POLYTECHNIC OF MEĐIMURJE IN ČAKOVEC

COURSE SYLLABUS

ACADEMIC YEAR:	2020/2021

1. GENERAL COURSE INFORMATION

1.1 Course name	**General Ecology**			
1.2 Study program/s				
1.3 Course status (O,E)		**1.6 Mode of instruction (number of hours)**	**Lectures**	30
1.4 Course code			**Exercises**	30
1.5 Course abbreviation			**Seminars**	
1.6 Semester	IV.		**E-learning**	
1.7 ECTS	5	**1.7 Place and time of instruction**		

2. TEACHING STAFF

2.1 Course leader/s-title	dr. sc**. Darinka Kiš-Novak, PhD, biologist** dipl. ing. biol. s ekol., prof. biol., prof. v. š.	**contact**	**dkisnovak@mev.hr**
		contact	
2.2 Assistant/s- title		**contact**	
		contact	
2.3 Instruction held by-title		**contact**	

3. COURSE DESCRIPTION

3.1 Course goals	Adopt the basics of ecological principles and knowledge about the functioning of all levels of ecosystems; getting to know the organism-environment

	relationship; understanding the environmental consequences of anthropogenic impact
3.2 Prerequisites	passed the course Fundamentals of Biology
3.3 Course outcomes	It is expected that students after completing the course: 1. Identify the basic laws of ecology as a biological science 2. Explain the basic environmental laws, principles and mechanisms at all levels of the living world hierarchy, explain, relate and describe the specifics of 3. Distinguish, identify, isolate and compare abiotic and biotic factors. Understand and use basic concepts related to environmental literacy 6. Develop the ability to analyze 7. Understand, apply, classify and analyze a potential problem at the level of ecology / nature protection 8. Identify different (negative) influences with professional participation in solving some of the current ones problems in ecology or protection of nature or environment 9. Explain the connection between living and non-living world and the connection between climatic conditions, biomes and theirs typical representatives through lifestyle and role in the community 10. Interpret how the developmental similarity of living beings reflects their evolutionary and ecological connection 11. Design a presentation on a specific topic and present it to the group Design a presentation on a specific topic and present it to the group.
3.4 Course content	Ecology as a science of inter / intra interaction of organisms and habitats; man, culture, nature and (eco) technology

3.5 Types of coursework	x	Lectures	x	Exercises		Blended e-learning	x	Individual activities		Laboratory
	x	Seminars and	x	Distant learning		Field classes		Multimedia and network		Mentorship

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<tr><td></td><td></td><td>worksho ps</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td>Other</td><td colspan="8"></td></tr>
<tr><td>3.6 Language of instruction</td><td colspan="10">Croation and English</td></tr>
<tr><td rowspan="6">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)</td><td>0,5</td><td colspan="2">Class attendance</td><td></td><td colspan="2">Seminars</td><td>0,5</td><td colspan="2">Essay</td></tr>
<tr><td>0,5</td><td colspan="2">Class activity</td><td></td><td colspan="2">Project</td><td></td><td colspan="2">Report/paper</td></tr>
<tr><td>1,0</td><td colspan="2">Midterm exams</td><td>0,5</td><td colspan="2">Practical task</td><td></td><td colspan="2">Continuous knowledge check</td></tr>
<tr><td></td><td colspan="2">Written exam</td><td>0,5</td><td colspan="2">Experimental work</td><td></td><td colspan="2"></td></tr>
<tr><td>1</td><td colspan="2">Oral exam</td><td>0,5</td><td colspan="2">Research</td><td></td><td colspan="2"></td></tr>
<tr><td colspan="10"></td></tr>
<tr><td>3.8 Assessment and evaluation of students' work during classes and at the final exam</td><td colspan="10"><table>
<tr><th>Activity specification</th><th>Percent %</th><th>Points</th></tr>
<tr><td colspan="3">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>Seminar/ project/ essay</td><td>30%</td><td>30</td></tr>
<tr><td>Midterm exam 1</td><td>30%</td><td>30</td></tr>
<tr><td>Midterm exam 2</td><td>30%</td><td>30</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>Total:</td><td>100%</td><td>100</td></tr>
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<tr><td>3.9 Assessment criteria – analysis per learning outcomes</td><td colspan="10">During the semester, students will write 2 midterm exams, and give a presentation on a specific topic.

The 1st midterm exam is written after the first 7 weeks of classes and covers the learning outcomes covered in the first 7 weeks. The 2nd midterm exam is</td></tr>
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written after the other 7 weeks of classes and covers the learning outcomes covered in the other 7 weeks of classes.

Intermediate exams are taken during the duration of classes in the 1st week after each cycle of 7 weeks of classes.

