University of Debrecen
Faculty of Science and Technology
Institute of Earth Sciences

GEOGRAPHY BSC PROGRAM

2019

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DEAN`S WELCOME

Welcome to the Faculty of Science and Technology!

This is an exciting time for you, and I encourage you to take advantage of all that the Faculty of Science and Technology UD offers you during your bachelor's or master's studies. I hope that your time here will be both academically productive and personally rewarding

Being a regional centre for research, development and innovation, our Faculty has always regarded training highly qualified professionals as a priority. Since the establishment of the Faculty in 1949, we have traditionally been teaching and working in all aspects of Science and have been preparing students for the challenges of teaching. Our internationally renowned research teams guarantee that all students gain a high quality of expertise and knowledge. Students can also take part in research and development work, guided by professors with vast international experience.

While proud of our traditions, we seek continuous improvement, keeping in tune with the challenges of the modern age. To meet our region's demand for professionals, we offer engineering courses with a strong scientific basis, thus expanding our training spectrum in the field of technology. Recently, we successfully re-introduced dual training programmes in our constantly evolving engineering courses.

We are committed to providing our students with valuable knowledge and professional work experience, so that they can enter the job market with competitive degrees. To ensure this, we maintain a close relationship with the most important companies in our extended region. The basis for our network of industrial relationships are in our off-site departments at various different companies, through which market participants - future employers - are also included in the development and training of our students.

Prof. dr. Ferenc Kun
Dean

UNIVERSITY OF DEBRECEN

Date of foundation: 1912 Hungarian Royal University of Sciences, 2000 University of Debrecen

Legal predecessors: Debrecen University of Agricultural Sciences; Debrecen Medical University; Wargha István College of Education, Hajdúböszörmény; Kossuth Lajos University of Arts and Sciences

Legal status of the University of Debrecen: state university

Founder of the University of Debrecen: Hungarian State Parliament

Supervisory body of the University of Debrecen: Ministry of Education

Number of Faculties at the University of Debrecen: 14

Faculty of Agricultural and Food Sciences and Environmental Management

Faculty of Child and Special Needs Education

Faculty of Dentistry

Faculty of Economics and Business

Faculty of Engineering

Faculty of Health

Faculty of Humanities

Faculty of Informatics

Faculty of Law

Faculty of Medicine

Faculty of Music

Faculty of Pharmacy

Faculty of Public Health

Faculty of Science and Technology

Number of students at the University of Debrecen: 26938

Full time teachers of the University of Debrecen: 1542

207 full university professors and 1159 lecturers with a PhD.

FACULTY OF SCIENCE AND TECHNOLOGY

The Faculty of Science and Technology is currently one of the largest faculties of the University of Debrecen with about 3000 students and more than 200 staff members. The Faculty has got 6 institutes: Institute of Biology and Ecology, Institute of Biotechnology, Institute of Chemistry, Institute of Earth Sciences, Institute of Physics and Institute of Mathematics. The Faculty has a very wide scope of education dominated by science and technology (10 Bachelor programs and 12 Master programs), additionally it has a significant variety of teachers' training programs. Our teaching activities are based on a strong academic and industrial background, where highly qualified teachers with a scientific degree involve student in research and development projects as part of their curriculum. We are proud of our scientific excellence and of the application-oriented teaching programs with a strong industrial support. The number of international students of our faculty is continuously growing (currently 570 students). The attractiveness of our education is indicated by the popularity of the Faculty in terms of incoming Erasmus students, as well.

THE ORGANIZATIONAL STRUCTURE OF THE FACULTY

Dean: Prof. Dr. Ferenc Kun, University Professor
E-mail: ttkdekan@science.unideb.hu

Vice Dean for Educational Affairs: Prof. Dr. Gábor Kozma, University Professor
E-mail: kozma.gabor@science.unideb.hu

Vice Dean for Scientific Affairs: Prof. Dr. Sándor Kéki, University Professor
E-mail: keki.sandor@science.unideb.hu

Consultant on Economic Affairs: Dr. Sándor Alex Nagy, Associate Professor
E-mail: nagy.sandor.alex@science.unideb.hu

Consultant on External Relationships: Prof. Dr. Attila Bérczes, University Professor
E-mail: berczesa@science.unideb.hu

Quality Assurance Coordinator: Dr. Zsolt Radics, Assistant Professor
E-mail: radics.zsolt@science.unideb.hu

Dean's Office
Head of Dean's Office: Mrs. Katalin Csománé Tóth
E-mail: csomane.toth.katalin@science.unideb.hu

Registrar's Office
Registrar: Ms. Ildikó Kerekes
E-mail: kerekes.ildiko@science.unideb.hu

English Program Officer: Mr. Imre Varga
Address: 4032 Egyetem tér 1., Chemistry Building, A/101
E-mail: vargaimre@unideb.hu

DEPARTMENTS OF INSTITUTE OF EARTH SCIENCES

Department of Meteorology (home page: https://meteo.unideb.hu)
4032 Debrecen, Egyetem tér 1, Geomathematics Building

Name	Position	E-mail	room
Mr. Dr. Sándor Szegedi, PhD, habil	Associate Professor, Head of Department	szegedi.sandor@science.unideb.hu	126
Mr. Dr. István Lázár, PhD	Assistant Professor	lazar.istvan@science.unideb.hu	128
Mr. Dr. Tamás Tóth, PhD	Assistant Professor	toth.tamas@science.unideb.hu	127
Mr. Dr. Ferenc Wantuch, PhD	Assistant Professor	wantuch.ferenc@nkh.gov.hu	127

Department of Mineralogy and Geology (home page: https://zafir.min.unideb.hu)
4032 Debrecen, Egyetem tér 1, Chemistry Building

Name	Position	E-mail	room
Mr. Dr Péter Rózsa, PhD, habil	Associate Professor, Head of Department	rozsa.peter@science.unideb.hu	A/7
Mr. Prof. Dr. Gábor Dobosi, PhD, habil, DSc	University Professor	gabor.dobosi@gmail.com	A/4
Mr. Dr. Tamás Buday, PhD	Assistant Professor	buday.tamas@science.unideb.hu	A/4
Mr. Dr. Árpád Csámer, PhD	Assistant Professor	csamera@unideb.hu	A/6
Mr. Dr. Richárd William McIntosh, PhD	Assistant Professor	mcintosh.richard@science.unideb.hu	A/5
Mr. Dr. Dávid Nagy, PhD	Assistant Professor	nagy.david@science.unideb.hu	E/25
Mr. István Simon	Technical Assistant	simon.istvan@science.unideb.hu	A/9
Ms. Judit Vanka	Technical Assistant	vanka.judit@science.unideb.hu	A/8

Department of Landscape Protection and Environmental Geography (home page: https://tajvedelem.unideb.hu)
4032 Debrecen, Egyetem tér 1, Geomathematics Building

Name	Position	E-mail	room
Mr. Dr. György Szabó, PhD, habil	Associate Professor, Head of Department	szabo.gyorgy@science.unideb.hu	218
Mr. Prof. Dr. Péter Csorba, PhD, habil, DSc	University Professor	csorba.peter@science.unideb.hu	217
Mr. Prof. Dr. Attila Kerényi, PhD, habil, DSc	Professor Emeritus	kerenyi.attila@science.unideb.hu	216
Mr. Dr. Tibor Novák, PhD, habil	Associate Professor	novak.tibor@science.unideb.hu	221
Mr. Dr. István Fazekas, PhD	Assistant Professor	fazekas.istvan@science.unideb.hu	219
Mr. Tamás Mester	Assistant Lecturer	mester.tamas@science.unideb.hu	220
Mrs. Réka Molnárné Bodnár	Assistant Lecturer	bodnar.reka@science.unideb.hu	220
Mrs. Dr. Borbála Halasi-Kovácsné Benkhard, PhD	Technical Assistant	benkhard.borbala@science.unideb.hu	220
Ms. Katalin Sári	Secretary	sari.katalin@science.unideb.hu	216

Department of Social Geography and Regional Development Planning (home page: https://human.geo.science.unideb.hu)
4032 Debrecen, Egyetem tér 1, Geomathematics Building

Name	Position	E-mail	room
Mr. Prof. Dr. Gábor Kozma, PhD, habil, DSc	University Professor, Head of Department	kozma.gabor@science.unideb.hu	123
Mr. Dr. János Pénzes, PhD, habil	Associate Professor	penzes.janos@science.unideb.hu	118
Mr. Dr. Károly Teperics, PhD, habil	Associate Professor	teperics.karoly@science.unideb.hu	119
Mr. Dr. Ernő Molnár, PhD	Assistant Professor	molnar.erno@science.unideb.hu	118
Mr. Dr. István Pásztor, PhD	Assistant Professor	pasztor.istvan@kossuth-gimnazium.unideb.hu	116
Mr. Dr. Zsolt Radics, PhD	Assistant Professor	radics.zsolt@science.unideb.hu	119
Mrs. Dr. Klára Szilágyiné Czimre	Assistant Professor	czimre.klara@science.unideb.hu	120
Mr. Gábor Németh	Informatician	nemeth.gabor@science.unideb.hu	120

Department of Physical Geography and Geoinformatics (home page: https://geogis.unideb.hu)
4032 Debrecen, Egyetem tér 1, Geomathematics Building

Name	Position	E-mail	room
Mr. Prof. Dr. Szilárd Szabó, PhD, habil, DSc	University Professor, Head of Department Head of Institute	szabo.szilard@science.unideb.hu	223
Mr. Prof. Dr. József Lóki, PhD, habil, DSc	Professor Emeritus	loki.jozsef@science.unideb.hu	226
Mr. Prof. Dr. József Szabó, PhD, habil, DSc	Professor Emeritus		
Mr. Dr. Csaba Albert Tóth, PhD, habil	Associate Professor	toth.csaba@science.unideb.hu	228
Mrs. Dr. Boglárka Bertalanné Balogh, PhD	Assistant Professor	balazs.boglarka@science.unideb.hu	222
Mr. Dr. Gábor Négyesi, PhD	Assistant Professor	negyesi.gabor@science.unideb.hu	227
Mr. Dr. Gergely Szabó, PhD	Assistant Professor	szabo.gergely@science.unideb.hu	222
Mr. Dr. Zoltán Krisztián Túri, PhD	Assistant Professor	turi.zoltan@science.unideb.hu	228
Mr. László Bertalan	Assistant Lecturer	bertalan@science.unideb.hu	227
Mrs. Judit Kisné Boda	Assistant Lecturer	boda.judit@science.unideb.hu	202
Mrs. Krisztina Sósné Mező	Technical Assistant	mezo.krisztina@science.unideb.hu	A/P-6
Ms. Csilla Tóth	Technical Assistant	toth.csilla@science.unideb.hu	A/P-6*
Mrs. Annamária Kupásné Szalóki	Research Lecturer	szaloki.annamaria@science.unideb.hu	222
Ms. Zsuzsanna Szabó	Research Lecturer	szabo.zsuzsanna@science.unideb.hu	227
Ms. Oktávia Szabó	Secretary	szabo.oktavia@science.unideb.hu	224

***** - Chemistry Building

ACADEMIC CALENDAR

General structure of the academic semester (2 semesters/year):

Study period	1st week	Registration*	1 week
	2nd – 15th week	Teaching period	14 weeks
Exam period	directly after the study period	Exams	7 weeks

*Usually, registration is scheduled for the first week of September in the fall semester, and for the first week of February in the spring semester.

For further information please check the following link:
http://www.edu.unideb.hu/tartalom/downloads/University_Calendars_2019_20/1920_Science.pdf

THE GEOGRAPHY BACHELOR PROGRAM

Information about the Program

Name of BSc Program:	Geography BSc Program
Specialization available:	Applied Geography
Field, branch:	Science
Qualification:	Geographer
Mode of attendance:	Full-time
Faculty, Institute:	Faculty of Science and Technology Institute of Earth Sciences
Program coordinator:	Prof. Dr. Gábor Kozma, University Professor
Duration:	6 semesters
ECTS Credits:	180

Objectives of the BSc program:

The aim of the Geography BSc program is to train professional geographers who have deep insight into spatial processes. Relying on strong geoinformatics base graduates of the program they are able to understand the natural, environmental, technical and social phenomena and to develop applied science-based solutions

Professional competences to be acquired

A Geographer:

a) Knowledge:

- He/she knows the basic relations between the general geographic science and the physical, social and regional fields.
- He/she knows the basic methods of physical and social geography.
- He/she knows the basic features of geographic approach and thinking.
- He/she has relevant theoretical and practical knowledge of physical and social geography.
- He/she knows the specific features of physical processes, natural resources, rules of biotic and abiotic systems related the discipline of geography.
- He/she knows the basic quantification methods of geography.
- He/she knows the assumptions of phrasing local geographic statements and the limits of relating consequences.
- He/she knows the principles of the physical and related anthropogenic processes.
- He/she knows the methods of field and laboratory analysis of physical geography.
- He/she knows the data collecting, recording and processing methods of physical and social geography.

b) Abilities:

- He/she is able to apply the methods of geography to the main fields of physical and social geography.
- He/she is able to see the basic relationship of general geographic disciplines in the natural, social and partly regional geographic areas.
- He/she is able to solve the basic practical problems connected to natural processes, natural resources, and living and non-living systems.
- He/she is able to apply the acquired knowledge of geography to solve basic practical problems, including supporting them with calculations.
- He/she is able to frame logical geographic statements by specifying the terms and conclusions that can be deduced from them.
- He/she is able to recognize and apply the principles of natural and related anthropogenic processes.
- He/she is able to perform field and laboratory examinations with the methods of physical geography.
- He/she is able to describe and understand the natural and social processes in the geographical space, to collect and process data and to use methods and literature.
- He/she is capable of the geoinformatical processing of geographical data, mapping of results, and confidently use on geoinformatics software.
- He/she is able display and map the geographical results.
- He/she is able to recognize the routine professional problems, to process the available written and electronic literature needed for the theoretical and practical solutions, and to apply the methods available in those resources.
- He/she is able to identify and phrase geographical problems.
- He/she has the ability to perform geographical analysis.

c) Attitude:

- He/she endeavors to get acquainted with the geographical theories, paradigms and principles, as fully as possible.
- He/she acts in an environmentally responsible manner in the geographical fieldwork and laboratory activities and is firmly committed to sustainable development.
- He/she is cooperative and interpersonal, prefers communicative action in problem-solving.
- He/she aims to get the most thorough acquaintance with the observable geographic phenomena and is able to describe and explain the rules relying on this geographical knowledge.
- He/she is open to proficient discussions, professional co-operation, and aims to resolve tasks with the inclusion of opinion of colleagues, preferably in a co-operative manner.
- He/she has the ability to increase knowledge and continue studies on higher level.
- He/she has adequate perseverance and tolerance for monotony in the practical activities related to geographical analysis.

d) Autonomy and responsibility:

- He/she arrives at decisions independently relying on specialized literature both in fundamental theoretical and applied geographical topics, along with relevant technical issues in environmental sciences.
- He/she is responsible for the values of geography and co-operates with other experts of the science.
- He/she appreciates and responsibly evaluates the efficiency and safety of their own as well as other's work.
- He/she is responsible for his/her own work.
- He/she operates the equipment in the laboratory and in the field autonomously.
- He/she knows the limits and applicability of the scientific statements.
- He/she makes his/her own decisions derived from the geographical analysis.

Completion of the BSc Program

The Credit System

Majors in the Hungarian Education System have generally been instituted and ruled by the Act of Parliament under the Higher Education Act. The higher education system meets the qualifications of the Bologna Process that defines the qualifications in terms of learning outcomes: statements of what students know and can do on completing their degrees. In describing the cycles, the framework uses the European Credit Transfer and Accumulation System (ECTS).
ECTS was developed as an instrument of improving academic recognition throughout the European Universities by means of effective and general mechanisms. ECTS serves as a model of academic recognition, as it provides greater transparency of study programs and student achievement. ECTS in no way regulates the content, structure and/or equivalence of study programs.
Regarding each major the Higher Education Act prescribes which professional fields define a certain training program. It contains the proportion of the subject groups: natural sciences, economics and humanities, subject-related subjects and differentiated field-specific subjects.

