

Course Information Sheet

University: <i>University of Prešov in Prešov</i>	
Faculty: <i>Faculty of Humanities and Natural Sciences</i>	
Code: 2EKO/VYMAEK/22	Title of Course: Selected methods of applied ecology
Form of Study: <i>lectures, laboratory classes</i> Number of contact hours: <i>per week: lectures 1, laboratory classes 2</i> <i>per level/semester: 10 lectures, 20 laboratory classes, 20 preparation for laboratory work, 40 self study</i> Method: <i>physical presence/traditional classrooms</i>	
Number of credits: 3	
Semester: <i>1st semester /1st year of study</i>	
Degree/Level: <i>master</i>	
Prerequisites:	
Grading Policy (Assessment/Evaluation): <i>During the semester, it will be mandatory to writing exercises for 40 points and practical exercise for 10 points; to obtain an A rating it is necessary to obtain at least 90%, to obtain an B rating at least 80%, to obtain a C rating at least 70%, to obtain a D rating at least 60 points and to obtain an E rating at least 50%.</i>	
Aims and Objectives: <i>The student will be acquainted with the latest selected methods used for experimental activities in plant and invertebrate ecology.</i> <i>The student will know:</i> <ul style="list-style-type: none"> - analyze the issues of applied ecology - select the appropriate method - apply the selected methodology for data acquisition - process and evaluate the obtained data - interpret the results in connection with the solved problem of applied ecology 	
Syllabus/Indicative Content: <ol style="list-style-type: none"> 1. introduction to experimental activities and safety rules 2. good laboratory practice for keeping the laboratory clean 3. how to conduct a search of professional literature 4. acquisition of material and preparation of material for experimental activities 5. selected methods for extraction of biologically active substances from selected matrices (distillation, maceration, leaching, etc.) 6. methods for determination of antioxidant activity (DPPH, OH) 7. methods for the determination of antigerminative and phytotoxic activity 8. methods for identification and determination of active substances (chromatography) 9. animal model organisms for laboratory testing 10. methods for determining the biocidal activity and ecotoxicity of different types of extracts 11. in-vitro cultivation method 12. selected methods for analysis of results 13. interpretation of the obtained results 	
Suggested readings:	

Bartal, M. 2013, *Jednoduché prístrojové metódy v školskom laboratóriu*. Bratislava 2013
 Steinmetz, W. Common laboratory techniques and practices.2012
 WHO. Good Laboratory Practices (GLP).2010

Language of Instruction: *slovak, english resp.*

Other course information: The course is intended for students who decide to carry out diploma theses with a focus on applied ecology

Grading history

A	B	C	D	E	FX
a	b	c	d	e	f

Lecturer/Instructor:

Doc. Ing. Jozef Fejér, PhD.
 RNDr. Beáta Baranová, PhD.
 RNDr. Daniela Grul'ová, PhD.

Last update: 9. mája 2022

Approved by:

University: *University of Prešov in Prešov*

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Code: 2EKO/VYMAEK/22

Title of Course: **Selected methods of applied ecology**

Form of Study: *lectures, laboratory classes*

Number of contact hours:

per week: lectures 1, laboratory classes 2

per level/semester: 10 lectures, 20 laboratory classes, 20 preparation for laboratory work, 40 self study

Method: *physical presence/traditional classrooms*

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Aims and Objectives:

The student will be acquainted with the latest selected methods used for experimental activities in plant and invertebrate ecology.

The student will know:

- *analyze the issues of applied ecology*
- *select the appropriate method*
- *apply the selected methodology for data acquisition*
- *process and evaluate the obtained data*
- *interpret the results in connection with the solved problem of applied ecology*

Syllabus/Indicative Content:

- 1. introduction to experimental activities and safety rules*
- 2. good laboratory practice for keeping the laboratory clean*

3. how to conduct a search of professional literature
4. acquisition of material and preparation of material for experimental activities
5. selected methods for extraction of biologically active substances from selected matrices (distillation, maceration, leaching, etc.)
6. methods for determination of antioxidant activity (DPPH, OH)
7. methods for the determination of antigerminative and phytotoxic activity
8. methods for identification and determination of active substances (chromatography)
9. animal model organisms for laboratory testing
10. methods for determining the biocidal activity and ecotoxicity of different types of extracts
11. in-vitro cultivation method
12. selected methods for analysis of results
13. interpretation of the obtained results

Suggested readings:

Bartal, M. 2013, *Jednoduché prístrojové metódy v školskom laboratóriu*. Bratislava 2013
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Other course information: The course is intended for students who decide to carry out diploma theses with a focus on applied ecology

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Lecturer/Instructor:

Doc. Ing. Jozef Fejér, PhD.
 RNDr. Beáta Baranová, PhD.
 RNDr. Daniela Grul'ová, PhD.