The type of questions is defined by the teacher, but all questions and tasks cover the course material or 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			10	10	5	25
Outcome 3			5	5	5	15
Outcome 4			5	10	5	20
Outcome 5				10		10
Outcome not-related	5	5		10		20
Total	5	5	25	45	20	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	If a student collects 50% of the points of each outcome, he / she directly takes the exam, provided that he / she has done practical work (exercises). A student cannot access the exam period if he / she has not achieved a min for each exercise. 60% correct answers. Practical work-exercises are made according to the instructions published on the Merlin system and are submitted by posting on the Merlin. Checking the completed exercises is done in practice classes after prior preparation with the teacher. During the semester, the student is required to perform six exercises independently. Practical work (completed exercises) is taught until the last week of lectures. During the exam, it is possible to orally check the knowledge from practical work (exercises). If a student does not achieve a sufficient number of points on the midterm exam, he / she cannot take the next midterm exam. 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. The final grade is obtained on the exam period and is the sum of points earned during classes. Students who did not take the colloquium access the written part of the exam where all learning outcomes are checked, and are required to have completed exercises before taking the exam.
3.11 Students obligations	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.

	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.
3.12 Written assignments	The discussion essay must be written in computer and may have a maximum of 800 words (Times New Roman, font 12) from introduction to conclusion, together with pictures, table appendices, etc. An essay or rehearsal is a type of exam and should be practiced. What is judged in the essay? Your understanding of the text and how successfully you have made the structure of the essay (introductory part). If you have described the problematization according to the guidelines. If you used the Croatian language, spelling, grammar correctly. Your written expression and writing style. If you have supported your claims (views, opinions) with quotes or paraphrases. The essay is of limited length: 600 to 800 words. The essay is written on the basis of the offered text (texts). TEXT OFFERED: YOUR ESSAY TOPIC! The topic of the presentation is determined by the teacher in cooperation with the student in the field: 1. Biodiversity 2. Natural heritage 4. Ecological network Discussion essay: Read carefully. Argue your position with quotes, facts. Be critical, objective, but also subjective when needed. Useful expressions with a discussion essay: argument, proof, personal attitude, questioning, background, opposition, connotation, discussion, conclusion… Essay writing (tips): Composition - essay structure: introductory part, elaboration parts, concluding part. Define keywords or terms in the text Use quotes

	If the title is not given, think of it yourself and let the thought be extracted from the text of your essay. To write exactly what you are asked to do, follow the writing guidelines First, answer the questions you know the answer to Answer only what you are asked, not some other questions It is important (if necessary) to read the text several times with understanding The student guarantees the authenticity of the work with his signature.	
3.13 Required reading	1.	Kerovec,Mladen. 1988. Ekologija kopnenih voda . Hrvatsko ekološko društvo i dr. Ante Pelivan, Zagreb, Mala ekološka biblioteka
	2.	Kiš-Novak, Darinka 2004. U potrazi za biološkom raznolikošću zavičajnih pasmina – međimurski konj, *Učitelj 4*, (235-245), Čakovec.
	3.	Kiš-Novak, Darinka 2007. Saprobiološke metode u procjeni kvalitete vode, *Učitelj 7*, (209-222), Čakovec.
	4.	Dolenec, Zdravko & Kiš Novak, Darinka 2010. Winter prey of the long-eared owl (*Asio otus*) in northern Croatia; u: *Natura Croatica* , Hrvatski prirodoslovni muzej, Zagreb, (Vol. 19, No 1)
	5. 6. 7. 8.	Kiš-Novak, Darinka 2015. Rijeka Drava i povijest izgradnje akumulacijskih jezera na području Međimurja. Prirodoslovne teme. U: Hrvatski kajkavski kolendar 2015. Godišnjak Ogranka Matice hrvatske u Čakovcu. Zrinski d. d. Čakovec, 2015: 228-233. ISSN 1332-2141 Matoničkin, I., Klobučar, G., Kučinić, M. 2010. Opća zoologija. Školska knjiga, Zagreb Požar-Domac, A. 1988. O biologiji mora. Hrvatsko ekološko društvo, Zagreb, Mala ekološka biblioteka Smith R.L., Smith T.M., 2006: Elements of Ecology. 6th Edition, Benjamin/Cummings Science Publishing.
3.14 Additional reading	1.	Selected texts from professional journals
	2.	Selected texts from university textbooks
	3.	Lecture notes
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	Professional, scientific, popular scientific, ethical and moral approach to work, critical evaluation of arguments, assumptions and data in order to create opinions and contribute to the solution of problems, knowledge of contemporary issues of the profession and society. Personal knowledge and skills - ethical and moral approach to work, - knowledge of contemporary issues of the profession and society. General knowledge and skills - use of foreign languages, English or German, in literature and everyday professional communication

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** • Direct teaching (lecture, instruction, pp presentation) • Discovery learning (individual, lead, discussion) • Group learning • Case study • Field classes…	**Learning outcomes**	**Course outcome**

