



POLYTECHNIC OF MEĐIMURJE IN ČAKOVEC

COURSE SYLLABUS

ACADEMIC YEAR: 2020/2021

1. GENERAL COURSE INFORMATION

1.1 Course name	SUSTAINABILITY OF ARCHITECTURE			
1.2 Study program/s	Undergraduate professional study Sustainable Development			
1.3 Course status (O,E)	Required	1.6 Mode of instruction (number of hours)	Lectures	30
1.4 Course code	4032		Exercises	30
1.5 Course abbreviation	OA		Seminars	
1.6 Semester	V semester		E-learning	
1.7 ECTS	5	1.7 Place and time of instruction	Premises of Polytechnic of Međimurje in Čakovec, according to the schedule published on the website	

2. TEACHING STAFF

2.1 Course leader/s-title	Jasmina Ovčar, mag.ing.arh.i urb. senior lecturer	contact	jovcar@mev.hr
		contact	
2.2 Assistant/s- title		contact	
		contact	
2.3 Instruction held by- title		contact	

3. COURSE DESCRIPTION

3.1 Course goals	Acquisition of knowledge from modern tendencies of architectural design that lead in the direction of low-energy and passive houses, for the purpose of energy savings, environmental protection and rationalization in the construction of buildings. The aim is primarily to get acquainted with the basic principles of nZeb design and the characteristics of passive family houses.
3.2 Prerequisites	In order to join the course SUSTAINABILITY OF ARCHITECTURE, the course BUILDING CONSTRUCTION (semester III) and URBAN PLANNING AND DESIGN (semester IV) and the acquired ability to use the graphic program for computer technical drawing and constructor modeling (autoCad, archiCad or Allplan - BIM system that enables students to model and draw program tasks) are a condition. The condition for taking the exam in the course ODRARH are passed exams ZGRAD (semester III) and UPP (semester IV).
3.3 Course outcomes	After successfully mastering the course, students will be able to: I1 – argue the position of the need to build modern low-energy buildings / R 6 I2 – critical judgement and presentation of basic design principles and economic justification of low-energy buildings/ R 6 I3 – justify and propose the use of certain modern environmentally friendly materials according to the specific requirements of low-energy buildings /R 6 I4 – propose different construction technologies and justify the choice of technology when designing low-energy buildings/ R 6 I5 – create your own architectural solution of a family house respecting the rules and recommendations of designing low-energy buildings / R 6

	16 – on the basis of the drafted conceptual solution of a low-energy building computer plan and present the conceptual design with all the components, and argue the advantages of the adopted design principles / R 6																																							
3.4 Course content	Sustainability of architecture is a course that sums up all previously acquired knowledge in the field of sustainable architecture and construction, by introducing students to the current state of society, tendencies regarding the sustainability of buildings and the conditions they must meet in accordance with the needs and legal regulations. Students by creating their own architectural conceptual design of a low-energy/passive family home benefit acquired knowledge with the contribution of their own innovation and creativity.																																							
3.5 Types of coursework	X	Lectures	X	Exercises		Blended e-learning	X	Individual activities		Laboratory																														
		Seminars and workshops		Distant learning	X	Field classes		Multimedia and network		Mentorship																														
		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			1	Project			Report/paper																															
		Midterm exams				Practical task			Continuous knowledge check																															
	1	Written exam				Experimental work																																		
	1	Oral exam				Research																																		
3.8 Assessment and evaluation of students' work during classes and at the final exam	<table border="1"> <thead> <tr> <th>Activity specification</th> <th>Percent %</th> <th>Points</th> </tr> </thead> <tbody> <tr> <td colspan="3" style="text-align: center;">Assessment during instruction</td> </tr> <tr> <td>Attendance</td> <td>5%</td> <td>5</td> </tr> <tr> <td>Class activity</td> <td>5%</td> <td>5</td> </tr> <tr> <td>Project</td> <td>30%</td> <td>30</td> </tr> <tr> <td>Continuous knowledge check</td> <td>20%</td> <td>20</td> </tr> <tr> <td colspan="3" style="text-align: center;"><i>Exam assessment for the students who failed to fulfill all the obligatory requirements during the semester</i></td> </tr> <tr> <td><i>Written exam</i></td> <td><i>20%</i></td> <td><i>20</i></td> </tr> <tr> <td><i>Oral exam</i></td> <td><i>20%</i></td> <td><i>20</i></td> </tr> <tr> <td>Total:</td> <td>100%</td> <td>100</td> </tr> </tbody> </table>										Activity specification	Percent %	Points	Assessment during instruction			Attendance	5%	5	Class activity	5%	5	Project	30%	30	Continuous knowledge check	20%	20	<i>Exam assessment for the students who failed to fulfill all the obligatory requirements during the semester</i>			<i>Written exam</i>	<i>20%</i>	<i>20</i>	<i>Oral exam</i>	<i>20%</i>	<i>20</i>	Total:	100%	100
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3.9 Assessment criteria – analysis per learning outcomes	Ways of evaluating learning outcomes																																							
		Attendance and activity	Project	Continuous knowledge check	Written exam	Oral exam	Total																																	
	Outcome 1			5	5	5	15																																	
	Outcome 2			5	5	5	15																																	
	Outcome 3			5	5	5	15																																	
	Outcome 4			5	5	5	15																																	
	Outcome 5		10				10																																	
	Outcome 6		20				20																																	
	Outcome not-related	10					10																																	
	Total	10	30	20	20	20	100																																	