Last update: 9. mája 2022

Approved by:

Code: 2EKO/STAT2/22	Title: Statistic II.	
Field of study: 4.1.4 General ecology and ecology of individuals and populations		
Study programme: Ecology		
Guarantee:		Lecturers: PaedDr. Jakub Fedorčák, PhD.
Semester: Winter	Forms of teaching: Lectures, seminars	Number of credits: 3
	Recommended number of hours: Per week: 1/1 Total per study: lectures 13, exercises 13, individual work 71 (elaboration of a model task in a statistical program)	
Prerequisites:		
Assessment: Exam		
Course assessment: Continuous work with statistic script partial and final test		
Final assessment: Test		

Learning outcomes (Objectives):

The student masters the statistical environment of the R program. It manages data import, basic command line programming, program interface and import of programming packages. The student knows the basic statistical tests, their use and the principles of statistical modeling in the command line. Student can solve the preconditions for the use of a general linear model, work with linear regression and mixed linear models. Can correctly diagnose and compare statistical models.

The student is able to apply statistical methods (statistical tests, LR, GLM) for their own hypotheses and understands the importance of planned ecological research.

Course content:

Advanced statistical modeling:

1. Introduction, presentation of content and evaluation. Basics with statistical environment R, characteristics of input data and import of data into environment R, basic concepts
2. Use of commands, programming language R.
3. Parametric and nonparametric tests, linear regression (LR) in R
4. General linear model and assumptions of general linear model, comparison of t-test results, ANOVA and general linear model,
5. Basic principles of statistical modeling, correlation between variables, full model, null model, finding the most parzimononic model, cross-validation model, AIC,
6. Unfulfilled assumptions about the distribution of the dependent variable - only positive values - Generalized linear models with Gamma distribution, selection of the most parzimononic model, AIC, model diagnostics
7. Unfulfilled assumptions about the distribution of the dependent variable - numbers - Generalized linear models with Poisson distribution, selection of the most parzimononic model, AIC, model diagnostics
8. Unfulfilled assumptions about the distribution of the dependent variable - presence / absence - Generalized linear models with binomial distribution, selection of the most parzimononic model, AIC, model diagnostics
9. Unfulfilled assumptions about the distribution of the dependent variable - ratios (%) - Generalized linear models with binomial distribution, overdispersion in models, selection of the most parzimononic model, AIC, model diagnostics
10. Unfulfilled assumptions about the distribution of the dependent variable - other minor distributions, non-fulfillment of linearity in models - Generalized additive models
11. Application of knowledge for evaluation of own data in final theses (assignment)

Literature:

Crawley, M. J. (2012). The R book. John Wiley & Sons.

Dalgaard, P. (2008). Introductory statistics with R. Springer.

Mittal, H. V. (2011). R graphs cookbook: detailed hands-on recipes for creating the most useful types of graphs in R-starting from the simplest versions to more advanced applications. Packt Publishing Ltd.

Teetor, P. (2011). R cookbook. O'Reilly Media, Inc..

Language the course is taught in:

English

Signature of guarantee and date of last edition:

