



POLYTECHNIC OF MEĐIMURJE IN ČAKOVEC

COURSE SYLLABUS

ACADEMIC YEAR: 2020/2021

1. GENERAL COURSE INFORMATION

1.1 Course name	Natural Resource Management			
1.2 Study program/s				
1.3 Course status (O,E)	O	1.6 Mode of instruction (number of hours)	Lectures	15
1.4 Course code	4061		Exercises	30
1.5 Course abbreviation	GPR		Seminars	
1.6 Semester	III		E-learning	Merlin
1.7 ECTS	4	1.7 Place and time of instruction	Classrooms Polytechnic of Međimurje in Čakovec	

2. TEACHING STAFF

2.1 Course leader/s-title	Ivančica Somođi, mag. biol. mol.	contact	isomodji@mev.hr
		contact	
2.2 Assistant/s- title		contact	
		contact	
2.3 Instruction held by- title		contact	

3. COURSE DESCRIPTION

3.1 Course goals	<p>Apply knowledge of natural resources management in primary production activities, but also in other economic branches when making decisions on their use. It apply a new and emerging economics that seeks solutions that make sense from financial standpoint as well as from environmental and cultural perspective.</p> <p>Knowledge is acquired from national and global environmental problems of exploitation of natural resources and their solution. The student must recognize an interdisciplinary approach focused on basic biological knowledge, be able to apply the analytical approach needed to conserve, restore and manage biodiversity resources in a sustainable way. Emphasis was placed on developing the ability to recognize comprehensive process planning and the human dimension of natural resource management. Students must recognize the integration of the biological, sociological, and institutional dimensions of management through the analysis of study cases.</p> <p>Students acquire basic knowledge of terrestrial and aquatic habitats, the basics of exploitation and management of natural resources. The student is trained as a team solving environmental problems, apply legislation in project implementation and take responsibility in a sustainable community.</p>
3.2 Prerequisites	/
3.3 Course outcomes	<p>After successfully completing the course, students will be able to:</p> <p>I1 - Indicate the composition, structure, abiotic and biotic factors of soil, water, forests, the basic document required for the management of protected natural resources.</p> <p>I2 - Identify, describe and explain the impacts on the environment and the nature of natural resource management: predict the impacts, compare</p>

	<p>the impacts of the project with the financial standpoint.</p> <p>13 - Interpret and apply the basics of forest, water, soil and air protection</p> <p>14 - Assess, review the possible impacts of environmental interventions in the management of natural resources; apply data from the Management Plans of environmental and nature components</p> <p>15 - Anticipate possible consequences of intervention / management of natural resources; independently apply legislation in the use of natural resources.</p> <p>16 - Connect and present the acquired knowledge in the economic use of natural resources.</p>																																										
3.4 Course content	<p>The course deals with the basic management of the components of the environment and nature in a sustainable way, directed at thinking about sustainability in their economic use. The contents are processed descriptively and from the aspect of study cases, focusing on sustainable production and consumption. The following contents are presented in the teaching units: ethics, sustainability in food production, economy, protection and management of soil (composition, minerals, ores, fossil fuels), water, air and biodiversity (management of protected natural resources, aquaculture and hunting), their the most significant ways of pollution (pesticides, heavy metals), the impact of the use of non-renewable energy sources (energetics) management of protected natural values (categorization, infrastructure, ecology, education, tourism, historical and cultural heritage), sustainable development strategy.</p>																																										
3.5 Types of coursework	x	Lectures	x	Exercises		Blended e-learning		Individual activities		Laboratory																																	
	x	Seminars and workshops		Distant learning		Field classes		Multimedia and network		Mentorship																																	
		Other																																									
3.6 Language of instruction																																											
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)	0,5	Class attendance	0,25	Seminars				Essay																																			
	0,25	Class activity		Project				Report/paper																																			
	1,0	Midterm exams		Practical task				Continuous knowledge check																																			
		Written exam		Experimental work																																							
	1,0	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>10%</td> <td>10</td> </tr> <tr> <td>Class activity</td> <td>10%</td> <td>10</td> </tr> <tr> <td>Seminar/ project/ essay</td> <td>20%</td> <td>20</td> </tr> <tr> <td>Midterm exam 1</td> <td>12,5%</td> <td>12,5</td> </tr> <tr> <td>Midterm exam 2</td> <td>12,5%</td> <td>12,5</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>Written exam</td> <td>25%</td> <td>25</td> </tr> <tr> <td>Oral exam</td> <td>35%</td> <td>35</td> </tr> <tr> <td>Total:</td> <td>100%</td> <td>100</td> </tr> </tbody> </table>										Activity specification	Percent %	Points	Assessment during instruction			Attendance	10%	10	Class activity	10%	10	Seminar/ project/ essay	20%	20	Midterm exam 1	12,5%	12,5	Midterm exam 2	12,5%	12,5	<i>Exam assessment for the students who failed to fulfill all the obligatory requirements during the semester</i>			Written exam	25%	25	Oral exam	35%	35	Total:	100%	100
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3.9 Assessment criteria – analysis per learning outcomes	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		10
	Outcome 3			5	5		10
	Outcome 4			5	5	10	20
	Outcome 5		5	5	5	5	20
	Outcome 6		5	5	5	5	20
	Outcome not-related	5	5				10
	Total	5	5	30	30	30	100
	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)					
3.10 Specific features related with taking the course	<p>If a student collects 50% of the points of each outcome, he / she directly takes the exam, provided that he / she has submitted a seminar paper. A student cannot access the exam period if he / she has not submitted and presented a seminar paper. The seminar paper is taught and presented according to the schedule of the lecture, and at the latest at the final lecture when it must be presented. During the exam, it is possible to orally check the knowledge during the preparation of the seminar paper.</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> <p>Once achieved points in intermediate exams for each learning outcome are no longer deleted unless the student decides to correct the result for a particular learning outcome, whereby the points won until then are deleted and newly achieved points for that learning outcome are entered.</p> <p>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 colloquium access the written part of the exam where all learning outcomes are checked.</p>						
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	Seminar papers must be computer written and may have a maximum of 10 to 12 text cards (Times New Roman, font 12) from introduction to conclusion, together with pictures, appendices to tables according to the " <i>Regulations on</i>						

