



POLYTECHNIC OF MEĐIMURJE IN ČAKOVEC

COURSE SYLLABUS

ACADEMIC YEAR: 2020/2021

1. GENERAL COURSE INFORMATION										
1.1 Course name	Multimedia									
1.2 Study program/s	Undergraduate professional study programme in Computer Science									
1.3 Course status (O,E)	elective	1.6 Mode of instruction (number of hours)		Lectures	15					
1.4 Course code				Exercises	45					
1.5 Course abbreviation	MM			Seminars						
1.6 Semester	IV			E-learning						
1.7 ECTS	4	1.7 Place and time of instruction		Premises of the Polytechnic of Međimurje in Čakovec, according to the schedule published on the website of the Polytechnic						
2. TEACHING STAFF										
2.1 Course leader/s-title	Sanja Brekalo, PhD	contact		sbrekalo@mev.hr						
		contact								
2.2 Assistant/s- title		contact								
		contact								
2.3 Instruction held by- title		contact								
3. COURSE DESCRIPTION										
3.1 Course goals	After completing the course, the student will be able to recognize various aspects of multimedia in computer systems. Knowledge in the field of multimedia is acquired and the student is trained to perform multimedia tasks independently.									
3.2 Prerequisites										
3.3 Course outcomes	<p>After successfully completing the course, students will be able to:</p> <ul style="list-style-type: none"> I1 - Judge the digitization and compression of multimedia data in different media, depending on the file size and end use of each media I2 - Select the optimal colour system for each medium given the differences between individual systems I3 - Choose between vector, raster and 3D graphics depending on the medium in which they are used I4 - Create a 3D model by selecting 3D modelling techniques I5 - Create a multimedia presentation, 3D model and its animation 									
3.4 Course content	The course presents contents related to multimedia and various media and their specifics from the aspect of digital multimedia. The contents are processed by comparing different types of digital media, their digitization and compression, and the advantages and disadvantages of individual media and multimedia architectures are stated. The teaching units present contents related to digitalization, compression, vector, raster and 3D graphics, video and sound. 3D models are practically created and animated with the addition of other media.									
3.5 Types of coursework	x	Lectures	x	Exercises		Blended e-learning	x	Individual activities		Laboratory
		Seminars	x	Distant		Field	x	Multimedia		Mentorship

		and workshops		learning		classes		and network																																																																	
		Other																																																																							
3.6 Language of instruction	Croatian/English																																																																								
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)	2	Class attendance		Seminars		Essay																																																																			
		Class activity		Project		Report/paper																																																																			
	1	Midterm exams	1	Practical task		Continuous knowledge check																																																																			
		Written exam		Experimental work																																																																					
		Oral exam		Research																																																																					
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3.9 Assessment criteria – analysis per learning outcomes	<table border="1"> <thead> <tr> <th colspan="7">Ways of evaluating learning outcomes</th> </tr> <tr> <th></th> <th>Attendance</th> <th>Activity</th> <th>Mid-term exam 1</th> <th>Mid-term exam 2</th> <th>Practical work</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>Outcome 1</td> <td></td> <td></td> <td>5</td> <td>5</td> <td></td> <td>10</td> </tr> <tr> <td>Outcome 2</td> <td></td> <td></td> <td>5</td> <td></td> <td></td> <td>5</td> </tr> <tr> <td>Outcome 3</td> <td></td> <td></td> <td></td> <td>5</td> <td></td> <td>5</td> </tr> <tr> <td>Outcome 4</td> <td></td> <td></td> <td>20</td> <td>20</td> <td></td> <td>40</td> </tr> <tr> <td>Outcome 5</td> <td></td> <td></td> <td></td> <td></td> <td>30</td> <td>30</td> </tr> <tr> <td>Outcome not-related</td> <td>5</td> <td>5</td> <td></td> <td></td> <td></td> <td>10</td> </tr> <tr> <td>Total</td> <td>5</td> <td>5</td> <td>30</td> <td>30</td> <td>30</td> <td></td> </tr> </tbody> </table> <p>Grading of outcomes (in order to pass the mid-term exam/exam the student must achieve at least 50% points for each learning outcome)</p> <p>Points Grade</p> <p>89 – 100 excellent (5)</p> <p>76 – 88 very good (4)</p> <p>63 – 75 good (3)</p> <p>50 – 62 pass (2)</p> <p>0 – 49 fail (1)</p>										Ways of evaluating learning outcomes								Attendance	Activity	Mid-term exam 1	Mid-term exam 2	Practical work	Total	Outcome 1			5	5		10	Outcome 2			5			5	Outcome 3				5		5	Outcome 4			20	20		40	Outcome 5					30	30	Outcome not-related	5	5				10	Total	5	5	30	30	30	
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3.10 Specific features related with taking the course	<p>If a student collects 50% of the points of each outcome, he / she directly take the exam, provided that he / she have submitted a practical task. A student cannot take the exam if he / she have not submitted a practical task. The practical task is made according to the instructions published on the Merlin system and is submitted by placing it on the Merlin. The practical task is submitted at least 3 days before the exam. During the exam, it is possible to verbally check the knowledge in the preparation of practical task.</p> <p>If a student does not achieve a sufficient number of points on the midterm exam, he / she cannot take the next midterm exam.</p>																																																																								

	Once achieved points in intermediate exams for each learning outcome are no longer deleted unless the student decides to correct the result for each learning outcome, whereby the points won until then are deleted and newly achieved points for that learning outcome are entered.	
3.11 Students obligations	<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> <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.</p>	
3.12 Written assignments		
3.13 Required reading	1.	Tay Vaughan, Multimedia: Making It Work, Ninth Edition 9th Edition, Mc Graw Hill Education, 2014
	2.	
3.14 Additional reading	1.	Nigel Chapman, Jenny Chapman, Digital Multimedia, Wiley, 2009.
	2.	
4 ADDITIONAL COURSE INFORMATION		
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 Polytechnic of Međimurje in Čakovec.	
4.2 Contact the teacher	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.	
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 Polytechnic at least 24 hours in advance.	