	<p>Grading of outcomes (in order to pass the mid-term exam/exam the student must achieve more than 60% points for each learning outcome)</p> <table border="0"> <tr> <td>Points</td> <td>Grade</td> </tr> <tr> <td>91 – 100</td> <td>excellent (5)</td> </tr> <tr> <td>81 – 90</td> <td>very good (4)</td> </tr> <tr> <td>71 – 80</td> <td>good (3)</td> </tr> <tr> <td>61 – 70</td> <td>pass (2)</td> </tr> <tr> <td>0 – 60</td> <td>fail (1)</td> </tr> </table>	Points	Grade	91 – 100	excellent (5)	81 – 90	very good (4)	71 – 80	good (3)	61 – 70	pass (2)	0 – 60	fail (1)
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<p>3.10 Specific features related with taking the course</p>	<p>In addition to regular attendance and activities in monitoring processed material, the workload of students is significantly oriented towards the practical use of the adopted material through the preparation of a project task in training classes. The project task is designed as an urban and architectural conceptual design of a passive family house. On this task it is necessary to use all the knowledge gained in the courses ZGR and UPP, and to supplement them with new knowledge and guidelines for the design of modern nZeb buildings. The preparation of the project task is a condition for obtaining a signature from this course, and a prerequisite for taking the exam.</p> <p>The workload includes a continuous oral knowledge check conducted at the beginning of each lecture, starting with the second lecture (3rd lesson). Continuous verification consists of a 5-minute knowledge test (5 short and concrete questions from the material processed at the previous lecture). During class, attendance is evaluated with 5% of the total possible final grade, 5% teaching activity, 30% urban and architectural design task, continuous knowledge check 20% + written exam total 20%, and oral exam 20%. The final written exam is taken at the time of regular and extraordinary exam periods. A written exam consists of 3 tasks. Each task carries 5 points. The total maximum number of points on a written exam is 15 points. The oral exam can be accessed by a student who has achieved a score of at least 60.01% accuracy (more than 36 points).</p> <p>The type of question is defined by the teacher, but all questions and tasks cover the material of the course that was handled in lectures and exercises. Additional student efforts are also possible, which is evaluated as part of teaching activities:</p> <ol style="list-style-type: none"> 1) as an additional challenge through a creative technical workshop it is recommended to create a model of a designed conceptual solution or 3D display 2) the three best designed and designed project tasks will be presented as part of the annual exhibition of works on MEV. 												
<p>3.11 Students obligations</p>	<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 provided for in the course, he/she is obliged to attend lectures again and meet the requirements for taking the exam.</p> <p>In exceptional cases, with prior justification and confirmation of the impossibility of coming to class, incomingsness can be compensated by online consultations, organized webinars and additional tasks set by teachers. One class lasts 45 minutes, and more hours make up the unit. Absence from one unit counts as one absence.</p> <p>In the event that the student is absent with more than 50% of the lessons, and has a justified reason/apology, a request should be submitted to the Department Council, which then decides on the justification of student absences with the obligatory opinion of the course holder.</p>												