For the Geography Bachelor program the following professional fields define the training:

- natural sciences, economics and humanities, bases of earth sciences, bases of geography: 36-58 credits;
- physical geography, human geography, regional geography: 50-74 credits.
- specialization: 35-60 credits

Credit points assigned to optional subjects: 9
Credit points assigned to thesis: 10
Credits total: 180
During the program students have to complete a total amount of 180 credit points. It means approximately 30 credits per semester. The curriculum contains the list of subjects (with credit points) and the recommended order of completing subjects which takes into account the prerequisite(s) of each subject. You can find the recommended list of subjects/semesters in chapter “Model Curriculum of Geography BSc Program”.

	semesters								ECTS credit points	evaluation
	1.	2.	3.	4.	5.	6.				
	contact hours, types of teaching (l – lecture, p – practice), credit points									
Bases of arts and sciences subject group										
TTTBE0040_EN Introduction to environmental science *Nagy Sándor Alex*	14 l /1cr. 14 p /1cr.								2	exam
TTTGBL7002_EN Fundamentals of informatics *Kissné Boda Judit*	28 p /2cr.								2	mid-semester grade
TTGBG6504_EN Geographical research methods *Pásztor István Zoltán*				28 p /2cr.					*2*	mid-semester grade
Bases of earths sciences I. subject group										
TTGBE5001_EN Introduction to geology *Rózsa Péter*	28 l /3cr.								3	exam
TTGBG5002_EN Introduction to geology - practice *Rózsa Péter*	28 p /2cr.								2	mid-semester grade
TTGBE5003_EN Physical and historical geology *McIntosh Richard*		28 p /3cr.							3	mid-semester grade
TTGBE7003_EN Cosmic relations of the Earth *Szabó Gergely*	28 l /3cr.								*3*	mid-semester grade
Bases of earths sciences II. subject group										
TTGBE5501_EN Meteorology and climatology I. *Szegedi Sándor*	28 l /3cr.								3	exam
TTGBG5502_EN Meteorology and climatology II. *Szegedi Sándor*		14 l /1cr.							1	exam

TTGBG5503_EN Meteorology and climatology II. practice *Szegedi Sándor*		28 p /2cr.							*2*	exam
TTGBE7001_EN Cartography *Lóki József*	28 l /3cr. 28 p /2cr.								5	exam
Bases of geography subject group										
TTGBL7004_EN Geomathematics *Kissné Boda Judit*			28 p /2cr.						2	mid-semester grade
TTGBL7005_EN Geoinformatics I. *Turi Zoltán*		14 l /1cr. 28 p /2cr.							3	mid-semester grade
TTGBG7006_EN Orientation and navigation *Tóth Csaba*	14 l /1cr. 28 p /2cr.								3	mid-semester grade
TTGBE7007_EN History of geographical way of thinking *Négyesi Gábor*						24 l /3cr.			3	exam
Physical geography I. subject group										
TTGBE5004_EN Structural geology I. *McIntoch Richard*			28 p /2cr.						2	mid-semester grade
TTGBE7008_EN Fundamentals of physical geography I. (Hydrogeography) *Szabó Szilárd*		28 l /3cr.							3	exam
TTGBE7009_EN Fundamentals of physical geography II. (Geomorphology) *Lóki József*			28 l /3cr.						3	exam
TTGBG7010_EN Fundamentals of physical geography III. (Anthropogenic geomorphology) *Lóki József*				14 l /1cr. 28 p /2cr.					3	mid-semester grade
Physical geography II. subject group										
TTGBE6001_EN Soil geography *Novák Tibor*		28 l /3cr.							3	exam
TTGBG6002_EN Soil geography - practice *Szabó György*		28 p /2cr.							2	mid-semester grade

TTGBE7011_EN Biogeography *Tóth Csaba*			28 l /3cr.						3	exam
TTGBE6003_EN Bases of the environmental protection *Kerényi Attila*		28 l /3cr.							3	exam
Human geography I. subject group										
TTGBE6504_EN Population and settlement geography I. *Kozma Gábor*	28 l /3cr.								3	exam
TTGBG6504_EN Population and settlement geography II. *Pénzes János*		14 l /1cr. 28 p /2cr.							3	mid-semester grade
TTGBE6506_EN Basic elements of economic geography I.-II. *Radics Zsolt*			42 l /4cr. 28 p /2cr.						6	exam
Human geography II. subject group										
TTGBE6507_EN Bases of political geography *Pásztor István*					28 l /3cr.				3	exam
TTGBE6508_EN Urban and regional policy *Kozma Gábor*		28 l /3cr.							3	exam
TTGBE6004_EN Bases of tourism *Radics Zsolt*		28 l /3cr.							3	exam
TTTBE0030_EN EU studies *Teperics Károly*	14 l /1cr.								1	exam
TTGBG6501_EN EU policies *Czimre Klára*				28 p /2cr.					2	mid-semester grade
Regional physical geography subject group										
TTGBE6021_EN Global environmental problems *Szabó György*				28 l /3cr.					3	exam
TTGBG6022_EN Global environmental problems *Szabó György*				28 p /2cr.					2	mid-semester grade

TTGBE6007_EN Physical geography of Europe *Csorba Péter*				28 l /3cr.					3	exam
TTGBE6008_EN Physical geography of the world *Csorba Péter*					28 l /3cr.				3	exam
Regional human geography subject group										
TTGBE6530_EN Global social and political problems *Molnár Ernő*				28 l /3cr. 28 p /2cr.					5	exam
TTGBE6510_EN Social geography of Europe *Kozma Gábor*				28 l /3cr.					3	exam
TTGBE6511_EN Social geography of the world *Pénzes János*					28 l /3cr.				3	exam
Geoinformatics subject group										
TTGBE7013_EN Geographical databases *Szabó Szilárd*			14 l /1cr.						1	exam
TTGBL7014_EN Geographical databases practice *Szabó Szilárd*			14 p /1cr.						1	mid-semester grade
TTGBL7015_EN Raster based GIS *Szabó Gergely*				28 p /2cr.					2	mid-semester grade
TTGBL7024_EN Remote sensing in geography *Szabó Gergely*						24 p /2cr.			2	mid-semester grade
TTGBG7020_EN Digital terrain modelling *Négyesi Gábor*					28 p /2cr.				2	mid-semester grade
TTGBE6011_EN Geoecology *Novák Tibor*			14 l /1cr. 28 p /2cr			.			3	mid-semester grade
Environmental protection subject group										
1. Landscape ecology *Novák Tibor*						24 l /3cr.			3	exam

TTGBG6014_EN Bases of environmental management *Fazekas István*				14 l /1cr. 28 p /2cr.					3	mid-semester grade
TTGBE6009_EN Regional environmental protection *Szabó György*			28 l /3cr.						3	exam
TTGBG6010_EN Regional environmental protection *Szabó György*			14 p /l cr.						1	mid-semester grade
Regional policy subject group										
TTGBG6514_EN Regional policy and tourism *Molnár Ernő*					14 l /1cr. 28 p /2cr.				3	mid-semester grade
TTGBE6516_EN The economic and social impact of tourism *Pásztor István*					28 l /3cr.				3	exam
TTGBE6525_EN Principles of infrastructure *Pénzes János*						24 l /3cr.			3	exam
TTGBG6512_EN Method of application making *Radics Zsolt*						12 l /0cr 24 p /3cr.			3	mid-semester grade
Applied geography subject group										
TTGBE6523_EN Cross-border co-operation: theory and practice *Czimre Klára*				28 l / 3cr.					3	exam
TTGBG7035_EN Applied geoinformatics in landscape protection and regional policy *Szabó Szilárd*				14 l/1 cr. 28 p/2cr.					3	mid-semester grade
Applied project work subject group										
TTGBG6540_EN Geographical project work I. *Czimre Klára*					3cr.				3	mid-semester grade
TTGBG7040_EN Geographical projectwork II. *Balázs Boglárka*						4cr.			4	mid-semester grade

TTGBG7501_EN Study trip I.		**5 days/2 cr**						*2*	mid-semester grade
TTGBG7502_EN Study trip II					**4 days/2 cr**			*2*	mid-semester grade
TTGBG7503_EN Thesis I.					**5 cr.**			*5*	mid-semester grade
TTGBG7504_EN Thesis II.						**5 cr.**		**5**	mid-semester grade
optional courses									
optional courses								*9*	
internship									
internship								*6 weeks/4 cr*	mid-semester grade

Work and Fire Safety Course

According to the Rules and Regulations of University of Debrecen a student has to complete the online course for work and fire safety. Registration for the course and completion are necessary for graduation. For MSc students the course is only necessary only if BSc diploma has been awarded outside of the University of Debrecen.
Registration in the Neptun system by the subject: MUNKAVEDELEM
Students have to read an online material until the end to get the signature on Neptun for the completion of the course. The link of the online course is available on webpage of the Faculty.

Internship

Students majoring in the Geography BSc have to carry out a 6 weeks internship involved in the model curriculum. The internship course must be signed up for previously via the NEPTUN study registration system in the spring semester (4^{th} semester). Its execution is the criteria requirement of getting the pre-degree certificate (absolutorium).

Objective of the internship, competences
Students get acquainted with professional work in conformity with their major at the company or institution and join in the daily working process. They have to resolve tasks independently assigned by their supervisor and gain experiences may be utilized later in the labour market. During the internship common and professional competences may be acquired. Common competences: precise working on schedule either individually or in team, talk shop applying correct technical terms. Professional competences: applying the professional skill gained during the training and acquiring new knowledge.

Places suitable for internship
All the organizations, institutions and companies in Hungary or abroad, provide students with the opportunity to acquire proficiency in accordance with their specialization in the field of operation, repairing technology, installation, management and development of different machines and vehicles, may be a suitable place.

Physical Education

According to the Rules and Regulations of University of Debrecen a student has to complete Physical Education courses at least in two semesters during his/her Bachelor's training. Our University offers a wide range of facilities to complete them. Further information is available from the Sport Centre of the University, its website: http://sportsci.unideb.hu.

Pre-degree Certification

A pre-degree certificate is issued by the Faculty after completion of the bachelor's (BSc) program. The pre-degree certificate can be issued if the student has successfully completed the study and exam requirements as set out in the curriculum, the requirements relating to Physical Education as set out in Section 10 in Rules and Regulations, internship (mandatory) – with the exception of preparing thesis – and gained the necessary credit points (180). The pre-degree certificate verifies (without any mention of assessment or grades) that the student has fulfilled all the necessary study and exam requirements defined in the curriculum and the requirements for Physical Education. Students who obtained the pre-degree certificate can submit the thesis and take the final exam.

Thesis

A Thesis is the creative elaboration of a professional task in written form. By solving the task, the student relies on his/her studies using national and international literature under the guidance of an internal supervisor (referee). By a completed dissertation and its successful defence geography student certifies that he/she is capable to apply the acquired knowledge in practice and to summarize the completed work and its results in a professional way, to solve the tasks related to his/her topic creatively and to complete individual professional work. By preparing and defending a thesis a student who completes the Geography Bachelor program proves that he/she is capable of the practical applications of the acquired skills, summarizing the work done and its results in a professional way, creatively solving the tasks related to the topic and doing individual professional work.

The student can choose any topic for a thesis suggested by the institute or in occasional cases individual topics acknowledged by the head of the department. The requirements of the thesis content, the general aspects of evaluation and the number of credits assigned to the thesis are determined by the requirements of the program.

The formal requirements of the thesis are detailed in the "manual for writing thesis" which is available on the official home page of institute.

A thesis can be submitted only if it is supported both by the internal supervisor. If a thesis is evaluated with a fail mark by the referee and the department the student is not allowed to take the final exam and is supposed to prepare a new or modified thesis. The student has to be informed about it. Conditions on resubmitting the thesis are defined by the program coordinator of the particular specialization.

Final Exam

Students had obtained the pre-degree certificate will finish their studies by taking the final exam of Geography Bachelor Program. A final exam is the evaluation and control of the knowledge and skills acquired. The candidate has to certify that he/she is able to apply the obtained

knowledge in practice. A final exam can be taken in the forthcoming exam period after obtaining the pre-degree certificate. A final exam has to be taken in front of the Final Exam Board. If a candidate does not pass his/her final exam by the termination of his/her student status, he/she can take his/her final exam after the termination of the student status on any of the final exam days of the relevant academic year according to existing requirements on the rules of the final exam.
The Final Exam consists of 2 parts:
- presentation of the thesis and its defence
- oral exam
  - a core material question
  - a question regarding applied geography specialization

Final Exam Board
Board chair and its members are selected from the acknowledged internal and external experts of the professional field. Traditionally, it is the chair and in case of his/her absence or indisposition the vice-chair who will be called upon, as well. The board consists of – besides the chair – at least two members (one of them is an external expert), and questioners as required. The mandate of a Final Exam Board lasts for one year.

Repeating a failed Final Exam
If any part of the final exam is failed it can be repeated according to the rules and regulations. A final exam can be retaken in the forthcoming final exam period. If the Board qualified the Thesis unsatisfactory a student cannot take the final exam and he has to make a new thesis. A repeated final exam can be take twice on each subject.

Diploma

The diploma is an official document decorated with the coat of arms of Hungary which verifies the successful completion of studies in the Geography Bachelor Program. It contains the following data: name of HEI (higher education institution); institutional identification number; serial number of diploma; name of diploma holder; date and place of his/her birth; level of qualification; training program; specialization; mode of attendance; place, day, month and year issued. Furthermore, it has to contain the rector's (or vice-rector's) original signature and the seal of HEI. The University keeps a record of the diplomas issued.

In Geography Bachelor Program the diploma grade is calculated as the average grade of the results of the followings:

- Weighted average of the overall studies at the program (A)
- Average of grades of the thesis and its defense given by the Final Exam Board (B)
- Average of the grades received at the State Exam for the two subjects (C)

Diploma grade = (A + B + C)/3

Classification of the award on the bases of the calculated average:

Excellent	4.81 – 5.00
Very good	4.51 – 4.80
Good	3.51 – 4.50
Satisfactory	2.51 – 3.50
Pass	2.00 – 2.50

Course Descriptions of Geography BSc Program

Title of course: Fundamentals of informatics **Code**: TTGBL7002_EN	**ECTS Credit points: 2**

Type of teaching, contact hours

- lecture: -
- practice: -
- laboratory: 2 hours/week

Evaluation: mid-semester grade

Workload (estimated), divided into contact hours:

- lecture: -
- practice: -
- laboratory: 28 hours
- home assignment: 16 hours
- preparation for the exam: 16 hours

Total: 60 hours

Year, semester: 1st year, 1st semester

Its prerequisite(s): -

Further courses built on it: -

Topics of course

Basic terminology of informatics. Hardware, operation systems, software. File management in Windows Browser and Total Commander. Data types. File zipping and extraction. Basic terminology of the internet. Introduction to text editing. Words and character formatting, finding and replacing. Formatting paragraphs. Page settings, margins, styles and formatting. Tabulators, page numbering, running head. Inserting and formatting tables, figures, images. Microsoft Excel tools. Printing the results. Complex functions: copy, delete, insert, find, replace, grouped fill. Clustered cell management, hiding fields. Links, naming, functions. Defining dates, statistical functions, database and text editing functions. Diagrams. Basics of PowerPoint.

Literature

- MS Office Support – https://support.office.com/
- Galeso, M. (2017): Microsoft Word 2017: An Easy Guide for Begginers.
- Galeso, M. (2017): Microsoft Excel 2017: An Easy Guide to Learning the Basics.
- Frandsen, T.L. (2010): Microsoft Office Excel 2007. URL: http://web.mef.hr/web/images/pdf/ms_o_exc.pdf
- Galeso, M. (2017): Microsoft Power Point 2017: An Easy Guide to Learning the Basics.
- Library And Learning Services: Working With Microsoft Powerpoint. URL: http://www2.eit.ac.nz/library/Documents/Working_With_PowerPoint_Combined.pdf

Schedule:

1st week Introduction to the course. IT terminology. Hardware, operation systems, software. Data types. File managing. Windows Browser, Total Commander.

2nd week Nomenclature of internet. Danger of Internet. Viruses. Webpages, addressing, references, backlinks, downloads. Favourite websites. Searching, e-mail, browsers.

3rd week Introduction to word editing. Creating documents. Test insert, correction, formatting paragraphs: alignment, indentations, spacers, spacing, text placement. Page size, margin settings. Styles and Formatting I.

4th week Font formatting: font type, style, size, etc. Special options. Formatting paragraphs: alignment, indentations, spacers, spacing, text placement. Page size, margin settings. Styles and Formatting II.

5th week Classification, numbering. Applying Tabs. Page numbering and options. Use live heads, page numbering in headers.

