </ul>	<b>Learning outcomes</b>	<b>Course outcome</b>
1.	Division into teams, principles of teamwork	Direct teaching Discussion Power Point	Accept the way of work	01
2.				
3.	Basic production model; division of tasks	Direct teaching Power Point	Understand the main project idea	01, 03
4.				
5.	Elaboration of project tasks	Direct teaching Discussion Power Point	Understand all details of Project task	01
6.				
7.	UML diagrams, examples	Direct teaching Power Point	Create simple UML diagrams	01
8.				
9.	Process diagrams for Project task	Direct teaching Discussion Power Point	Create process diagrams for project tasks	01
10.				
11.	The first presentation of the project	Presentation by students	Present the current state of the project documentation	01
12.				
13.	Mitterm exam 1	Exam solution analysis	Understand the key details of software engineering	01, 02
14.				
15.	Example of working on a large IS (SAP)	Field work	Understand the power of standard IS	01, 03
16.				
17.	Elaboration of project tasks	Direct teaching Power Point	Create test documentation	03
18.				
19.	Second project presentation	Presentation by students	Present the current state of the project documentation	02
20.				
21.	Calculation and presentation of material needs	Direct teaching Power Point	Calculate material needs based on plan	02
22.				
23.	Calculation and presentation of production costs	Direct teaching Power Point	Calculate the production price of the product (Cost Estimate)	03
24.				

<b>25.</b>				
<b>26.</b>	Final works on the project	Discussion	Create IS implementation plan	O2, O2
<b>27.</b>	Final presentation of the project	Presentation by students	Present the current state of the project	O1, O2
<b>28.</b>				
<b>29.</b>	Midterm Exam 2	Exam solution analysis	Understand the key details of IS	O3, O4
<b>30.</b>				