4.4 Course contribution to the study program	IS4 Apply communication and professional ethics IS5 Identify trends in ICT technologies in the domestic and international market IS6 Analyse user needs (investigate and detect data sources, currently present business systems, technological constraints, specifics of the business environment) IS16 Develop web and mobile projects, applying advanced technologies and connecting to databases using modern methods and tools
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5. ANALYSIS OF COURSE TOPICS (the number of hours is equal to the number of lectures and exercises of the course)

LECTURES				
Hours	Topic and description	Method	Learning outcomes	Course outcome
1.-2.	Introduction to course content, the concept of multimedia, history, use of multimedia, multimedia applications and tools, types of multimedia	<ul style="list-style-type: none"> • Direct teaching (lecture, instruction, pp presentation) • Discovery learning (individual, lead, discussion) • Group learning • Case study • Field classes... 	Explain the basic concepts related to multimedia	I1
3.-4.	Digitization and data compression	Lecture, pp presentation	Describe the digitization of multimedia data and the reasons for their compression	I1
5.-6.	Vector graphics	Lecture, pp presentation, discussion	Describe ways to save and work with vector graphics. Apply types of vector graphics depending on the medium in which it is used	I1, I3
7.-8.	Raster graphics, resolution, resampling, compression	Lecture, pp presentation, discussion	Explain the differences between vector and raster graphics. Apply different graphics properties depending on the medium	I1, I3
9.-10.	Raster graphics, file types and compression, image data manipulation	Lecture, pp presentation, discussion	Apply types of raster graphics depending on the medium in which it is used	I1, I3
11.-12.	Colours, colour models, ways of defining colours in computer	Lecture, pp presentation, discussion	Choose the optimal colour system for	I2

	systems		each medium and understand the differences between individual colour systems	
13.-14.	Colour spaces, channels and colour correction, consistent colour	Lecture, pp presentation, discussion	Apply digital colour rendering systems in different media	12
15.-16.	Midterm exam 1			
17.-18.	Video standards, analog and digital video	Lecture, pp presentation, discussion	Define the main differences between analog and digital video, and describe the characteristics of digital video	11
19.-20.	Video compression	Lecture, pp presentation, discussion	Describe ways to process and compress video in digital media	11
21.-22.	Animation	Lecture, pp presentation, discussion	Define the types of animations (2D and 3D) and list the techniques that are typically used in their creation	15
23.-24.	Sound	Lecture, pp presentation, discussion	Explain sound processing and compression techniques	11
25.-26.	Text	Lecture, pp presentation, discussion	Recognize the characteristics of digital fonts	11
27.-28.	Final task, examples of finished projects	Lecture, pp presentation, discussion, independent assignments solving	Create vector animation and link and optimize hypermedia content	15
29.-30.	Midterm exam 2			
EXERCISES/ SEMINARS				
Hours	Topic and description	Method <ul style="list-style-type: none"> • Direct teaching (lecture, instruction, pp presentation) • Discovery learning (individual, lead, discussion) • Group learning • Case study • Field classes... 	Learning outcomes	Course outcome
1.-2.	Basics of using the program in creating 3D objects, basic parts of the interface	Lecture, pp presentation	Identify parts of the application and describe their role	14
3.-4.	Vector drawing	Lecture, pp	Apply the basics of	14

		presentation, guided assignments	vector drawing on a computer	
5.-6.	Basic tools and their application	Lecture, pp presentation, guided assignments	Create basic and simple 3D objects	14
7.-8.	Modelling tools	Lecture, pp presentation, guided assignments	Apply modelling tools	14
9.-10.	Additional tools in creating 3D objects	Lecture, pp presentation, guided assignments	Create more complex 3D objects	14
11.-12.	Modelling from curves	Lecture, pp presentation, guided assignments	Import bitmaps as drawing bases and create 3D objects from curves	14
13.-14.	Assignment	Independent creation of tasks	Create a more complex 3D object	14
15.-16.	Midterm exam 1			
17.-18.	Shading, materials and adding object physics	Lecture, pp presentation, guided assignments	Create an object on which shading, material and basic physics are placed	14, 15
19.-20.	Creating more complex objects and setting textures	Lecture, pp presentation, guided assignments	Create more complex scenes with objects and set textures and reflections of objects	14, 15
21.-22.	Work with armatures	Lecture, pp presentation, guided assignments	Select adequate armature to animate the object	14, 15
23.-24.	3D object animation management, key frames	Lecture, pp presentation, guided assignments	Make simple animations	15
25.-26.	Particle systems	Lecture, pp presentation, guided assignments	Shape more complex structures of objects	15
27.-28.	Preparation of the project according to the instructions	Independent creation of tasks	Create vector animation and connect and optimize hypermedia content	15
29.-30.	Midterm exam 2			