6th week Insert tables, diagrams, images, size, and characteristics. Spreading and splitting.

7th week I. practical grading – MS Word.

8th week MS EXCEL menu system and toolbar. Worksheet display, export-import options. Move within the table and between tables. Cells and Data Types (Numbers, Date, Text). Easy data entry, repair data formats and setup options. Print results, page setup, header, footnote, margins. Complex operations: copying, deleting, inserting, searching, exchanging, group filling. Group handling of cells. Hide.

9th week References, names, formulas, and functions. Managing Functions and Function Groups. Date management, statistical functions, and database and text management functions.

10th week Create or modify charts. Subtitles, texts, explanations, links, graphical elements display format (background, dimension, gridlines, axes) Types of charts, parameterization and graphical settings. Representation function. Concept of template.

11th week II. practical grading – MS Excel.

12th week Presentations. PowerPoint features (screen layout, menu, window management, views, toolbars, etc.). Use built-in layouts. Creating a slide show, inserting objects, using template templates. Drawing drawings. Animations.

13th week Action Buttons. Projection options. Impact enhancement tools (custom animations, transitions, timings, music sequences, etc.). Hyperlinks. Printing.

14th week III. practical grading – MS PowerPoint.

Requirements:

- for a signature

Participation at **practice classes** is compulsory. A student must attend the practice classes and may not miss more than three times during the semester. In case a student does so, the subject will not be signed and the student must repeat the course. A student can't make up any practice with another group. Attendance at practice classes will be recorded by the practice leader. Being late is equivalent with an absence. In case of further absences, a medical certificate needs to be presented. Missed practice classes should be made up for at a later date, to be discussed with the tutor.

Students are required to bring the drawing tasks and drawing instruments of the course to each practice class. Active participation is evaluated by the teacher in every class. If a student's behavior or conduct doesn't meet the requirements of active participation, the teacher may evaluate his/her participation as an absence because of the lack of active participation in class.

During the semester there are three practical grading. Students have to attend.

- *for a grade*
The final grade is calculated as an average of the three practical grading.

The minimum requirement for the examinations respectively is 50%. Based on the score of the grading separately the grade is given according to the following table:

Score	Grade
0-49	fail (1)
50-59	pass (2)
60-72	satisfactory (3)
73-84	good (4)
85-100	excellent (5)

If the score of any task is below 50, students can take a retake in conformity with the EDUCATION AND EXAMINATION RULES AND REGULATIONS.

Person responsible for course: Judit Boda Kissné, assistant lecturer

Lecturer: Judit Boda Kissné, assistant lecturer;
Dr. Gábor Négyesi, assisstant professor, PhD

Title of course: Geographical research methods **Code**: TTGBG6504_EN	**ECTS Credit points:** 2

Type of teaching, contact hours

- lecture: -
- practice: 2 hours/week
- laboratory: -

Evaluation: exam, essay

Workload (estimated), divided into contact hours:

- lecture: -
- practice: 28 hours
- laboratory: -
- home assignment: 20 hours
- preparation for the exam: 12 hours

Total: 60 hours

Year, semester: 2nd year, 2nd semester

Its prerequisite(s): -

Further courses built on it: -

Topics of course

Better understanding of the databases used in social geography research. Interpretation of geographical illustrations, maps, charts. Hypothesis statement and conceptualization. The steps of the research and the requirements of the scientific works. Sampling procedures and its problems. Types of the questionnaires, interviews and their editorial skills. Qualitative and quantitative analysis. Ethical and legal questions relating to the research. Requirements of the bibliographical references. Structure of scientific papers. Closure of the research and its afterlife.

Literature

Compulsory:

- Earl Babbie (2015): The Practice of Social Research. Chapman University, Cengage Learning. ISBN: 978-1-305-10494-5.

Recommended:

- Earl Babbie (2016): The basics of social recearch. Chapman University, Cengage Learning. ISBN: 978-1-305-50307-6.

Schedule:

1st week

Introduction, access to and use of databases used for geographic research. Use of internal resources.

2nd week

Interpretation of the geographical contents of diagrams, diagrams, thematic maps, recognition of socio-economic processes. Graphic and diagram editing.

3rd week

Preparing for research - research question, research plan, conceptualization, operationization, multitude and pattern. Rules for Hypothesis Delivery. Practicing hypothesis wording for developed research questions.

4th week

The general course and scope of the research, the requirements of realization and scientific writing.

5th week

The problem of sampling, sampling procedures, representativity and research organization inquiries. Sample selection and definition of the sources.

6th week

Steps of questionnaire studies, questionnaire editing, question types, data collection and data processing. Determine the range of information that can be collected through the questionnaire.

7th week

Types of interviews, interviewing process, question types used in the interview. Comparative ranking method.

8th week

Qualitative data analysis, qualitative characterization, exploration of relationships. The evaluation system of non-numerical results.

9th week

Analysis of quantitative data: descriptive statistics. Use of statistical methods in population analysis. Transform texts into quantitative data.

10th week

Ethical and legal issues related to research. Legal protection of intellectual property (copyright).

11th week

The rules of bibliographical references, the requirements for compiling the bibliography. Interpersonal reference and footnote.

12th week

The closing of the research and its outcome, the research report and the summary. Evaluation aspects of the completed dissertation.

13th week

Methods of knowledge transmission. Basic Requirements for Successful Presentation. Typical technical errors during the presentation.

14th week

Completion of the semester, description of the homework assessment. Verification, writing a written essay on practical knowledge.

Requirements:

- for a signature

Participation at **practice classes** is compulsory. A student must attend the practice classes and may not miss more than three times during the semester. In case a student does so, the subject will not be signed and the student must repeat the course. Attendance at practice classes will be recorded by the practice leader. In case of further absences, a medical certificate needs to be presented.

During the semester there is one test: the end-term test in the 15th week.

Writing an essay in a topic chosen by the student.

Based on the score of the test separately, the grade for the test and the essay is given according to the following table:

Score	Grade
0-59	fail (1)
60-69	pass (2)
70-79	satisfactory (3)
80-89	good (4)

90-100	excellent (5)
Person responsible for course: Dr. István Zoltán Pásztor, assistant professor, PhD	
Lecturer: Dr. István Zoltán Pásztor, assistant professor, PhD	

Title of course: Introduction to geology **Code**: TTGBE5001_EN, TTGBG5002_EN	**ECTS Credit points: 5**

Type of teaching, contact hours

- lecture: 2 hours/week
- practice: 2 hours/week
- laboratory: -

Evaluation: exam

Workload (estimated), divided into contact hours:

- lecture: 28 hours
- practice: 28 hours
- laboratory: -
- home assignment: 48 hours
- preparation for the exam: 46 hours

Total: 150 hours

Year, semester: 1st year, 1st semester

Its prerequisite(s): -

Further courses built on it: -

Topics of course

The aim of the course is to introduce the basics of crystallography, mineralogy and petrology to students including basics of crystal morphology, chemistry and physics; classification (both genetic and chemical) of minerals; characterization of minerals; moreover, introducing basics of petrology, including classification of igneous, sedimentary and metamorphic rocks, and characterization of the most important rocks.

Literature

Compulsory:

Püspöki Z. (ed.) (2005): Chapters from geology – University of Debrecen, Department of Mineralogy and Geology, 84 p.
de Graef M. – McHenry M.E. (2012): Structure of materials: An introduction to crystallography, Diffraction and Symmetry – Cambridge University Press, 768 p.
Nesse W. D. (1999): Introduction to Mineralogy – Oxford University Press, 466 p.

Recommended:

Boggs S. (2009): Petrology of sedimentary rocks – Cambridge University Press, 607 p.
Philpotts A. – Ague J. (2009): Principles of igneous and metamorphic petrology – Cambridge University Press, 684 p.

Schedule:

1st week

Definition of crystal, mineral and rock. Unit cell, crystal systems.

2nd week

Basic crystal morphology; symmetry elements, crystal forms.

3rd week

Basic crystal chemistry; ionic lattices, covalent and metal bonding lattices.

4th week

Principal physical properties of crystals.

5th week

Chemical and genetic classification of minerals. Most important mineral species.

6th week

Rock-forming minerals.

7th week

System and classification of igneous rocks. TAS diagram, QAPF diagram.

8th week

Most important igneous rocks.

9th week

Pyroclastic rocks.

10th week

Erosion, transportation and sedimentation. System of sedimentary rocks.

11th week

Clastic sedimentary rocks.

12th week

Carbonate rocks, evaporates, organic sediments.

13th week

Local (contact) and regional (dynamo-thermal) metamorphism. System of metamorphic rocks.

14th week

Most important metamorphic rock types.

Requirements:

- for a signature

Attendance at **lectures** is recommended, but not compulsory.

Participation at **practice classes** is compulsory. A student must attend the practice classes and may not miss more than three times during the semester. In case a student does so, the subject will not be signed and the student must repeat the course. A student can't make up any practice with another group. Attendance at practice classes will be recorded by the practice leader. Being late is equivalent with an absence. In case of further absences, a medical certificate needs to be presented. Missed practice classes should be made up for at a later date, to be discussed with the tutor. Students are required to bring the drawing tasks and drawing instruments of the course to each practice class. Active participation is evaluated by the teacher in every class. If a student's behavior or conduct doesn't meet the requirements of active participation, the teacher may evaluate his/her participation as an absence because of the lack of active participation in class.

Students have to **submit all the two designing tasks** as scheduled minimum on a sufficient level.

During the semester there are two tests: the mid-term test in the 8th week and the end-term test in the 15th week. Students have to sit for the tests

- for a grade

The course ends in an **examination**. Based on the average of the grades of the designing tasks and the examination, the exam grade is calculated as an average of them:

- the average grade of the two designing tasks
- the result of the examination

The minimum requirement for the mid-term and end-term tests and the examination respectively is 60%. Based on the score of the tests separately, the grade for the tests and the examination is given according to the following table:

Score	Grade
0-49	fail (1)

50-65	pass (2)
65-79	satisfactory (3)
80-89	good (4)
90-100	excellent (5)

If the score of any test is below 60, students can take a retake test in conformity with the EDUCATION AND EXAMINATION RULES AND REGULATIONS.

-*an offered grade:*
it may be offered for students if the average grade of the two designing tasks is at least satisfactory (3) and the average of the mid-term and end-term tests is at least satisfactory (3). The offered grade is the average of them.

Person responsible for course: Dr. Péter Rózsa, associate professor, PhD

Lecturer: Dr. Péter Rózsa, associate professor, PhD

Title of course: Physical and historical geology **Code**: TTGBE5003_EN	**ECTS Credit points:** 3

Type of teaching, contact hours

- lecture: 2 hours/week
- practice: -
- laboratory: -

Evaluation: exam

Workload (estimated), divided into contact hours:

- lecture: 28 hours
- practice: -
- laboratory: -
- home assignment:
- preparation for the exam: 62 hours

Total: 90 hours

Year, semester: 1st year, 2nd semester

Its prerequisite(s): Introduction to geology

Further courses built on it:-

Topics of course

The aims of the course include the establishment of a modern dynamic view for the students that make the understanding of the difficult and variable material and crust development system of the earth and the recognising of the processes of general and local significance. Further aims include making students familiar with structural geological features, making them capable of measuring the most important structural elements in the field and understanding illustration techniques used in the literature, reading the structural geological figures and diagrams.

Over the practicals the students will learn the formation of earth type planets and the most important structural and geophysical conditions of the earth. The general interior structure of our planet is discussed together with the structural results (faults and folds) of the movements occurring in the mantle. In the second half of the semester the major phases of plate tectonics (riftogenesis, tectogenesis, orogenesis, cratonisation) are discussed reflecting on the associated volcanism and formation of igneous rocks. The relationship between orogenic mega-cycles and sedimentary depositional environments are also interpreted. Finally, a general outline of the structural conditions and tectonic development of the Alp-Carpathian region and the Pannonian Basin is also given.

Literature

Compulsory:

- Earle S. (2015): Physical geology – BC Campus Open Textbook, 720 p.
- Wicander R. – Monroe J.S. (2012): Historical geology – Cengage Learning, 448 p.

Recommended:

-

Schedule:

1st week

Discussing the terms of sedimentology, bedding and facies. Methods of facies correlation.

2nd week

Fundamentals of stratigraphy, age determinations, principles of lithostratigraphy and biostratigraphy. Formation, taxon, Oppel zone, micropalaeontology, chronostratigraphy.

3rd week

Siliciclastic sedimentary systems. Walther's facies law, parasequences, sequence stratigraphy.

4th week

Carbonaceous sedimentary systems. Textural variations, Wilson's facies belts.

5th week

Orogene megacycles. Plate tectonics, early divergence, rifting, early convergence, subduction, tectogenesis, orogenesis, cratonisation.

6th week

Development of the crust and life in the Precambrian.

7th week

Development of the crust and the flora in the Palaeozoic.

8th week

Development of animals in the Palaeozoic I.

9th week

Development of animals in the Palaeozoic II.

10th week

Development of the crust in the Mesozoic.

11th week

Development of life in the Mesozoic.

12th week

Development of the crust and the flora in the Cenozoic.

13th week

Development of animals in the Cenozoic.

14th week

Development and events in the Quaternary.

Requirements:

- for a signature

Attendance at **lectures** is recommended, but not compulsory.

- for a grade

The course ends in a written and oral complex **examination** that is composed of two parts: 10 basic questions, out of a list given to the students at the start of the semester and an oral examination based on a randomly chosen topic. The final grade is calculated as below:

- the result of the basic questions: 20%
- the result of the oral examination (80%)

The grade for the course is given according to the following table:

Score	Grade
0-50	fail (1)
50-59	pass (2)
60-74	satisfactory (3)
75-87	good (4)
88-100	excellent (5)

If the score of student result is below 50, students can re-take the exam in conformity with the EDUCATION AND EXAMINATION RULES AND REGULATIONS.

-an offered grade:
Person responsible for course: Dr. Richard William McIntosh, assistant professor, PhD
Lecturer: Dr. Richard William McIntosh, assistant professor, PhD

Title of course: Cosmic relations of the Earth **Code**: TTGBE7003_EN	**ECTS Credit points:** 3

Type of teaching, contact hours

- lecture: 2 hours/week
- practice: -
- laboratory: -

Evaluation: exam

Workload (estimated), divided into contact hours:

- lecture: 28 hours
- practice: -
- laboratory: -
- home assignment: -
- preparation for the exam: 62 hours

Total: 90 hours

Year, semester: 1st year, 1st semester

Its prerequisite(s):

Further courses built on it: -

Topics of course

The aim of the course to gain comprehensive knowledge of the narrower and wider cosmic environment of the Earth as well as our planet as part of the Solar System to reveal the identities and differences of the characteristics and evolution of the cosmic bodies.

Literature

Freedman, R.A. - Geller, R. - Kaufmann, W.J. (2014): Universe: The Solar System. ISBN 9781464135286.
Vita-Finzi, C. - Fortes, A.D. (2013): Planetary Geology : An Introduction. ISBN 9781780460154

Schedule:

1st week Introduction

2nd week Altering of point of view of the society, during the ceturies

3rd week The structure of the Solar System

4th week The Venus

5th week The Mars – I.

6th week The Mars – II.

7th week Common features of outer planets. The Jupiter and it's moons

8th week The Saturn and it's moons

9th week Uranus, Neptune, and their moons

10th week The Pluto

11th week The dwarf planets and other minor bodies

12th week The Moon

13th week Comets and meteorites

14th week The evolving Solar System

Requirements:

Attendance at **lectures** is recommended, but not compulsory.

The course ends in an **examination**.

The minimum requirement for the examination is 60%. Based on the score of the examination is given according to the following table:

Score	Grade
0-59	fail (1)
60-69	pass (2)
70-79	satisfactory (3)
80-89	good (4)
90-100	excellent (5)

If the score of test is below 60, students can take a retake test in conformity with the EDUCATION AND EXAMINATION RULES AND REGULATIONS.