	<i>the final work,..."</i> ; MEV, 2015. Seminar papers must have an adequate title page, content, marked pages and literature. The seminar paper should be divided into chapters and contain a list of references and a list of figures and tables and graphs and finally a summary / conclusion in the size of 250 words. The student guarantees the authenticity of the work with his signature.			
3.13 Required reading	1.	Management of protected areas of nature - planning, development, sustainability, Ivan Martinić, University of Zagreb, Faculty of Forestry, Zagreb, 2010.		
	2.	Poisoned Blue-Green Planet, O. P. Springer, Daniel Springer, Meridians, 2008 - selected Chapters		
	3.	Nevenko Herceg. Environment and sustainable development, Zagreb: Synopsis, 2013, selected chapters		
	4.	Remediation of contaminated soil, I. Kišić, Faculty of Agriculture, University of Zagreb, Zagreb, 2012.		
3.14 Additional reading	1.	Natural Resource Conservation, Oliver S. Owen, Daniel D. Chiras, John P. Reganold, Prentice Hall		
	2.	Biology, Raven Johnson, Losos Singer		
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	16 Solve engineering problems in sustainable development by applying mathematics, chemistry, physics and biology. 18 Interdisciplinary solving of engineering problems in sustainable development. 127 Assess potential environmental risks and cooperate in the preparation of environment impact studies and EIA.			
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 <ul style="list-style-type: none"> • Direct teaching (lecture, instruction, pp presentation) • Discovery learning (individual, lead, discussion) • Group learning • Case study 	Learning outcomes	Course outcome

		• Field classes...		
1.	Introduction: concept, content, career	Direct teaching, conversation	Explain the content of the course and basic obligations	11
2.	Economy and ethic	Direct teaching, ppt	Understand sustainable ethics and creating sustainable economy, develop the ability to think critically	12
3.	Basic concepts of ecology and sustainability	Direct teaching, ppt	Understanding the basic concepts of ecology to understand the anthropogenic impact on the environment and nature.	12
4.	The structure of the planet Earth	Direct teaching, ppt	Describe the structure of the Earth	11
5.	Geological resources	Direct teaching, ppt	Distinguish geological resources	12
6.	Ores, minerals	Direct teaching, ppt	Distinguish ores and minerals	12
7.	Soil: composition, origin, value, profiles	Direct teaching, ppt	Distinguish soil profiles, get to know the structure of the soil	13
8.	Midterm exam 1	Written work	Present the acquired knowledge	16
9.	Soil pollution	Direct teaching, ppt	Explain the types of soil pollution	14
10.	Forests: abiotic and biotic factors	Direct teaching, ppt	Distinguish between abiotic and biotic factors in the forest	13
11.	Forest management: maintenance, general forest functions, hunting	Direct teaching, ppt	Explain forest management: maintenance, general forest functions, hunting	13
12.	Water resources management	Direct teaching, ppt	Explain the global role of water	12
13.	Fisheries, aquaculture	Direct teaching, ppt	Distinguish between economic and SF fisheries, explain aquaculture	13
14.	Management of protected nature areas	Direct teaching, ppt	Explain the planning documents on the basis of which it is	14