13th January 2022

University: University of Presov

Faculty: Faculty of Humanities and Natural Sciences					
Code: 2EKO/SDP1/22			Title of Course: Diploma Thesis Seminar 1		
Form of Study: seminar					
Number of contact hours: seminar 1					
per week: 1 per level/semester: seminars 10, preparation of semester work 20, work with the supervisor 30					
Number of credits: 2					
Semester: 2. semester					
Degree/Level: 2					
Prerequisites:					
Grading Policy (Assessment/Evaluation): Attendance at seminars is mandatory. A student can have a maximum of 2 absences justified on the basis of a medical certificate. In case of unjustified non-participation or a large number of absences, the student will not be granted credits. The evaluation of the student's study results within the study subject will take place: Active participation in seminars. Each student presents the chosen topic of their final thesis at least once a semester. It responds to the comments of the present members of the department and students.					
Aims and Objectives: By completing the course, the student is able to explain why he chose the topic, he has knowledge of basic knowledge, facts and relevant published outputs from the topic. Can describe hypotheses and aims of the work. Can explain what research methods will be used, how samples will be taken, how samples will be processed and how they will be evaluated. The student is able to summarize and discuss the results obtained so far. He can explain what he sees as the use of his research. The student will gain practical experience with writing a thesis and its formal requirements.					
Syllabus/Indicative Content: 1. Introductory lesson. 2. Formal requirements of the final thesis, current directive on the requirements of final theses, work with professional literature - databases Scopus, WOS, ethics of citing and listing bibliographic sources, EZP and control of originality. 3. schedule of presentations of individual students. 4.– 13. Presentation of topics, summary of basic knowledge and facts, hypotheses and goals of the work, methods and achieved results of the final work of individual students					
Suggested readings: TOWNSEND, R. C., BEGON, M., HARPER, L. J.: Základy ekologie (z anglického originálu: Essential of Ecology). 1. české vyd., Univerzita Palackého Olomouc: Blackwell Publishing, 2010, 505 s., ISBN 978-80-244-2478-1. ŠIMONEK, J. a kol. 1985. Diplomový seminár. Bratislava: UK Smernica o náležitostiach záverečných prác, ich bibliografickej registrácii, kontrole originality, uchovávaní a sprístupňovaní.[online]. Prešov: PU. [cit.26.3.2014]. Dostupné z: http://www.pulib.sk/web/data/pulib/subory/stranka/ezp-smernica-2013.pdf					
Language of Instruction: Slovak language					
Other course information:					
Grading history					
A	B	C	D	E	FX
a	b	c	d	e	f
Lecturer/Instructor: Ing. Jozef Oboňa, PhD. Final thesis supervisor, final thesis consultant					

Last update: 9. mája 2022
Approved by:

University: <i>Prešov University of Prešov</i>	
Faculty: <i>Faculty of humanities and natural sciences</i>	
Code: <i>2EKO/PODEK/15</i>	Title of Course: <i>Soil ecology</i>
Form of Study: <i>Present, lecture, seminar</i> Number of contact hours: per week: <i>1h + 1h</i> per level/semester: <i>lectures 10, seminars 10, preparing of seminar work 20, self work and study 50.</i>	
Number of credits: 3	
Semester: <i>2. semester / 1. year of study</i>	
Degree/Level: 2	
Prerequisites: ---	
Grading Policy (Assessment/Evaluation): <i>Active participation in seminars is mandatory. A student can have a maximum of 1 absence justified on the basis of a medical certificate. In case of unjustified non-participation or a large number of absences, the student will not be granted credits.</i> <i>The evaluation of the student's study results within the study subject will take place: final test with a minimum success rate of 50% and preparing of seminar work according to instructions.</i> <i>The success criteria (percentage of results) for the classification levels are as follows:</i> <i>a) A - 100.00 - 90.00%</i> <i>b) B - 89.99 - 80.00%</i> <i>c) C - 79.99 - 70.00%</i> <i>d) D - 69.99 - 60.00%</i> <i>e) E - 59.99 - 50.00%</i> <i>f) FX - 49.99 and less%</i>	
Aims and Objectives: <i>Student will obtain survey about way of soil ecosystem functioning, soil material and energy flow, soil organisms communities, their structure, interactions, and how they contribute to the soil ecosystem functioning.</i>	
Syllabus/Indicative Content: <ol style="list-style-type: none"> 1. Soil ecology as an interdisciplinary science, actual trends in research. 2. Properties and characteristics of the soil ecosystem 3. Soil organisms. 4. Soil microbial biomass. 5. Soil enzymes. 6. Soil food chain. 7. Cycle of elements in the soil ecosystem. Biomass degradation, hummification. 8. Methods of studying the decomposition of organic matter in the soil ecosystem. 9. Mycorysis. 10. Soil-plant interactions. 11. Soil-fauna interactions, soil fauna vs. pedogenic and degradation processes, soil 	

fauna vs. nutrients and energy cycle 12. Soil biocenoses of different types of ecosystems. 13. Threats and soil protection.					
Suggested readings:					
Language of Instruction: slovak, english					
Grading history					
A	B	C	D	E	FX
a	b	c	d	e	f
Lecturer/Instructor: <i>RNDr. Beáta Baranová, PhD., Ing. Lenka Bobuľská, PhD.</i>					
Last update: 9. mája 2022					
Approved by:					