1	Introductory introduction to the module, literature, teaching methods, student obligations; Introduction to ecology; history of ecology, subject of research, ecology as a multidisciplinary and interdisciplinary science, ecological valence: stenovalent and eurivalent species	Presentation, pp presentation, video Presentation, pp presentation video	Interpret	I1-4
2.	Abiotic factors: Temperature as an environmental factor; thermal energy on Earth, ways of heat exchange, physiological groups of animals, the influence of heat on growth and development, thermophiles and cryophiles.	Presentation, pp presentation video	Apply analyzes	I1-4
3.	Abiotic factors: Light as an environmental factor; influence of light on the living world, circadian rhythm, photoperiodism and phenological phenomena, bioluminescence	Presentation, pp presentation video	Apply analyzes	I1-4
4.	Abiotic factors: Water and metabolic gases; water on Earth, humidity as an environmental factor ,; xerophytes, hydrophytes, hygrophytes and mesophytes, water regulation in the animal body. Habitat or biotop	Presentation, pp presentation video	Apply the principles	I1-4 I2-4
5.	Hierarchy of organization; Biosphere, Biota; Biotic factors: Population; spatial distribution, population density, age structure,	Presentation, pp presentation Video; Field classes	Apply	I3

	population growth, fluctuations in natural populations, population regulation, development strategies and life cycle			
6.	Biocenosis: intraspecific and interspecific relationships; nutrition relations in the biocenosis (autotrophic and heterotrophic organisms); Biodiversity; Ecosystem or ecosystem	Presentation, pp presentation Video	Interpret	I4
7.	Bioms	Presentation, pp presentation video	Interpret	I1-6
8.	Colloquium (Intermediate Exam 1)	Presentation, pp presentation Video	Interpret Apply analyzes	I1-6
9.	Biogeochemical cycles	Presentation, pp presentation Video	Show examples	I1-4
10.	Ecotoxicology	Presentation, pp presentation Video	Apply	I1-4
11.	Plant ecology	Presentation, pp presentation	Apply knowledge and interpret	I1-4

		Video; Field classes		
12.	Animal ecology	Presentation, pp presentation Video	The example Interpret	I1-4
13.	Ecological characteristics of inland waters; swamps, streams, stagnant	Presentation, pp presentation Video		I1-6
14.	Basic ecological features of the sea and ocean Ecology, nature protection and environmental science	Presentation, pp presentation Video	The example Interpret	I1-6
15.	Colloquium (Intermediate Exam 2)	individual	Apply knowledge	I1-6
Hours		**Method** • Direct teaching (lecture, instruction, pp presentation) • Discovery learning (individual, lead, discussion) • Group learning • Case study • Field classes…	**Learning outcomes**	**Course outcome**
1.	Introduction to ecology; history of ecology, subject of research, ecology as a multidisciplinary and interdisciplinary science, ecological	• microscopy	Interpret	I1-4

	valence: stenovalent and eurivalent species			
2.	Abiotic factors: Temperature as an environmental factor; thermal energy on Earth, ways of heat exchange, physiological groups of animals, the influence of heat on growth and development, thermophiles and cryophiles.	• laboratory exercises, experiments	Apply analyzes	I1-4
3.	Abiotic factors: Light as an environmental factor; influence of light on the living world, circadian rhythm, photoperiodism and phenological phenomena, bioluminescence	• exercises	Apply analyzes	I1-4
4.	Abiotic factors: Water and metabolic gases; water on Earth, humidity as an environmental factor ,; xerophytes, hydrophytes, hygrophytes and mesophytes, water regulation in the animal body. Habitat or biotop	• discovery learning, independent, scientific literature	Apply the principles	I1-4 I2-4
5.	Hierarchy of organization; Biosphere, Biota; Biotic factors: Population; spatial distribution, population density, age structure, population growth, fluctuations in natural populations, population regulation, development strategies and life cycle	• learning by discovery; Field classes	Apply	I3
6.	Biocenosis: intraspecific and interspecific relationships; nutrition relations in the biocenosis	• drawings, learning by discovery	Interpret	I4

	(autotrophic and heterotrophic organisms); Biodiversity; Ecosystem or ecosystem			
7.	Bioms	apply knowledge drawings, learning by discovery	Interpret	I1-6
8.	Colloquium (Intermediate Exam 1)	scientific literature	Interpret Apply analyzes	I1-6
9.	Biogeochemical cycles	microscopy	Show examples	I1-4
10.	Ecotoxicology	microscopy	Apply	I1-4
11.	Plant ecology	Individual, group; Field classes	Apply knowledge and interpret	I1-4
12.	Animal ecology	Individual, group	The example Interpret	I1-4
13.	Ecological characteristics of inland waters; swamps, streams, stagnant	Individual, group	The examples	I1-6
14.	Basic ecological features of the sea and ocean Ecology, nature protection and environmental science	Individual, group	Apply knowledge	I1-6

15.	Colloquium (Intermediate Exam 2)	individual	Apply knowledge	I1-6