Person responsible for course: Dr. Gergely Szabó, assistant professor, PhD

Lecturer: Dr. Gergely Szabó, assistant professor, PhD

Title of course: Meteorology and Climatology 1 **Code**: TTGBE5501_EN	**ECTS Credit points:** 3

Type of teaching, contact hours

- lecture: 2 hours/week
- practice: -
- laboratory: -

Evaluation: exam

Workload (estimated), divided into contact hours:

- lecture: 28 hours
- practice: -
- laboratory: -
- home assignment: -
- preparation for the exam: 32 hours

Total: 60 hours

Year, semester: 1st year, 1st semester

Its prerequisite(s):

Further courses built on it: TTGBE5502_EN

Topics of course

The aim of the course is to provide knowledge on thermodynamics of weather processes, their main characteristics and effects, to gain a picture on the system of synoptic weather phenomena. The following topics are discussed in the frame of the course: definition of meteorology and its place within the system of sciences; the structure and composition of the Earth's atmosphere: atmospheric gases and the aerosol; fundaments of actinometry: basic physical laws of electromagnetic radiation; thermodynamics of vertical movements of dry and moist air; stability conditions in the atmosphere; condensation in the atmosphere; cloud types; processes and types of precipitation; acid precipitation; horizontal movements of the air in the free atmosphere and in the boundary layer, wind profiles; Isobar maps. Air masses, weather fronts; tropical, and mid latitude cyclones, anticyclones.

Literature

Compulsory literature:

C. D. Ahrens: Meteorology Today: An Introduction to Weather, Climate, and the Environment, Cengage Learning; 9th edition (2008) ISBN-10: 0495555738

Recommended literature:

J. M. Wallace: Atmospheric Science, Second Edition: An Introductory Survey (International Geophysics) 2nd Edition. Academic Press; 2 edition (2006) ISBN-10: 012732951X

R. V. Rohli: Climatology Academic Press; 2 edition (2006) ISBN-10: 128411998X

Schedule:

1st week

Introduction: definition of meteorology; its development position within the system of sciences and its terminology.

2nd week

The structure and composition of the atmosphere. Alterations in the composition of the atmosphere. The atmospheric aerosol and its meteorological effects.

3rd week

Fundaments of actinometry: basic physical laws of electromagnetic radiation.

4th week

Thermodynamics of dry air and its vertical movements. Changes in the physical parameters of dry air with height

5th week

Adiabatic processes of moist air. Stability conditions in the atmosphere.

6th week

Condensation in the atmosphere. Cloud types

7th week

Processes and types of precipitation. Acid precipitation

8th week

Horizontal movements of the air in the free atmosphere

9th week

Effects of friction on wind, wind profile.

10th week

Air masses, atmospheric fronts 1

11th week

Air masses, atmospheric fronts 2

12th week

Isobar maps.

13th week

Fundamental forms of barometric field 1.

14th week

Fundamental forms of barometric field 2.

Requirements:

- for a signature

Attendance at **lectures** is recommended, but not compulsory.

- for a grade

The course ends in an **examination**. The exam grade is the result of the examination.

The minimum requirement is 50%. the grade for the tests and the examination is given according to the following table:

%	Grade
0-49	fail (1)
50-64	pass (2)
65-79	satisfactory (3)
80-89	good (4)
90-100	excellent (5)

If the score of any test is below 60, students can take a retake test in conformity with the EDUCATION AND EXAMINATION RULES AND REGULATIONS.

Person responsible for course: Dr. Sándor Szegedi, associate professor, PhD

Lecturer: Dr. Sándor Szegedi, associate professor, PhD

Title of course: Meteorology and Climatology II. **Code**: TTGBE5502_EN	**ECTS Credit points:** 1

Type of teaching, contact hours

- lecture: 1 hours/week
- practice: -
- laboratory: -

Evaluation: exam

Workload (estimated), divided into contact hours:

- lecture: 14 hours
- practice: -
- laboratory: -
- home assignment: -
- preparation for the exam: 16 hours

Total: 30 hours

Year, semester: 1st year, 2nd semester

Its prerequisite(s): TTGBE5501_EN

Further courses built on it:

Topics of course

The aim of the course is to provide knowledge on the terminology of climatology; to understand the basics of the functioning of the climate system, to understand the interactions between climate forming factors and their impacts; to gain a picture on the temporal and spatial patterns of climate elements and on the anomalies in the climate system of the Earth.
The following topics are discussed in the frame of the course: definition of climate; climate forming factors; general atmospheric circulation; the tropical and extra tropical monsoons; the role of ocean currents in forming the climate of the continents; spatial and temporal patterns of solar irradiation, temperature and precipitation on the Earth; climate zones and regions of the Earth; anomalies in the functioning of the climate system (ENSO).

Literature

Compulsory literature:

R. V. Rohli: Climatology Academic Press; 2 edition (2006) ISBN-10: 128411998X

additional literature:

J. M. Wallace: Atmospheric Science, Second Edition: An Introductory Survey (International Geophysics) Academic Press; (2006) ISBN-10: 012732951X

W. F. Ruddiman: Earth's Climate: Past and Future Freeman/Worth (2013) ISBN-10: 1429255250

Schedule:

1st week

Introduction: definition of climatology; its position within the system of sciences and its terminology.

2nd week

Climate forming factors 1.1, extraterrestrial factors: radiation output of the sun.

3rd week

Climate forming factors 1.2: effects of the changing position of the Sun and the Earth. Impacts of the modifications in the elements of Earth’s orbit.

4th week

Climate forming factors 1.3. Terrestrial effects: impacts of latitude on the angle and length of irradiation.

5th week

Climate forming factors 2. Factors that influence energy and material transport processes between the surface and atmosphere: material and cover types of the surface.

6th week

Climate forming factors 3.1. Material and energy transport processes in the ocean-atmosphere system: the global circulation system.

7th week

Climate forming factors 3.2. Climate forming effects of Ocean currents and monsoon circulations.

8th week

Climate forming factors 4. Relief as a climate modifying factor: the impacts of elevation and relief forms on climate.

9th week

Climate forming factors 5. Human impacts on climate.

10th week

Anomalies in the functioning of the climate system: the El Niño (ENSO) phenonmenon, climate changes and fluctuations.

11th week

Temporal patterns of climate elements on the Earth 1. Annual courses and geographic types of solar irradiance, temperature, air pressure and winds.

12th week

Temporal patterns of climate elements on the Earth 2. Annual courses and geographic types of evaporation, cloud cover and precipitation.

13th week

Spatial patterns of climate elements on the Earth 1. Spatial patterns of solar irradiance, temperature, air pressure and winds.

14th week

Temporal patterns of climate elements on the Earth 2. Spatial patterns of evaporation, cloud cover and precipitation.

Requirements:

- for a signature

Attendance at **lectures** is recommended, but not compulsory.

- for a grade

The course ends in an **examination**. The exam grade is the result of the examination.

The minimum requirement is 50%. the grade for the tests and the examination is given according to the following table:

%	Grade
0-49	fail (1)
50-64	pass (2)
65-79	satisfactory (3)
80-89	good (4)
90-100	excellent (5)

If the score of any test is below 60, students can take a retake test in conformity with the EDUCATION AND EXAMINATION RULES AND REGULATIONS.

Person responsible for course: Dr. Sándor Szegedi, associate professor, PhD
Lecturer: Dr. Sándor Szegedi, associate professor, PhD

Title of course: Meteorology and Climatology II practice **Code**: TTGBG5503_EN	**ECTS Credit points:** 2

Type of teaching, contact hours

- lecture: -
- practice: 2 hours/week
- laboratory

Evaluation: mid-semester grade

Workload (estimated), divided into contact hours:

- lecture: -
- practice: 28 hours
- laboratory: -
- home assignment: 32 hours
- preparation for the exam: -

Total: 60 hours

Year, semester: 1st year, 2nd semester

Its prerequisite(s): TTGBE5501_EN

Further courses built on it:

Topics of course

The aim of the course is to introduce the students of the course into the methods of climatological data collection, data base building and management; data processing, analyses and presentation. The course enables students to prepare and analyze climate diagrams, to recognize climate types and characterize the climate zones of the Earth.
The following topics are discussed in the frame of the course: collection of climatological data; data base building and management; data processing, data screening methods, conversions between measures, presentation of datasets in diagrams; preparation and analyses climate diagrams; identification of climate types using Walter-Lieth diagrams; description of the climate zones of the Earth.

Literature

Compulsory literature:

R. Snow, M Snow, J. E. Oliver: Exercises in Climatology. Pearson (2002) ISBN-10: 0130354694

additional literature:

J. M. Wallace: Atmospheric Science, Second Edition: An Introductory Survey (International Geophysics) Academic Press; (2006) ISBN-10: 012732951X

W. F. Ruddiman: Earth's Climate: Past and Future Freeman/Worth (2013) ISBN-10: 1429255250

http://www.klimadiagramme.de

Schedule:

1st week

Climatological data collection,

2nd week

Data base building and management; data screening methods, conversions between measures.

3rd week

Calculation of base climate statistics.

4th week

Presentation of datasets in diagrams 1.

5th week

Presentation of datasets in diagrams 2.

6th week

Preparation and analyses climate diagrams; Walter-Lieth climate diagrams.

7th week

Identification of climate types using Walter-Lieth diagrams.

8th week

Climate classification systems.

9th week

The Köppen climate classification system 1.

10th week

The Köppen climate classification system 2.

11th week

Identification of climate types using Walter-Lieth diagrams 1.

12th week

Identification of climate types using Walter-Lieth diagrams 2.

13th week

Description of the climate zones of the Earth 1.

14th week

Description of the climate zones of the Earth 2.

Requirements:

- for a signature

Participation at **practice classes** is compulsory. A student must attend the practice classes and may not miss more than three times during the semester. In case a student does so, the subject will not be signed and the student must repeat the course. A student can't make up any practice with another group. Attendance at practice classes will be recorded by the practice leader. Being late is equivalent with an absence. In case of further absences, a medical certificate needs to be presented. Missed practice classes should be made up for at a later date, to be discussed with the tutor. If a student's behavior or conduct doesn't meet the requirements of active participation, the teacher may evaluate his/her participation as an absence because of the lack of active participation in class.

- for a grade

The course ends in a **practice grade**.

The minimum requirement is 50%. the grade for the tests and the examination is given according to the following table:

%	Grade
0-49	fail (1)
50-64	pass (2)
65-79	satisfactory (3)
80-89	good (4)
90-100	excellent (5)

Person responsible for course: Dr. Sándor Szegedi, associate professor, PhD,

Lecturer: Dr. István Lázár, senior lecturer, PhD

Title of course: Cartography **Code**: TTGBE7001_EN	**ECTS Credit points: 5**

Type of teaching, contact hours

- lecture: 2 hours/week
- practice: 2 hours/week
- laboratory

Evaluation: exam

Workload (estimated), divided into contact hours:

- lecture: 28 hours
- practice: 28 hours
- laboratory: -
- home assignment: 24 hours
- preparation for the exam: 70

Total: 150 hours

Year, semester: 1st year, 1st semester

Its prerequisite(s): -

Further courses built on it: Geoinformatics I.

Topics of course

Students learn the main coordinate reference systems (world and national projections) and the fundamental knowledge for map editing, map reading, map types and the possibilities of digital cartography. Map elements, frame, legend, scale bar, northing, searching net, scale number. Map types: topographyc, thematic; new map types: dynamic maps, story map.

Literature

Compulsory literature:

Slocum, T.A. - McMaster, R.B. - Kessler, F.C. - Howard, H.H. (2014): Thematic Cartography and Geovisualization. Pearson, 620 p.
Monmonier, M. - de Blij, H.J. (1996): How to lie with maps. The University Chicago Press
Robinson A.H. (1995): Elements of Cartography. Wiley, 674 p

Schedule:

Requirements:

Person responsible for course: Prof. Dr. Szilárd Szabó, university professor, DSc

Lecturer: Prof. Dr. Szilárd Szabó, university professor, DSc

Title of course: Geomathematics **Code**: TTGBL7004_EN	**ECTS Credit points: 2**

Type of teaching, contact hours

- lecture: -
- practice: 2 hours/week
- laboratory: -

Evaluation: mid-semester grade

Workload (estimated), divided into contact hours:

- lecture: -
- practice: 28 hours
- laboratory: -
- home assignment: 12 hours
- preparation for the exam: 20 hours

Total: 60 hours

Year, semester: 2nd year, 1st semester

Its prerequisite(s): -

Further courses built on it: -

Topics of course

During the semester the students get knowledge about the fundamentals and methods of Probability and mathematical statistics. Statistical and data analysing methods are presented which are frequently applied in researches in the field of earth sciences. The students will be able to plan and implement the processing of different databases, calculate descriptive statistics, use hypothesis testing and interpret their results.

Literature

- Rogerson, P. A. (2014). Statistical methods for geography: a student's guide. Sage.
- Rohatgi, V. K., & Saleh, A. M. E. (2015). An introduction to probability and statistics. John Wiley & Sons.
- Till, R. (1974). Statistical methods for the earth scientist; an introduction. 154. p.
- Williams, R. B. (1984). Introduction to statistics for geographers and earth scientists. London: Macmillan. 349. p.
- Dekking, F. M., Kraaikamp, C., Lopuhaä, H. P., & Meester, L. E. (2005). A Modern Introduction to Probability and Statistics: Understanding why and how. Springer Science & Business Media.

Schedule:

1st week Introduction to the course. Definitions, Set Theory, Probability axioms and simple properties. Events. Exercises.

2nd week Classical probability. Conditional probability. Exercises.

Feladatmegoldás.

3rd week Multiplication rule. Theorem of total probability. Bayes theorem. Independent events. Exercises.

4th week Probability. Probability models. Distributions. Probability mass functions. Cummulative distribution functions.

5th week Discrete Probability Models. (Binomial, Poison, Geometric distributions.)

6th week Continuous Probability Models. (Uniform, Exponential, Normal, Standard Normal Distributions.)

7th week t-distribution, F-distribution. Definitions (confidence intervall, significance level, degree of freedom).

8th week Mid-term test.

9th week Introduction to mathematical ststistics. Definitions. Sample. Sample collecting methods. Representative sample. Descriptive statistics.

10th week Introduction to Hypothesis Testing. Null hypothesis, alternative hypotesis. Exercises.

11th week One sample t-test, paired t-test, two samples t-test. F-test. Exercises.

12th week Welch-test. Test of Independence.

13th week Second test.

14th week Test retake.

Requirements:

- for a signature

Attendance at **classes** is compulsory. A student must attend the practice classes and may not miss more than three times during the semester. In case a student does so, the subject will not be signed and the student must repeat the course. Attendance at practice classes will be recorded by the practice leader. Being late is equivalent with an absence. In case of further absences, a medical certificate needs to be presented. Missed practice classes should be made up for at a later date, to be discussed with the tutor. Students are required to bring the drawing tasks, drawing instruments and calculator of the course to each practice class. Active participation is evaluated by the teacher in every class. If a student's behavior or conduct doesn't meet the requirements of active participation, the teacher may evaluate his/her participation as an absence because of the lack of active participation in class.

During the semester there are two tests: the mid-term test in the 8th week and the end-term test in the 13th week. Students have to sit for the tests.

- for a grade

The final grade is calculated as an average of the grades of the tests.

The minimum requirement for the mid-term and end-term respectively is 50%. Based on the score of the tests separately, the grade for the tests is given according to the following table:

Score	Grade
0-49	fail (1)
50-59	pass (2)
60-74	satisfactory (3)
75-86	good (4)

87-100 excellent (5) If the score of any test is below 50, students can take a retake test in the 14th week. In case od fail, or the grade is not convenient for the student there is a possibility to have an exam in the exam session conformity with the EDUCATION AND EXAMINATION RULES AND REGULATIONS.
Person responsible for course: Judit Kissné Boda, assistant lecturer
Lecturer: Judit Kissné Boda, assistant lecturer; Dr. Boglárka Balázs, assistant professor, PhD

Title of course: Geoinformatics I. **Code**: TTGBL7005_EN	**ECTS Credit points: 3**

Type of teaching, contact hours

- lecture: 1 hours/week
- practice: -
- laboratory: 2 hours/week

Evaluation: mid-semester grade

Workload (estimated), divided into contact hours:

- lecture: 14 hours
- practice: -
- laboratory: 28 hours
- home assignment: 18 hours
- preparation for the exam: 30 hours

Total: 90 hours

Year, semester: 1st year, 2nd semester

Its prerequisite(s): Cartography (TTGBE7001_EN)

Further courses built on it: -

Topics of course

Over the course, the students discover about theoretical backgrounds and characteristics of information and geoinformation systems, raster and vector data models, topological relationships, data sources, methods of data collection and types of data storage. They also gain information about the functionality of QGIS software, the GIS data types and file processing. The course allows students get to know about managing data sources, creating layers, working with raster and vector data. The course emphasizes selection methods and spatial queries, main toolbars and plugins, the overview of the print composer and creating thematic maps as well

Literature

- A Gentle Introduction to GIS. https://docs.qgis.org/2.8/en/docs/gentle_gis_introduction/
- QGIS User Guide. https://docs.qgis.org/2.18/pdf/en/QGIS-2.18-UserGuide-en.pdf
- QGIS Training Manual. https://docs.qgis.org/2.18/pdf/en/QGIS-2.18-QGISTrainingManual-en.pdf

Schedule:

1st week Lecture: Introduction to the course. Conceptual background of information systems. Functions and types of information systems. GIS, geoinformation systems.