3.12 Written assignments	<p>The design of the project task is designed as an urban and architectural conceptual design of a passive family house. On this task it is necessary to use all the knowledge gained in the courses ZGR and , and to supplement them with new knowledge and guidelines for the design of modern nZeb buildings. The development of the project solution is elaborated successively through exercises, with regular corrections of teachers and guidelines for further work and progress. The project is submitted as a preliminary design with all the components of textual and graphical representations; technical description of the building, all floor plans, characteristic cutthrelves, façade, duly made in an adequate scale, surfaced, broken in accordance with the rules of processing technical documentation, imported, handwritten signed defining the authenticity and originality of the production.</p> <p>The preparation of the project task is a condition for obtaining a signature from this course, and a prerequisite for taking the exam, and in the overall evaluation it is valued at 30%.</p>	
3.13 Required reading	1.	Martina Zbašnik Senegačnik: PASIVNA KUĆA; SUN ARH d.o.o. Zagreb, 2009.
	2.	VELUX A/S: A GOOD INDOOR ENVIRONMENT FEELS LIKE BEING OUTSIDE ON A MILD SUMMERs DAY (a guide to designing healthy homes), 2018.
	3.	Martina Feirer/Alexandra Frankel: WE ARE BUILDING A PASSIVE-HOUSE, 2014., Austria
3.14 Additional reading	1.	Justin Bere: AN INTRODUCTION TO PASSIVE HOUSE
	2.	Gonzalo Roberto, Rainer Vallentin: PASSIVE HOUSE DESIGN AND THE BUILDING ENVELOPE, Detail green books
	3.	Ljubomir Miščević: PASSIVE ENERGY STANDARD IN BUILDING AS A PERSPECTIVE OF SUSTAINABLE DEVELOPMENT – FIRST PASSIVE HOUSES IN CROATIA, 14th Forum Croatiam Energy Day, HED, Zagreb, str 117-126
	4.	Z.Pađan: Arhitektura biljaka – biljke kao dio općeg evolucijskog fenomena građenja, Zagreb, Školska knjiga, 2012.
4 ADDITIONAL COURSE INFORMATION		
4.1 Quality control	<p>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.</p>	
4.2 Contact the teacher	<p>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.</p>	
4.3 Information about the course	<p>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.</p>	
4.4 Course contribution to the study program	<p>GENERIC LEARNING OUTCOMES</p> <p>I1 - Interpret information, ideas, problems and solutions to professional and general audiences</p> <p>I2 - Use new technologies and techniques as part of the lifelong learning process</p>	

	<p>I3 - Use foreign languages in professional communication and use of professional literature</p> <p>I4 - Represent an ethical approach in work and according to project team associates</p> <p>I5 - Critically judge arguments, assumptions and data in order to create opinions and adhesion troubleshooting</p> <p>SPECIFIC LEARNING OUTCOMES</p> <p>I6 - Solve engineering problems of sustainable development using mathematics, physics, chemistry and biology</p> <p>I7 - Analyse collected data in the field of sustainable development</p> <p>I8 - Interdisciplinary to solve engineering problems of sustainable development</p> <p>I9 - Plan the circular economy in accordance with the legal framework in the Republic of Croatia</p> <p>I10 - Interpret European Union legislation on sustainable development</p> <p>I17 - Create an architectural and urban solution using basic principles of designing low-energy buildings using modern computer systems</p> <p>I18 - Perform an energy audit and create an energy card, energy renovation and griff of the building</p> <p>I21 - Propose selection of environmentally friendly materials in sustainable construction</p>
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