			managed of protected nature areas	
15.	Midterm exam 2	Written work	Present the acquired knowledge	16
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.	Natural Resource Conservation and Management: Past, Present and Future	Presentation, pp presentation, example, discussion	Explain the sustainability of using nat. resources	12
2.	Case study: China-birth control, ethics, meeting food needs, growth of food production	Problem solving on case analysis, discussion	Problem solving on case analysis, discussion	15
3.			Identify the environmental impacts of the life of minerals, energy, state the composition of non-renewable mineral resources	12
4.	Division of mineral resources, formation of non-renewable mineral resources, legislation	Presentation, pp presentation, example, discussion		
5.			Explain the formation of soil, humus, identify the role of microorganisms, water, humic acids in the soil	12
6.	Soil: rocks, wear and soil formation processes, formation, soil microorganisms, humification	Presentation, pp presentation, example, discussion		
7.	Environmental impact of mineral use	Presentation, pp presentation, example, discussion	Identify and analyse mineral resources in life cycle impact assessment	15
8.	Impact of energy on the environment	Presentation, pp presentation, example, discussion	Identify environmental impact of energy	12
9.	Soil as a resource: Earth's structure, minerals, value and characteristics	Presentation, pp presentation, example, discussion	Describe the structure of the Earth, discuss the diversity of layers	12
10.	Case study: how much is gold worth?	Presentation, pp presentation, example, discussion	Integrate acquired knowledge in the use of MR, link ethical issues with	16

			the use of MR	
11.	Soil: profiles, classification, forest soils	Presentation, pp presentation, example, discussion	Describe profiles of soil	12
12.	Sustainable management of mineral resources: mining, mineral life, protection of geological heritage, environmental effects of mineral resources	Presentation, pp presentation, example, discussion	Integrate acquired knowledge in the use of mineral resources and geological heritage	13
13.	Seminars: impact of TPP / HPP	Problem solving by example (case analysis), discussion	Critical thinking and recognize impacts through case analysis.	12
14.	Seminars: LNG	Problem solving by example (case analysis), discussion	Critical thinking and recognize impacts through case analysis.	16
15.	Soil: soil erosion, protection and sustainable agriculture	Presentation, pp presentation, example, discussion	Describe erosion	12
16.	Study case: Dust bowl	Problem solving by example (case analysis), discussion	Critical thinking, protection through case analysis	14
17.	Soil pollution by pesticides: historical overview, division, use, hazards, health and environmental protection, removal from the soil, remediation	Presentation, pp presentation, example, discussion	Explain the role of pesticides, division and identify the consequences of application	12
18.				
19.	Heavy metal soil contamination: case analysis, sustainable use and regulation	Problem solving by example (case analysis), discussion	Critical thinking and recognize impacts through case analysis.	12
20.				
21.	Case study: bioaccumulation and boil. magnification	Problem solving by example (case analysis), discussion	Think critically and recognize the accumulation of pesticides and heavy metals in the food web.	14
22.	Influence of biotic and abiotic factors on the forest	Presentation, pp presentation	Identify basic abiotic and biotic factors in the forest, synecological relationships	12
23.	Hunting management basics, wildlife management, legislation	Presentation, pp presentation	Use data from hunting Management Plans, learn importants of wilderness areas	13
24.	Seminars: Wildlife Management: Management Plans	Problem solving by example (Wildlife Management Plans),	Present management plans of lynx, wolf	16
25.	Global water pollution	Presentation, pp		13

		presentation	Interpret global water pollution problems	
26.	Aquaculture, legislation	Presentation, pp presentation	Present the types of aquaculture	13
27.	Case Study: Irrigation, California Water Project	Problem solving by example (case analysis), discussion	Interpret the example; relationship between purpose and influence	14
28.	Landscape planning, urban ecosystem management	Presentation, pp presentation	Identify spatial planning documentation	12
29.	Seminars: National Park Management Plans	Problem solving by example (case analysis), discussion	Present NP Management Plans (protection, economic, educational and tourist activities)	16
30.	Seminars: ethics of nature conservation (sustainability of the economy and protection)	Problem solving by example (case analysis), discussion	Problem solving by example (case analysis)	16