Laboratory: About QGIS software. System requirements. Supported data types. Graphical unit interface.

2nd week Lecture: GIS data sources, GIS layers. Vector and raster data systems.

Laboratory: Browse, open and display data. Tools and panels in QGIS.

3rd week Lecture: Development and historical overview of GIS.

Laboratory: Visualisation of thematic maps. Addition of vector and raster data.

4th week Lecture: Classification of spatial information systems (dimensions, sectors), application possibilities and levels.

Laboratory: Layer operations, layer shortcut menu. Setting attribution of layers, symbols. Layer hierarchy.

5th week Lecture: Steps for the modeling of GIS.

Laboratory: Vector editing. Geometric relationships, drawing. Editing of point geometry elements, drawing. Editing, modifying polyline geometry elements.

6th week Lecture: Logical models. Object attributes.

Laboratory: Vector editing, geometric relationships. Drawing, editing, modifying polygon geometry elements

7th week Lecture: Physical models.

Laboratory: Merging polygon geometry layers, buffer generating, complex editing operations.

8th week Lecture: Vector-based, raster-based and hybrid spatial systems. Vector raster, raster vector conversion.

Laboratory: Attribute table operations, dBase data storage format features.

9th week Lecture: Topological modelling, characterization of the geometrical relations of the objects. Point, line and polygon topology.

Laboratory: Spatial relationships. SQL language.

10th week Lecture: Data storage types. Sampling methods.

Laboratory: Thematic mapping methods, classification techniques, legend types.

11th week Lecture: Projection systems in GIS.

Laboratory: Cartography. Layout view. Page and print setting. Drawing toolbar, labeling, graphical elements. Thematic map publishing.

12th week Lecture: Data quality. Quality issues of the spatial information systems. Quality models. Failure of creating databases.

Laboratory: Transformation equations, Georeferencing.

13th week Lecture: Data acquisition processes and data sources for geometric and attribute data.

Laboratory: Plugins in Quantum GIS.

14th week Lecture: Writing examination of the theoretical material.

Laboratory: Practical grading.

Requirements:

- for a signature
Attendance at **lectures** is recommended, but not compulsory.

- for a grade
The course ends in a grading test.

The minimum requirement for the test respectively is 50%. Based on the score of the test, the grade for the test is given according to the following table:

Score	Grade
0-49	fail (1)
50-59	pass (2)
60-74	satisfactory (3)
75-86	good (4)
87-100	excellent (5)

If the score of any test is below 50, students can take a retake test in conformity with the EDUCATION AND EXAMINATION RULES AND REGULATIONS.

Person responsible for course: Dr. Zoltán Túri, assistant professor, PhD

Lecturer: Dr. Zoltán Túri, assistant professor, PhD

Title of course: Orientation and Navigation **Code**: TTGBG7006_EN	**ECTS Credit points: 3**

Type of teaching, contact hours

- lecture: 1 hours/week
- practice: 2 hours/week
- laboratory: -

Evaluation: mid-semester grade

Workload (estimated), divided into contact hours:

- lecture: 14 hours
- practice: 28 hours
- laboratory: -
- home assignment: 8 hours
- preparation for the exam: 40 hours

Total: 90 hours

Year, semester: 1st year, 1st semester

Its prerequisite(s): -

Further courses built on it: -

Topics of course

Earth's location in the Solar System, the Earth's most important measurable parameters, the geographic degree network. Orientation on Earth and in the Sky. Horizontal and Equal Coordinate Systems. Ecliptics and constellations of zodiac. Questions of time calculation. Methods for determining latitude and longitude. The principle, methods and sources of error of satellite positioning and navigation. Global and regional satellite systems, continental supplementary systems. Use of GNSS receivers. Orientation and navigation based on digital maps.

Literature

Theodore P. Snow (1988): The Dynamic Universe. West Publishing Company, St. Paul. ISBN 0-314-64212-9

Hoffmann-Wellenhof, B., Lichtenegger, H. Wasle, E.: 2008: GNSS – Global Navigation Satellite System. Springer. Wien – New York.

Schedule:

1st week Introduction to the course

2nd week Earth's location in the Solar System, the Earth's most important measurable parameters.

3rd week The geographic degree network. Orientation on Earth and in the Sky.

4th week Horizontal Coordinate System.

5th week Equal Coordinate System.

6th week Ecliptics and constellations of zodiac.

7th week Questions of time calculation.

8th week Mid-term test.

9th week Methods for determining latitude.

10th week Methods for determining longitude.

11th week The principle and methods satellite positioning and navigation.

12th week The sources of error of satellite positioning. Global and regional satellite systems, continental supplementary systems.

13th week End-term test

14th week Use of GNSS receivers. Orientation and navigation based on digital maps.

Requirements:

- *for a signature*

Attendance at classes is compulsory. A student must attend the practice classes and may not miss more than three times during the semester. In case a student does so, the subject will not be signed and the student must repeat the course. Attendance at practice classes will be recorded by the practice leader. In case of further absences, a medical certificate needs to be presented. Missed practice classes should be made up for at a later date, to be discussed with the tutor. Students are required to bring the drawing tasks, drawing instruments and calculator of the course to each practice class.

- *for a grade*

During the semester there are two tests: the mid-term test in the 8th week and the end-term test in the 13th week. The final grade is calculated as an average of the grades of the tests.

The minimum requirement for the mid-term and end-term respectively is 50%. Based on the score of the tests separately, the grade for the tests is given according to the following table:

Score	Grade
0-49	fail (1)
50-59	pass (2)
60-74	satisfactory (3)
75-86	good (4)
87-100	excellent (5)

If the score of any test is below 50, students can take a retake test in the 14th week.

Person responsible for course: Dr. Tóth Csaba Albert, associate professor, PhD

Lecturer: Dr. Tóth Csaba Albert, associate professor, PhD;
Dr. Balázs Boglárka, assistant professor, PhD

Title of course: History of geographical way of thinking **Code**: TTGBE7007_EN	**ECTS Credit points:** 3

Type of teaching, contact hours

- lecture: 2 hours/week
- practice: -
- laboratory: -

Evaluation: exam

Workload (estimated), divided into contact hours:

- lecture: 28 hours
- practice: -
- laboratory: -
- home assignment: -
- preparation for the exam: 62 hours

Total: 90 hours

Year, semester: 3nd year, 2nd semester

Its prerequisite(s): -

Further courses built on it: -

Topics of course

The aim of the study is to show the birthing circumstences and the important phases of development of geographical sciences in the context of other sciences. It draws a picture about the results and geographical thinking of antique world and about the effect of great geographical discoveries. It shows the development of branches of geography until present day.

Literature

Compulsory:

- Unwin, T. (1994): The Place of Geography Longman Scientific & Technical, New York, p. 271
- Hagett, P. (2001): Geography: A Global Synthesis 4th Edition, Prentice Hall, p.864

Recommended:

Schedule:

1st week
Geographical knowledge of ancient people.
2nd week
Contents and features of antic geography. Evolution of geographical knowledge in ancient empires (Egypt, Greece, Rome).
3rd week
Causes and geographical consequence of falling and new rising of geographical horizont in the early middle-age.
4th week
Expanding of oikumene – geographical aspects of causing factors.
5th week
Effects of expanding knowledge and word on the geographical science.
6th week
Analysis and synthesis in geography: Humboldt and Ritter.
7th week
The basis of genetical physical geography: the research of Pleistocene in the aspect of actualism.
8th week

Geographical trends in the second part of XIX. century and in the turn of the century.
9th week
Some geographical trends in the XX. century. Paradigsm and revolutions.
10th week
Kuhn's paradigm. Criticism of Kuhn's.
11th week
Induction, deduction, abduction.
12th week
Changing paradigms in geography.
13th week
The growth of spatial science.
14th week
Postmodernism in geography

Requirements:

- for a grade
Attendance at **lectures** is recommended, but not compulsory.

The course ends in an **examination**.

The minimum requirement for the examination respectively is 60%. Based on the score of the test, the grade for the examination is given according to the following table:

Score	Grade
0-59	fail (1)
60-69	pass (2)
70-79	satisfactory (3)
80-89	good (4)
90-100	excellent (5)

If the score of any test is below 60, students can take a retake test in conformity with the EDUCATION AND EXAMINATION RULES AND REGULATIONS.

Person responsible for course: Dr. Gábor Négyesi, assistant professor, PhD

Lecturer: Dr. Gábor Négyesi, assistant professor, PhD

Title of course: Structural geology I **Code**: TTGBE5004_EN	**ECTS Credit points:** 2

Type of teaching, contact hours

- lecture: -
- practice: 2 hours/week
- laboratory: -

Evaluation: two tests in the study period

Workload (estimated), divided into contact hours:

- lecture: -
- practice: 28 hours
- laboratory: -
- home assignment: -
- preparation for the tests: 32 hours

Total: 60 hours

Year, semester: 2nd year, 1st semester

Its prerequisite(s): Introduction to geology

Further courses built on it:-

Topics of course

The aims of the course include the establishment of a modern dynamic view for the students that make the understanding of the difficult and variable material and crust development system of the earth and the recognising of the processes of general and local significance. Further aims include to make students familiar with structural geological features, to make them capable of measuring the most important structural elements in the field and understanding illustration techniques used in the literature, reading the structural geological figures and diagrams.

Over the practicals the students will learn the formation of earth type planets and the most important structural and geophysical conditions of the earth. The general interior structure of our planet is discussed together with the structural results (faults and folds) of the movements occurring in the mantle. In the second half of the semester the major phases of plate tectonics (riftogenesis, tectogenesis, orogenesis, cratonisation) are discussed reflecting on the associated volcanism and formation of igneous rocks. The relationship between orogenic mega-cycles and sedimentary depositional environments are also interpreted. Finally, a general outline of the structural conditions and tectonic development of the Alp-Carpathian region and the Pannonian Basin is also given.

Literature

Compulsory:

- Fossen H. (2016): Structural geology – Cambridge University Press, 524 p.

Recommended:

- McIntosh R.W. – Püspöki Z. (2005): Chapters from structural geology – textbook, Department of Mineralogy and Geology, University of Debrecen, 100 p.

Schedule:

1st week

Tectonics and structural geology as scientific fields. Geotectonics, global tectonics, regional tectonics and microtectonics.

Development of Earth like planets. The role of element migration and differentiation in the formation of a spherical structure.

2nd week

Interior structure of Earth. Ways to explore the interior structure and composition. Characteristics and material conditions of the core, mantle and the crust. The magnetic field of Earth.

3rd week

Parts and behaviour of the lithosphere and its relationship with the mantle. Mechanical behaviour of minerals and rocks. Forms of stress and resultant deformations. Compression, tension and shear stress fields, elastic modulus, Poisson's ratio and other strength conditions.

4th week

Stress, its forms and calculation. Types of strain, its measurement and calculation. Relationship between deformation and stress and deformation and passed time. Inner (material, grain size, crystal water content and oriented texture) and outer (pressure, temperature, water content in fractures and velocity of deformation) factors influencing deformation.

5th week

Structural elements of brittle deformation. Lithoclases, diaclases, paraclases. Joints and faults. Mohr and Riedel joint systems, classification of faults, transpression, transtension, positive and negative flower structures. Blocks and flexures.

6th week

Structural elements of ductile deformation. Description and classification of folds. Schistosity, boudins, and nappe formation. Vergence, autochthonous and allochthonous rock masses.

7th week

Measurement, description, illustration and reconstruction of structural elements. Identification and measurement of dip direction, dip angle and strike using a geological compass. Rose diagrams and stereograms.

8th week

Test I

9th week

Fundamentals of plate tectonics and the orogenic megacycles. Major lithospheric plates, plate boundaries, evidence of plate tectonics and the concept of moving continents.

10th week

The process of rifting. Divergent plate boundaries, processes at mid-oceanic ridges. Structure and development of the oceanic crust. Palaeomagnetic stripes in the oceanic crust and their formation at mid-oceanic ridges. Hot-spot volcanoes and mantle plumes.

11th week

Development of subduction zones along convergent plate boundaries. Formation and structure of island-arc systems, typical subduction zones on Earth.

12th week

Orogenesis and orogenic zones. Suture, uplift, craton development. Volcanism, ore formation isostatic uplift in orogenic zones.

13th week

Structural conditions and development of the Alpine-Carpathian region. Formation and structural conditions of the Pannonian Basin.

14th week

Test II

Requirements:

- for a signature

Attendance at **practicals** is compulsory, absence of students shall not exceed three occasions.

- for a grade

Grades are given on the basis of two tests in the study period. Both tests are composed of two parts the scores of which are calculated a bit differently:

- basic terms I: 20% basic terms II: 20%
- test I: 30% test II: 30%

The grade for the course is given according to the following table:

Test Score (%)	Grade	basic terms Score (%)	Grade
0-50	fail (1)	0-65	fail (1)
50-59	pass (2)	65-74	pass (2)
60-74	satisfactory (3)	75-84	satisfactory (3)
75-87	good (4)	85-94	good (4)
88-100	excellent (5)	95-100	excellent (5)

If the score of student result is below 50, students can re-take the exam in conformity with the EDUCATION AND EXAMINATION RULES AND REGULATIONS.

-an offered grade:

Person responsible for course: Dr. Richard William McIntosh, associate professor, PhD

Lecturer: Dr. Richard William McIntosh, associate professor, PhD

Title of course: Fundamentals of physical geography I. (Hydrogeography) **Code**: TTGBE7008_EN	**ECTS Credit points: 3**

Type of teaching, contact hours

- lecture: 2 hours/week
- practice: -
- laboratory: -

Evaluation: exam

Workload (estimated), divided into contact hours:

- lecture: 28 hours
- practice: -
- laboratory: -
- home assignment: -
- preparation for the exam: 62 hours

Total: 90 hours

Year, semester: 1st year, 2nd semester

Its prerequisite(s): -

Further courses built on it: -

Topics of course

Students learn the water cycle, oceans, seas, lakes and rivers with their processes and forming factors. Physical and chemical features of the water. Water cycle. Oceand seas. Waves, currents, temperature, ice formation in the seas, tidal waves. Terminology of rivers, types, tributaries, estuaries and spring heads. Extent, river density, morphometrical indices, riverbed patterns. Physics of water flow, laminar and turbulent flow, riverbed formation. Floods. Lakes: exogenic and endogenic lake beds. Lake types: water budget, temperature, biology. Lake extinction. Groundwater, aquiers and aquitards.

Literature

- Calow, P. - Petts, G.E. (1994): The Rivers Handbook, Blackwell Science Ltd, 528 p. ISBN: 978-0-632-02985-3
- Jaya, R.R.P. (2005): A Text Book of Hydrology. Firewall Media, 530 p.
- Butzer, K.W. (1976): Geomorphology from the earth, New York, Harper and Row, 463 p.

Schedule:

1st week Water cycle and water courses of the Earth.

2nd week Horizontal and vertical structure of seas.

3rd week Geographical distribution of the chemical characteristics, temperature and the ice.

4th week Movements of the seas: waves.

5th week Movement of the seas: currents, tidal waves.

6th week Rivers, wells, estuaries.

7th week Catchments, watersheds, morphometrical indices, network-patterns.

8th week Runoff, floods.

9th week Genetical lake types.

10th week Water budget types for lakes.

11th week Geometric and attribute data collection and extraction.

12th week Types of undersurface waters.

13th week Remote sensing in hydrology.

14th week Grade-offering exam.

Requirements:
Lecture:

The minimum requirement for the examination is 50% from the midterm and closing tests. Based on the summarized score of the test the grade for the examination is given according to the following table:

Score	Grade
0-49%	fail (1)
50-59%	pass (2)
60-72%	satisfactory (3)
73-84%	good (4)
85-100%	excellent (5)

If the score of any test is below 50, students can take a retake test in conformity with the EDUCATION AND EXAMINATION RULES AND REGULATIONS.

Person responsible for course: Prof. dr. Szabó Szilárd, university professor, DSc

Lecturer: Prof. Dr. Szilárd Szabó, professor, DSc

Title of course: Fundamentals of physical geography II. (Geomorphology) **Code**: TTGBE7009_EN	**ECTS Credit points: 3**

Type of teaching, contact hours

- lecture: 2 hours/week
- practice: -
- laboratory: -

Evaluation: exam

Workload (estimated), divided into contact hours:

- lecture: 28 hours
- practice: -
- laboratory: -
- home assignment: -
- preparation for the exam: 62 hours

Total: 90 hours

Year, semester: 2nd year, 1st semester

Its prerequisite(s): -

Further courses built on it: -

Topics of course

Students know the driving forces of geomorphology: surficial processes; physiography. Rock weathering and erosion. Glacial processes and glacial landforms. Mass wasting: gravity driven processes (e.g. landslides), Eolian processes. Groundwater activity: hydrothermal, volcanic. Karst systems.

Literature

Huggett, R. (2016): Fundamentals of Geomorphology, Taylor and Francis, 578 p.
Huggett, R. (2009): Physical Geography: The Key Concepts, Routledge, 224 p.
Ritter, D.F. - Kochel, R.C. - Miller, J.R. (2011): Process Geomorphology, Wm. C. Brown, 546 p.

Schedule:

Requirements:

Lecture:

The minimum requirement for the examination is 50% from the midterm and closing tests. Based on the summarized score of the test the grade for the examination is given according to the following table:

Score	Grade
0-49%	fail (1)
50-59%	pass (2)
60-72%	satisfactory (3)
73-84%	good (4)
85-100%	excellent (5)

If the score of any test is below 50, students can take a retake test in conformity with the EDUCATION AND EXAMINATION RULES AND REGULATIONS.
Person responsible for course: Prof. Dr. József Lóki, professor emeritus, DSc
Lecturer: Dr. Szilárd Szabó, professor, DSc

Title of course: Fundamentals of physical geography III. (Anthropogenic geomorphology) **Code**: TTGBG7010_EN	**ECTS Credit points: 3**

Type of teaching, contact hours

- lecture: 1 hours/week
- practice: 2 hours/week
- laboratory: -

Evaluation: mid-semester grade

Workload (estimated), divided into contact hours:

- lecture: 14 hours
- practice: 28 hours
- laboratory: -
- home assignment: 7 hours
- preparation for the exam: 41 hours

Total: 90 hours

Year, semester: 2nd year, 2nd semester

Its prerequisite(s): -

Further courses built on it: -

Topics of course

The system based approach of the anthropogenic geomorphological processes and forms. Types and tipization of the processes and forms. Industry initiated forms. forms initiated by agricultural activity. Connection to the landscape. Risks. Surveying tecniques.

Literature

- Szabó, J. - Dávid, L. - Lóczy, D. (eds). (2010): Anthropogenic Geomorphology. Springer,
- Li, J. - Yang, L. - Pu, R. - Liu, Y. (2017): A review on anthropogenic geomorphology. Jornal of Geographical Sciences 27: 109-128.
- Goudie, A. (2001): The Human Impact on Natural Enviroment, MIT Press,

Schedule:

1st week

Lecture: History of fluvial geomorphology

Practice: Measures in fluvial geomorphology I. Impoundment of watersheds. Morphometrical analyses on maps: drainage density and maturity examinations of channels.

2nd week

Lecture: Movement and sediment transport of channels.

Practice: Measures in fluvial geomorphology II. Ordering examinations, channel shape measures.

3rd week

Lecture: Erosional and depositional forms along channels.

Practice: Measures in fluvial geomorphology III. Channel shape measures. Hydrological measures on the field.

4th week

Lecture: River terraces, formation and types of fluvial valleys.

Practice: Fluvial laboratory experiments.

5th week

Lecture: Physical foundation of wind erosion.

Practice: Examinations of alluvial and eolian sediments. Sample collection on the field,

6th week

Lecture: Sand transport by the wind.

Practice: Examination of physical properties of sediments. Methods of measuring of grains size, grain size nomenclatures. Graphical representation and evaluation of grains size distribution.

7th week

Lecture: Morphology and morphometry of major dune types.

Practice: Morphometrical analyses of grains, properties of grain surface, application of microscopes in sediment analyses.

8th week

Lecture: Paleoenvironments and dunes.

Practice: Examination of chemical properties of sediments: measuring the pH-value, $CaCO_3$- and organic matter content in laboratory

9th week

Lecture: Origin of loesses. Loess in Hungary.

Practice: I. writing test. Wind tunnel measurements.

10th week

Lecture: The geomorphologic synthesis. Mono- and biogenetic theories in geomorphology.

Practice: Examination of organic matters in sediments. Application of malacology in geomorphology.

11th week

Lecture: The geomorphologic synthesis. Climatical, polygenetic theories in geomorphology.

Practice: Applications of palynology in geomorphology.

12th week

Lecture: The study and system of anthropogenic geomorphology I.

Practice: Application of dendrology in geomorphology.

13th week

Lecture: The study and system of anthropogenic geomorphology II.

Practice: Determining the age of sediments. Relative and absolute age-dating methods.

14th week

Lecture: Grade-offering exam.

Practice: 2. writing test.

Requirements:

Practice:

Participation at classes is compulsory. A student must attend the courses and may not miss more than three times during the semester. In case a student does so, the subject will not be signed and the student must repeat the course.

During the semester there is one practical test. It can be completed in the 14th week.

The minimum score is 50%. Based on the score of the test, the grade for the test is given according to the following table:

Score	Grade
0-49	fail (1)
50-59	pass (2)
60-72	satisfactory (3)
73-84	good (4)
85-100	excellent (5)

Lecture:

The minimum requirement for the examination is 50% from the midterm and closing tests. Based on the summarized score of the test the grade for the examination is given according to the following table:

Score	Grade
0-49%	fail (1)
50-59%	pass (2)
60-72%	satisfactory (3)
73-84%	good (4)
85-100%	excellent (5)

If the score of any test is below 50, students can take a retake test in conformity with the EDUCATION AND EXAMINATION RULES AND REGULATIONS.

Person responsible for course: Prof. Dr. Lóki József, emeritus professor, DSc

Lecturer: Dr. Szilárd Szabó, professor, DSc;
László Bertalan, assistant lecturer

Title of course: Soil geography **Code**: TTGBE6001_EN	**ECTS Credit points:** 3

Type of teaching, contact hours

- lecture: 2 hours/week
- practice: -
- laboratory: -

Evaluation: exam

Workload (estimated), divided into contact hours:

- lecture: 28 hours
- practice: -
- laboratory: -
- home assignment: 12 hours
- preparation for the exam: 50 hours

Total: 90 hours

Year, semester: 1st year, 2nd semester

Its prerequisite(s): -

Further courses built on it:

Topics of course

The aim of the course is to get acquainted with the main areas of the science of soil geography. The course deals with the following topics: The concept of soil, soil forming factors, the history of the soil research. The importance and functions of soils. Composition of soils, soil-forming rocks. Soil-forming minerals. Physical, chemical and biological features, pedogenic minerals. Organic materials in soil, the process of humus formation. Colloids in soil. Physical properties of soils. The concepts of genetic and diagnostic soil classification. The soils of Central Europe: skeletal soils, lithogenic soils, soils with clay illuviation, chernozems, meadow soils, salt affected soils, fluvial soils, marshes, forested bogs soils.

Literature

Compulsory:

- European Soil Burea Network, European Commission 2005. Soil Atlas of Europe, Luxembourg, Office for Official Publications of the European Communities. 128.p. /https://esdac.jrc.ec.europa.eu/Projects/Soil_Atlas/Download/Atlas.pdf
- Blum, W., Schad, P., Nortcliff, S. 2018. Essentials of Soil Science. Soil formation, functions, use and classification (World Reference Base, WRB). Schweizerbart, Stuttgart, 171 p. ISBN 978-3-443-01090-4

Recommended:

- *Świtoniak, M.; Kabała, C.; Karklins, A.; Charzyński, P.; Hulisz, P.; Mendyk, Ł., Michalski, A.; Novák, T. J.; Penížek, V.; Reintam, E.; Repe, B.; Saksa, M.; Vaisvalavičius, R.; Waroszewski,* J. 2018. Guidelines for Soil Description and Classification Central and Eastern European Students' Version. ISBN 978-83-934096-6-2, Polish Society of Soil Science, Torun, Poland 286 pp

Schedule:

1st week

The pedosphere. Definition, extent, genesis and functions.

2nd week

Methods for study of soils. The base concept of the pedon.

3rd week

The components of soils. Soil as a three phase system.

4th week

Solid phase of soils. Minerals in soild phase of soils. Weathering processes of soil minerals. Pedogenic mineral transformations.

5th week

Fluid phase of soils. Moisture state and water regime of soils.

6th week

The gas phase of the soils. Pore volume, bulk density.

7th week

Physical characteristics of soils: texture, structure, colour, skeletal parts, pore volume.

8th week

Chemical characteristics of soils: pH, conductivity, redox-potential, carbonates, cation exchange complex, base saturation. Nutrients for plants..

9th week

Organic matter in soils. Forms, quantification, relevance.

10th week

The soil forming factors and their spatial distribution. Soil forming processes.

11th week

Taxonomy of soils. Diagnostic and genetic conceptions.

12th week

Classification of soils. US Soil Taxonomy, WRB and national classifications.

13th week

Distribution of soil types around the Earth.

14th week

Conservation and reclamation of soils. Endangering factors of soil resources.

Requirements:

- for a signature

Attendance at **lectures** is recommended, but not compulsory.

- for a grade

During the semester students have to write an essay dealing with a selected subject of course focussing attention on their home country.

The course ends in a written **examination**. Based on the result of examination and the quality of essay, the final grade is calculated as an average of them:

- the quality of the essay (15%)
- the result of the examination (85%)

The grade for the course is given according to the following table:

Score	Grade
0-50	fail (1)
50-59	pass (2)
60-74	satisfactory (3)
75-87	good (4)
88-100	excellent (5)

If the score of student result is below 50, students can take a new written examination in conformity with the EDUCATION AND EXAMINATION RULES AND REGULATIONS. *-an offered grade:*
Person responsible for course: Dr. Tibor Novák, associate professor, PhD
Lecturer: Dr. Tibor Novák, associate professor, PhD

Title of course: Soil geography - practice **Code**: TTGBG6002_EN	**ECTS Credit points:** 2

Type of teaching, contact hours

- lecture: -
- practice: 2 hours/week
- laboratory: -

Evaluation: mid-semester grade

Workload (estimated), divided into contact hours:

- lecture: -
- practice: 22 hours
- laboratory: 6 hours
- home assignment: 10 hours
- preparation for the exam: 22 hours

Total: 60 hours

Year, semester: 1st year, 2nd semester

Its prerequisite(s): -

Further courses built on it: -

Topics of course

Students will get acquainted with field soil sampling and testing methods, they will be able to take soil samples and prepare soil profiles. They are familiar with the physical, chemical properties required for the characterization of soils (e.g. soil texture, structure, pH) and field methods (e.g. Finger test) and tools (e.g. Munsell scale). They will be able to delineate these by field definition and name the genetic horizons, to recognize different concretions. They familiarize and apply different laboratory tests to determine basic soil properties (e.g. pH, Humus and OC content, $CaCO_3$ content, texture) and water management properties. Based on field and laboratory test results, students are able to draw conclusions on the use and management of soils.

Literature

Compulsory:

- FAO (2006): Guidelines for soil description, Roma, ISBN: 92-5-105521-1.
- S. Logsdon, D. Clay, D. Moore, T. Tsegaye, editors, 2008. Soil Science Step-by-Step Field Analysis. SSSA, Madison, WI.

Recommended:

-Soil Survey Staff. 2014. Soil Survey Field and Laboratory Methods Manual. Soil Survey - Investigations Report No. 51, Version 2.0. R. Burt and Soil Survey Staff (ed.). U.S. Department of Agriculture, Natural Resources Conservation Service.

Schedule:

1st week

Description of the semester theme. Presentation of the theoretical background of the fieldwork. Soil sampling methods and establisment of soil profiles. Methods of preparation soil reports.

2nd week

Physical and chemical properties of soils. Theoretical background of the determination of these properties on the field. Methods and tools required for the measurements. Methodological preparation of field work.

3rd week

Fieldwork. Practical application of soil sampling methods.

4th week

Fieldwork. Field test methods (Finger test, determination of Munsell color, field pH measurement, estimation of CaCO3 content with 10% HCl solution, humus quality estimation).

5th week

First written examination. Methodological preparation of laboratory practices. Creating 3 student groups that will perform laboratory exercises in the following weeks.

6th week

Getting acquainted with the Geography Institute's lab. Preparation of soil samples for laboratory measurements. Acquire the use of tools for preparation (eg analytical balance).

7th week

Laboratory test for determination of soil texture. Evaluating results, deducting conclusions.

8th week

Testing the water resistance of the structural elements in flowing water and still water. Evaluating results, deducting conclusions.

9th week

Investigating the water management properties of the soil. Evaluating results, deducting conclusions.

10th week

Determination of soil pH (H_2O, KCl) under laboratory conditions. Evaluating results, deducting conclusions.

11th week

Determination of the $CaCO_3$ content of soils in laboratory conditions. Exercise the use of Scheibler's calcimeter, measuring the $CaCO_3$ content of soil samples. Evaluating results, deducting conclusions.

12th week

Determination of the humus content of soils under laboratory conditions. Description and practical application of the Tyurin method. Performing and practicing titration. Evaluating results, deducting conclusions.

13th week

Second written examination. Submitting protocols.

14th week

The evaluation of the semester work, description and justification of the practice notes.

Requirements:

- for a signature

Participation at **practice classes** is compulsory. A student must attend the practice classes and may not miss more than three times during the semester. In case a student does so, the subject will not be signed and the student must repeat the course. A student can't make up any practice with another group. Attendance at practice classes will be recorded by the practice leader. Being late is equivalent with an absence. In case of further absences, a medical certificate needs to be presented. Missed practice classes should be made up for at a later date, to be discussed with the tutor. Students are required to bring the drawing tasks and drawing instruments of the course to each practice class. Active participation is evaluated by the teacher in every class. If a student's behavior or conduct doesn't meet the requirements of active participation, the teacher may evaluate his/her participation as an absence because of the lack of active participation in class.

- for a grade

During the semester there are two tests. The final grade is calculated as an average of the grades of the tests.
Based on the score of the tests separately, the grade for the tests and the examination is given according to the following table:

Score	Grade
0-59	fail (1)
60-69	pass (2)
70-79	satisfactory (3)
80-89	good (4)
90-100	excellent (5)

Person responsible for course: Dr. Szabó György, associate professor, PhD

Lecturer: Tamás Mester, assistant lecturer

Title of course: Biogeography **Code**: TTGBE7011_EN	**ECTS Credit points: 3**

Type of teaching, contact hours

- lecture: 2 hours/week
- practice: -
- laboratory: -

Evaluation: exam

Workload (estimated), divided into contact hours:

- lecture: 28 hours
- practice: -
- laboratory: -
- home assignment: 12 hours
- preparation for the exam: 50 hours

Total: 90 hours

Year, semester: 2nd year, 1st semester

Its prerequisite(s): -

Further courses built on it: -

Topics of course

The aim of the course to introduce the ecological and geographical background of the biogeography as an interdisciplinary science. The course provide knowledge on the relationship between wildlife and its geographical environment, tolerance, adaptation, spread of species, distribution patterns of wildlife, vikarism, pseudovikarism, zonality, biodiversity, flora and fauna empires and biogeographical empires. Besides this the aim of the course the characterization of the environmental conditions and the zonal, intrazonal wildlife of the individual biomes: tropical rainforest, savannah, tropical monsoon, tropical deserts, Mediterranean hardwood forest, subtropical monsoon forest, deciduous forest, steppe, moderate desert and semi-desert, tajga and tundra. Finally, the course introduces the vertical zonality of tropical and moderate zone mountains.

Literature

Mark Lomolino, Brett Riddle, Rober J. Whittaker (2017): Biogeography. Sinauer.
ISBN 978-1-6053-5472-9

Andrew Millington, Mark Blumler, Udo Schickhoff (eds.) (2011): The SAGE Handbook of Biogeography. SAGE Publications Ltd. London. ISBN: 978-1-4129-1951-7

Schedule:

1st week Introduction to the course.

2nd week Place of biogeography in the system of the sciences.

3rd week Ecological and biogeographical basics.

4th week Relationship between wildlife and its geographical environment, tolerance, adaptation.

5th week Spread of species, distribution patterns of wildlife.

6th week Vikarism, pseudovikarism. Vertical and horizontal distribution of the wildlife on Earth, zonality, intra- and extrazonality, biodiversity.

7th week The vertical zonality of tropical and moderate zone mountains.

8th week Flora and fauna empires, biogeographical empires.

9th week Characterization of the environmental conditions and the zonal wildlife of the tropical rainforest and savanah.

10th week Characterization of the environmental conditions and the zonal wildlife of the tropical monsoon forest and tropical deserts.

11th week Characterization of the environmental conditions and the zonal wildlife of the Mediterranean hardwood forest, subtropical monsoon forest and deciduous forest.

12th week Characterization of the environmental conditions and the zonal wildlife of the steppe, moderate semi-desert and desert.

13th week Characterization of the environmental conditions and the zonal wildlife of the tajga and tundra.

14th week Test. Questions.

Requirements:

Attendance at lectures is recommended, but not compulsory.

- *for a grade*

The course ends in an examination. The minimum requirement for the examination is 50%. The grade for the examination is given according to the following table:

Score	Grade
0-49%	fail (1)
50-59%	pass (2)
60-72%	satisfactory (3)
73-84%	good (4)
85-100%	excellent (5)

Students can take a retake test in conformity with the education and examination rules and regulations.

- *an offered grade:*

It may be offered for students if the test written in the 14th week is at least satisfactory (3).

Person responsible for course: Dr. Tóth Csaba Albert, associate professor, PhD

Lecturer: Dr. Tóth Csaba Albert, associate professor, PhD

Title of course: Bases of environmental protection **Code**: TTGBE6003_EN	**ECTS Credit points: 3**

Type of teaching, contact hours

- lecture: 2 hours/week
- practice: -
- laboratory: -

Evaluation: exam

Workload (estimated), divided into contact hours:

- lecture: 28 hours
- practice: -
- laboratory: -
- home assignment: -
- preparation for the exam: 62 hours

Total: 90 hours

Year, semester: 1st year, 2nd semester

Its prerequisite(s): -

Further courses built on it: -

Topics of course

The basis of the system theory, the Earth as a unified system. The basic environmental problem and environmental protection. Sustainable development and environmental protection. The role of sciences in environmental protection. The relationship between demographical processes and the natural environment. The ecologycal footprint and the carrying capacity of the Earth. The urban environment, the city as a system, green cities. The impact of production on the environment and human health. The impact of consumption on the environment and human health. Environmental pollution. Waste management. The destruction of wildlife. Environmental Principles.

Literature

Compulsory literature:
Cocks, D. (2013) Global Overshot – Contemplating the World's Converging Problems. Springer Science, 414 p.

Recommended literature:
Environmental Change and Sustainability. Edited by Steven Silvern and Stephen Young, InTech, 312 p., ISBN 978-953-51-1094-1, DOI: 10.5772/46198
https://www.intechopen.com/books/environmental-change-and-sustainability

Schedule:

1st week Introduction to the course

2nd week The basis of the system theory, the Earth as a unified system.

3rd week The basic environmental problems and environmental protection.

4th week Sustainable development and environmental protection.

5th week The role of sciences, economy and education in environmental protection.

6th week The relationship between demographical processes and the natural environment.

7th week Carrying capacity of the Earth.

8th week The city as an environmental system. The main characteristics and problems of the urban environment. The green cities.

9th week The impact of production and consumption on the environment and human health.

10th week The pollution of the atmosphere, hydrosphere and pedosphere.

11th week The environmental consequences of the waste management.

12th week The destruction of wildlife.

13th week Environmental Principles in practice.

14th week Evaluation of the course, instructions for the exam.

Requirements:

Attendance at **lectures** is recommended, but not compulsory.

The minimum requirement for the examination is 51%. Based on the score of the test, the grade is given according to the following table:

Score	Grade
0-50%	fail (1)
51-60%	pass (2)
61-70%	satisfactory (3)
71-85%	good (4)
86-100%	excellent (5)

If the score of any test is below 51%, students can take a retake test in conformity with the EDUCATION AND EXAMINATION RULES AND REGULATIONS.

Person responsible for course: Dr. György Szabó, associate professor, PhD

Lecturer: Dr. György Szabó, associate professor, PhD

Title of course: Population and settlement geography I. **Code**: TTGBE6504_EN	**ECTS Credit points:** 3

Type of teaching, contact hours

- lecture: 2 hours/week
- practice: -
- laboratory: -

Evaluation: exam

Workload (estimated), divided into contact hours:

- lecture: 28 hours
- practice: -
- laboratory: -
- home assignment: 12 hours
- preparation for the exam: 50 hours

Total: 90 hours

Year, semester: 1st year, 1st semester

Its prerequisite(s): -

Further courses built on it: Population and settlement geography II.

Topics of course

Position of social geography in the system of sciences. The increase of the population of World in the history. Natural increase (characteristics of births and deaths, model of demographic transition). Migration. Distribution of the population of World by gender, age and occupation. The ethnic and religious distribution of the population of World. Processes behind the development of settlements. Definition of urbanization and stages of modern urbanisation. Urban systems and world cities. The inner structure of cities. Rural geography.

Literature

Compulsory:

- Kaplan, D. – Wheeler, J. – Holloway, S. (2009) Urban geography. John Wiley and Sons
- Poston, D. L. Jr. – Bouvier, L. F. (2010) Population and society. Cambridge
- Woods, M. (2010) Rural: key ideas in geography. Routledge

Recommended:

- Know, Paul L. - McCarthy, Linda M. (eds.) (2014) Urbanization: An Introduction to Urban Geography (3rd Edition). Pearson Education Limited, Harlow, ISBN 978-0321736437

Schedule:

1st week

Position of social geography in the system of sciences.

2nd week

The increase of the population of World in the history. Future trends of population development.

3rd week

Natural increase of population: characteristics of births and deaths

4th week

The model of demographic transition: most important characteristics of different stages

5th week

Migration: reasons for migration, types of migration, consequences of migration, current and future trends of migration

6th week

Distribution of the population of World by gender, age and occupation

7th week

The ethnic distribution of the population of World

8th week

The religious distribution of the population of Earth most important characteristics of 5 major religions (Christianity, Buddhism, Islam, Hinduism and Taoism)

9th week

Processes behind the development of settlements

10th week

Definition of urbanization and stages of modern urbanization: characteristics of urbanization, suburbanization, des-urbanization and re-urbanization

11th week

The inner structure if cities I.: ecological models of urban form, functional models of cities

12th week

The inner structure of cities II.: urban land use, the social landscape of cities

13th week

Urban systems and world cities. Urban problems: environmental problems, segregation

14th week

Rural geography: types, functions and inner structure of villages

Requirements:

- for a signature
Attendance at **lectures** is recommended, but not compulsory.

- for a grade
During the semester students have to write an essay dealing with a selected subject of course focussing attention on their home country.

The course ends in a written **examination**. Based on the result of examination and the quality of essay, the final grade is calculated as an average of them:

- the quality of the essay (15%)
- the result of the examination (85%)

The grade for the course is given according to the following table:

Score	Grade
0-50	fail (1)
50-59	pass (2)
60-74	satisfactory (3)
75-87	good (4)
88-100	excellent (5)

If the score of student result is below 50, students can take a new written examination in conformity with the EDUCATION AND EXAMINATION RULES AND REGULATIONS.

-an offered grade:

Person responsible for course: Prof. Dr. Gábor Kozma, university professor, DSc

Lecturer: Prof. Dr. Gábor Kozma, university professor, DSc

Title of course: Population and settlement geography II. **Code**: TTGBG6505_EN	**ECTS Credit points: 3**

Type of teaching, contact hours

- lecture: 1 hours/week
- practice: 2 hours/week
- laboratory: -

Evaluation: two written tests covering the lectures, the definitions and the students' presentations; student's presentation and opinion given; and written essay (6-8 pages)

Workload (estimated), divided into contact hours:

- lecture: 14 hours
- practice: 28 hours
- laboratory: 0 hours
- home assignment: 24 hours
- preparation for the exam: 24 hours

Total: 90 hours

Year, semester: 1st year, 2nd semester

Its prerequisite(s): -

Further courses built on it: TTGBE6504_EN

Topics of course

The objectives of the course is to provide the definitions of population and settlement geography, the scientific results of the research field (partly by case studies), to know to process and evaluate the scientific achievements provided by special literature. Important demographic and structural processes of settlements are provided with their causes and consequences by the lectures and practical lessons of the course.

Literature

Know, Paul L. - McCarthy, Linda M. (eds.) 2014: Urbanization: An Introduction to Urban Geography (3rd Edition). – Pearson Education Limited, Harlow. 480 p.(ISBN 978-0321736437)

Newbold, Bruce 2017: Population Geography: Tools and Issues. – Rowman & Littlefield Publishers.366 p. (ISBN 978-1442265318)

Peter, Gary L. - Larkin, Robert P. 2010: Population Geography 9th Edition. Kendall Hunt Publishing. 382 p. (ISBN 978-0757538438)

Poston, Dudley R. Jr. – Micklin, Michael (eds.) 2005: Handbook of Population. – Springer-Verlag US. (ISBN 978-0-306-47768-3)

Schedule:

1st week

Introduction to the course; principles of scientific researches and methodology

2nd week

Issues of the population explosion and the demographic transition

3rd week

Territorial consequences of the population change

4th week

Issues of migration

5th week

The ethnic and religious division of the population

6th week

The social status of the population

7th week:

Mid-term test

8th week

Typologies of settlements

9th week

Development of cities and their classifications

10th week

Periods of the urbanization

11th week

Settlements network and the hierarchy of settlements

12th week

Inner structure of cities

13th week

The urban geography of Debrecen

14th week

End-term test

Requirements:

Participation at classes is compulsory. A student must attend the courses and may not miss more than three times during the semester. In case a student does so, the subject will not be signed and the student must repeat the course.

During the semester there are two tests: the mid-term test in the 7th week and the end-term test in the 14th week. The tests cover the lectures and practices as well.

Students must have a presentation on the basis of a proposed scientific paper listed at the beginning of the semester; additionally a written essay on the basis of scientific resources is required from the chosen topic (4-5 pages).

The minimum requirement for the mid-term and end-term tests respectively is 50%. Based on the score of the tests, the presentation and the essay separately:

Score	Grade
0-49	fail (1)
50-62	pass (2)
63-74	satisfactory (3)
75-87	good (4)
88-100	excellent (5)

The final grade is the weighted average of them (each test 30%; presentation 20%; essay 20%).

Person responsible for course: Dr. János Pénzes, associate professor, PhD

Lecturer: Dr. János Pénzes, PhD, associate professor, PhD

Title of course: Bases of political geography **Code**: TTGBE6507_EN	**ECTS Credit points:** 3

Type of teaching, contact hours

- lecture: 2 hours/week
- practice: -
- laboratory: -

Evaluation: exam

Workload (estimated), divided into contact hours:

- lecture: 28 hours
- practice: -
- laboratory: -
- home assignment: 32 hours
- preparation for the exam: 30 hours

Total: 90 hours

Year, semester: 3rd year, 1st semester

Its prerequisite(s): -

Further courses built on it: -

Topics of course

The syllabus can be divided into three parts. In the seminar's first third the students acquire the general knowledge in political geography. They learn how to analyse and interpret political phenomena using geographic methods. In the second third of the semester regional political geographic knowledge is presented. After the introduction of the global political developments Europe and its metro regions are discussed. Specific attention will be given to the conflicts based on ethnic, civilization religion and to tense areas. In the final third of the semester the students acquire such employment opportunities of the political geography which they may use in their everyday and professional life.

Literature

Compulsory:

- Huntington, S. P. (2016): The Clash of Civilizations and the Remaking of World Order. ISBN: 9780140267310.

Recommended:

- Francis Fukuyama (1992): The End of History and the Last Man. ISBN: 978-0743284554.

Schedule:

1st week

The "power" as a social relation, the instrument and purpose of political activities.

2nd week

The evolution of humanity, according to the evolutionist view; the barbarism, the savagery and the civilization.

3rd week

The ethnicities of the Historical Hungary. The sharpening of the nationality question in the XIX. century. Changes in the number and proportion of nationalities, the assimilation and the territorial changes.

4th week

Earth's civilizations - a historical overview from antiquity to the present.

5th week

Socio-economic characteristics of the 20th Europe century. The current main socio - economic - political - military problems of Europe.

6th week

The German Europe

7th week

The Neo-Latin -Europe nowadays: the French, Italians, Spanish, Romanians, Portugal, Walloons and Vlachs.

8th week.

The Slavs division into Eastern, Western and Southern Slavs.

9th week

The Baltic Europe: Estonia, Latvia and Lithuania.

10th week

The change of the national diversity of the Kingdom of Hungary from the state foundation to the Treaty of Trianon.

11th week

The history and significance of Hungarian social geographic research. The creation of modern Hungarian social geography.

12th week

The definition, purpose and role of the applied social geography in the urban development.

13th weeks

Presentation of the difference between sociology and social geography.

14th week.

The areas of applied social geographic analyses.

Requirements:

- Students must make a presentation or must write an essay (6-8 pages).
- Students must do an oral exam in the end of the semester.
- *for a signature*

Attendance at **lectures** is strongly recommended, but not mandatory.

Based on the score of the tests separately, the grade for the tests and the examination is given according to the following table:

Score	Grade
0-59	fail (1)
60-69	pass (2)
70-79	satisfactory (3)
80-89	good (4)
90-100	excellent (5)

If the score of any test is below 60, students can take a retake test in conformity with the EDUCATION AND EXAMINATION RULES AND REGULATIONS.

Person responsible for course: Dr. István Zoltán Pásztor, assistant professor, PhD

Lecturer: Dr. István Zoltán Pásztor, assistant professor, PhD

Title of course: Urban and regional policy. **Code**: TTGBE6508_EN	**ECTS Credit points:** 3

Type of teaching, contact hours

- lecture: 2 hours/week
- practice: -
- laboratory: -

Evaluation: exam

Workload (estimated), divided into contact hours:

- lecture: 28 hours
- practice: -
- laboratory: -
- home assignment: 12 hours
- preparation for the exam: 50 hours

Total: 90 hours

Year, semester: 1st year, 1st semester

Its prerequisite(s): Population and settlement geography I

Further courses built on it: -

Topics of course

Definition and importance of regional and urban policy. Phases and instruments of regional policy. Types of under-developed regions. Role of public administration in regional policy. Place marketing. Regional and rural policy of European Union. Importance of regional competitiveness, its determinants and indicators. The development of human and physical infrastructure as background of regional policy. Role of cross-border co-operation in regional policy.

Literature

Compulsory:

- Birch, E. L. (ed) (2009) The urban and regional planning. Routledge
- Nijkamp, P. et al. (ed) (2006) Regional planning. Edward Elgar Publishing Ltd.

Recommended:

- Stimson, R. J. – Stough, R. R. – Roberts, B. H. (2006) Regional economic development, Springer

Schedule:

1st week

Definition and importance of regional and urban policy

2nd week

Phases of regional policy: characteristics of different stages (modern and postmodern regional policy)

3rd week

Instruments of regional policy: financial supports, development of other elements

4th week

Types of under-developed regions

5th week

Role of public administration in regional policy

6th week

Regional policy of European Union

7th week

Rural policy of European Union

8th week

Tourism and regional policy

9th week

Regional competitiveness I: theoretical background, determinants of competitiveness

10th week

Regional competitiveness II: its indicators, current competitiveness of European regions

11th week

Role of cross-border co-operation in regional policy

12th week

Place marketing I: theoretical investigation, product-development stage

13th week

Place marketing II: communicational activities

14th week

Presentation of selected topics

Requirements:

- for a signature

Attendance at **lectures** is recommended, but not compulsory.

- for a grade

During the semester students have to write an essay dealing with a selected subject of course focussing attention on their home country.

The course ends in a written **examination**. Based on the result of examination and the quality of essay, the final grade is calculated as an average of them:

- the quality of the essay (15%)
- the result of the examination (85%)

The grade for the course is given according to the following table:

Score	Grade
0-50	fail (1)
50-59	pass (2)
60-74	satisfactory (3)
75-87	good (4)
88-100	excellent (5)

If the score of student result is below 50, students can take a new written examination in conformity with the EDUCATION AND EXAMINATION RULES AND REGULATIONS.

-an offered grade:

Person responsible for course: Prof. Dr. Gábor Kozma, university professor, DSc

Lecturer: Prof. Dr. Gábor Kozma, university professor, DSc

Title of course: Basic elements of economic geography **Code**: TTGBE6506_EN	**ECTS Credit points: 6**

Type of teaching, contact hours

- lecture: 3 hours/week
- practice: 2 hours/week
- laboratory: -

Evaluation: exam

Workload (estimated), divided into contact hours:

- lecture: 42 hours
- practice: 28 hours
- laboratory: -
- home assignment: 40 hours
- preparation for the exam: 70 hours

Total: 180 hours

Year, semester: 2ndt year, 1st semester

Its prerequisite(s): Population and settlement geography I

Further courses built on it: -

Topics of course

The place of economic geography in the system of sciences. The emergence and growth of the world economy. The impact of natural and social conditions on the economy. The players of the world economy. The role of the state in the modern economy. Geographical frameworks and characteristics of the operation of trans- and multinational companies. The impact of globalization on global economic processes. Integration forms and institutions in the world economy. The role of individuals and social groups in the development of the world economy. The Geographical Relationships of Modern Technology and Economic Development - Shrinking Earth, Expanding Opportunities.

The geography of the agricultural economy: the natural and social factors influencing the spatial nature of production, the territorial types of agricultural production. Geography of fossil and renewable energy sources, role in the world's energy economy, roles and strategies in the energy economy. Industrial geography: industry-building factors, geography of industries, industrialization, de-industrialization and re-industrialization, old and new industrial concentrations. Installer factors of services and geography. The geography of tourism, the geography of the creative economy, the geography of the transport and communications sector. Geography of production and consumption.

Literature

Compulsory:

Dicken, P.: Global Shift - Mapping the Changing Contours of the World Economy, Seventh Edition, Guilford Press, London, 619 p

Hagett, P. (2004): Geography – a global synthesis, Prentice Hall, 864 p

Knox, P. - Agnew, J. - Mccarthy, L. (2014): The Geography of the World Economy, 14th edition, Routledge, 496 p

Schedule:

Requirements:

Person responsible for course: Dr. Zsolt Radics, assistant professor, PhD
Lecturer: Dr. Zsolt Radics, assistant professor, PhD

Title of course: EU studies **Code**: TTTBE0030_EN	**ECTS Credit points: 1**

Type of teaching, contact hours

- lecture: 1 hour/week
- practice: -
- laboratory: -

Evaluation: exam

Workload (estimated), divided into contact hours:

- lecture: 14 hours
- practice: -
- laboratory: -
- home assignment: -
- preparation for the exam: 16 hours

Total: 30 hours

Year, semester: 1st year, 1st semester

Its prerequisite(s): -

Further courses built on it: -

Topics of course

The aim of the course is to give an overall picture for the students of the history of the development of the Community and the operation of its institutional system. It also aims at introducing the students to the enlargement process and the most important cooperation areas. On the level of EU policies, the issues of agriculture, regional policy, Economic and Monetary Union and the Schengen Area are discussed. The primary goal is that the future diploma holders have realistic knowledge about the functioning of the European Union, and of the international background of the Hungarian EU membership.

Literature

Bergmann, Julian – Niemann, Arne (2013): Theories of European Integration and their Contribution to the Study of European Foreign Policy, *Paper prepared for the 8th Pan-European Conference on International Relations, Warsaw 2013. p22.*
Ott, Andrea – Vos, Ellen (eds.) (2009): Fifty Years of European Integration: Foundations and Perspectives. T.M.C. Asser Press, Springer. 480pp. ISBN: 978-90-6704-254-3
Official website: https://europa.eu/european-union/about-eu_en

Schedule:

1st week

History of the Integration. Integration theories, stages of integration around the world. Specific features of the European integration process before the Second World War. Impacts of the Second World War on the history of the cooperation. Predecessors, impacts of the European Coal and Steel Community (ECSC) on the foundation of the European Economic Community. Steps towards the European Union.

2nd week

Process of the enlargement of the organisation. Preconditions of the enrolment of new members. Events of the period prior to the First Enlargement (1973). Steps, principles, causes and consequences of the Enlargements. Relationships between the decision-making mechanism and the Enlargement.

3rd week

Specific features of the enlargements after the turn of the millennium. Transformation of East Central Europe, and the unique features of its membership. Copenhagen criteria, pre-accession funds, prolonged negotiation process. Brexit.

4th week

History and principles of the creation of the institutional system. Taking-over the institutional system of the European Coal and Steel Community. Tasks of the most important institutions, operational mechanism, democratic deficit. Reform process of the institutional system, concepts laid down in the Constitutional Treaty. Decision-making in the EU.

5th week

Agricultural policy. History of the development of the CAP. The most important tools and sources of the funds. Horizontal measures. Current state of the common agricultural policy and its expected future. Reform attempts in agriculture. Hungary and common agricultural policy. Sharing the fish stocks of the seas.

6th week

Regional policy in the European Union. History of the regional policy. Regionalism – regionalisation in the EU Member States. General features of the regional policy. NUTS nomenclature. Regional disparities in the Community. Funds and main objectives. Decision-making in regional policy. Hungary and the regional policy.

7th week

Economic and Monetary Union (EMU). History of the European monetary co-operation. The European Monetary System (EMS). Role of the Maastricht Treaty in the monetary co-operation. Stages on the development of the Monetary Union. Convergence criteria. The euro and the currency market. Hungary and the Monetary Union.

8th week

Judicial co-operation in the Community. Legal order in the European Union. Role of the primary EU legislation in the European Community. European Community justice. Institutions serving the needs of judicial co-operation.

9th week

History of co-operations in home affairs. Schengen Convention. Regulations related to crossing state borders. Border checks. Checks between state borders, migration policy.

10th week

External relations. Principles of the common foreign trade policy. Autonomous import and export regulation. Issues related to the impediment to trade. External relations: African, Caribbean and Pacific Group of States (ACP), Global Mediterranean Policy, associated countries.

11th week

EU Budget: revenue side. Components of the EU budget and recent changes in the proportions. History of the EU budget. Budget revenues: duties, value-added tax (VAT), gross national product (GNP) sources.

12th week

Expenditures: agricultural policy, structural funds, external aid, research and development, pre-accession assistances, administrative expenditures. Economic characteristics. Budget procedure.

13th week

Migration and the European Union. Theoretical background to the migration crisis in 2015and its practical consequences. History of the migration routes and movements. Natural and social (political) causes contributing to the crisis situation.

14th week

Common vision for the European co-operation. Possible development paths in the future of the European Union. Federal Europe or Europe of Nations? Reform options. Problem-solving attempts. Brexit.
Requirements: *- for a signature* Attendance at **lectures** is recommended, but not compulsory. *- for a grade* The course ends in a **written examination**.
Person responsible for course: Dr. Károly Teperics, associate professor, PhD
Lecturer: Dr. Klára Czimre, assistant professor, PhD

Title of course: EU policies **Code**: TTGBG6501_EN	**ECTS Credit points: 2**

Type of teaching, contact hours

- lecture: -
- practice: 2 hour/week
- laboratory: -

Evaluation: exam

Workload (estimated), divided into contact hours:

- lecture: -
- practice: 28 hours
- laboratory: -
- home assignment: 32 hours
- preparation for the exam: -

Total: 60 hours

Year, semester: 2nd year, 2nd semester

Its prerequisite(s): -

Further courses built on it: -

Topics of course

The aim of the course is that the students majoring in Geographer and Geography teacher get acquainted with the system and operation of the EU policies based on the "European Union studies" which is obligatory for tall students attending the Faculty of Sciences. In addition to the agricultural, financial and regional policies, the students are also acquainted with the co-operations in the fields of home affairs, security policy and transport, external economic relations, interregional and environmental co-operations.

Literature

1. McCormick, J. – Olsen, J. (2016): The European Union: Politics and Policies. Avalon Publishing, New York. 402p.
2. Heinelt, H. – Münch, S. (eds.) (2018): Handbook of European Policies – Interpretive approaches to the EU. Edward Elgar Publishing, Camberley, Surrey. 416p.
3. Missiroli, A. (ed.) (2016): The EU and the world: players and policies post-Lisbon - a handbook. European Union, Institute for Security Studies, Paris. 211p.
4. Your Guide to policies, information and services. European Commission. https://ec.europa.eu/info/index_en

Schedule:

1st week

EU institutional system. Institutional issues. History, tasks and responsibilities of the EU institutions. Cooperation and interactions between the EU institutions.

2nd week

Regions and local development. The rules and operation of the EU regional policy. Discussion of the history of the regional policy and its contribution to the development on the different administrative levels.

3rd week

Economic and monetary policy. Budget: in figures, resources and expenditures. Economic and monetary affairs. The benefits of the euro. How countries join the euro area. Fraud prevention.

OLAF (European Anti-Fraud Office): investigations and customs operations. Key issues: cigarette smuggling, fake euros. Related funding opportunities.

4th week

Business. Competition: protection for small firms, rules, cases, checks and balances. Enterprise: industry is key to economic recovery, small businesses and entrepreneurship, EU-wide market for goods and services. Single Market: no barriers versus some remaining barriers, external border checks and their effects. Trade: trading as a world leader.

5th week

Employment and social affairs. Employment. Workers' rights. Social security and inclusion. Skills. Living and working abroad. Related EU funding programmes.

6th week

Agriculture, fisheries and food. Agriculture: changes in farm policy, future challenges, funding European farming. Food safety: accommodating diversity on the EU food market, animal diseases – containing outbreaks, keeping plants healthy, early warning system (RASFF), enforcement and control. Maritime affairs and fisheries: the importance of conservation, international cooperation, illegal fishing, sustainable fish consumption, economic benefits.

7th week

Justice and citizens' rights. EU citizenship: rights, moving and living in the EU, participating in the political life of the EU, petitions and complaints, consular protection. How to get involved in European policy-making? Consumers: interest protection, fair business practices, enforcing the rules. Justice and home affairs: guaranteeing fundamental rights, cooperation between judicial authorities, asylum and immigration, EU security strategy.

8th week

Enlargement and foreign affairs. Enlargement: brief history of enlargements, uniting East and West, joining procedure, candidate countries and potential candidates. Foreign and security policy: peace and security, diplomacy and partnership, peacekeeping missions, means of intervention, European Neighbourhood Policy, relations with Asia and Latin America, decision-making in EU foreign policy.

9th week

Culture and education. Audiovisual and media: services directive, promoting European films and programmes, public service broadcasting, safeguarding Europe's film heritage. Culture: Creative Europe Programme, Arts prizes in the EU, European capitals of culture. Education, training and youth: Erasmus+ Programme, Europass – standard CV, qualifications: comparability and recognition, vocational education and training, higher education, innovation and entrepreneurship. Multilingualism: EU official languages, the EUROPA website, regional and minority languages, language learning.

10th week

Science and Technology. Space: Copernicus – Earth observation, Galileo – satellite navigation, EGNOS – satellite augmentation system, space exploration, research. Digital economy and society: a consumer-friendly digital single market, driving economic growth, regulating the market. Research and innovation: EU funding, EU research and innovation bodies.

11th week

Environment and energy. Climate action: climate and energy targets for 2030. emissions trading, preparing for unavoidable climate change. Energy: Energy Union, EU energy targets. Environment: Green Growth, protecting nature, safeguarding of health and wellbeing of people living in the EU, global challenges.

12th week

Transport and travel. Transport: major challenges for European transport, EU achievements in transport, more competition, passenger rights, safe travel, infrastructure and funding.

13th week

Health and Sport. Health: diseases – prevention and response, pharmaceuticals, research and innovation, treatment abroad, international cooperation. Sport: Sport in Erasmus+, exercise for health, ant-doping action, social inclusion, integration and equal opportunities, good governance in sport.

14th week

Development and humanitarian aid. Development and cooperation. Humanitarian aid and civil protection. EU aid volunteers. Human rights: protecting fundamental rights within the EU, promoting human rights worldwide. **Customs and tax.** Customs: customs protection, preventing fraud, data on trade flows. Taxation: VAT and excise duties, corporate and income tax, tax revenue, tax in the Single Market, fair taxation across borders.

Requirements:

- *for a signature*
Attendance at the practices is compulsory.

- *for a grade*
There are tests taken during the first 10-15 minutes of the practices which are graded individually. At the end of the course the average is taken for the tests which makes up for the final grade. There are minor voluntary home works related to the actual topics which can be handed in on the week following the discussion of the relevant topic. One voluntary home work equals 0.1 which is added to the average taken from the short tests. Depending on the diligence of the students, it is possible to gather 0.5.

Person responsible for course: Dr. Klára Czimre, assistant professor, PhD

Lecturer: Dr. Klára Czimre, assistant professor, PhD
Dr. Károly Teperics, associate professor, PhD

Title of course: Global environmental problems **Code**: TTGBE6021_EN	**ECTS Credit points: 3**

Type of teaching, contact hours

- lecture: 2 hours/week
- practice: -
- laboratory: -

Evaluation: exam, mid-semester grade

Workload (estimated), divided into contact hours:

- lecture: 28 hours
- practice: -
- laboratory: -
- home assignment: -
- preparation for the exam: 62 hours

Total: 90 hours

Year, semester: 2nd year, 2nd semester

Its prerequisite(s): -

Further courses built on it: -

Topics of course

The operation and characteristics of environmental systems. The causes of problems in the operation of environmental systems. The causes and consequences of overpopulation. The main consequences of the Meadows world models. An overview of the factors of global climate change. The consequences of global climate change and possible solutions. Overview of IPPC reports. The causes and consequences of desertification. Overview of the global scale environmental pollution. Pollution of oceans. The causes, consequences and solutions of stratospheric ozone depletion. Causes and consequences of acidification of the environment.

Literature

Compulsory:

Bloom, D.E.; Harvey C.F.; Holbrook, N.M.; Holdren, J.P.; Jacob, J.D.; McCarthy, J.J.; Moorcroft, P.R.; Pringle, A.; Schrag, D.P.; Shaw, J.H.; Sprengler, J.D.; Wofsy, S.C. The Habitable Planet – A System Approach to Environmental Science. Annaberg Learner, 398 p.

Recommended literature:

Robbins, R. H. (2014) Global Problems and the Culture of Capitalism. Pearson Education Inc. 427 p.

Schedule:

1st week

Introduction to the course

2nd week

The operation and characteristics of environmental systems.

3rd week

The causes of problems in the operation of environmental systems.

4th week

The causes and consequences of overpopulation.

5th week

The main consequences of the Meadows world models.

6th week

An overview of the factors of global climate change.

7th week:

The consequences of global climate change and possible solutions.

8th week

Overview of IPPC reports.

9th week

The causes and consequences of desertification.

10th week

Overview of the global scale environmental pollution.

11th week

Pollution of oceans.

12th week

The causes, consequences and solutions of stratospheric ozone depletion.

13th week

Causes and consequences of acidification of the environment.

14th week

Evaluation of the course, instructions for the exam.

Requirements:

Attendance at **lectures** is recommended, but not compulsory.

The minimum requirement for the examination respectively is 51%. Based on the score of the tests separately, the grade for the tests and the examination is given according to the following table:

Score	Grade
0-50%	fail (1)
51-60%	pass (2)
61-70%	satisfactory (3)
71-85%	good (4)
86-100%	excellent (5)

If the score of any test is below 51%, students can take a retake test in conformity with the EDUCATION AND EXAMINATION RULES AND REGULATIONS.

Person responsible for course: Dr. György Szabó, associate professor, PhD

Lecturer: Dr. György Szabó, associate professor, PhD

Title of course: Global environmental problems **Code**: TTGBG6022_EN	**ECTS Credit points: 2**

Type of teaching, contact hours

- lecture: -
- practice: 2 hours/week
- laboratory: -

Evaluation: mid-semester grade

Workload (estimated), divided into contact hours:

- lecture: -
- practice: 28 hours
- laboratory: -
- home assignment: 32 hours
- preparation for the exam: -

Total: 60 hours

Year, semester: 2nd year, 2nd semester

Its prerequisite(s): -

Further courses built on it: -

Topics of course

The concept of ecological footprint, the method of calculating the ecological footprint. Students calculate their own ecological footprints and evaluate the result of the calculation. Students in the course are working on a freely chosen global environmental problem from the point of view that how this problem occurs in their own country. They write an essay on the subject and elaborate a presentation which will be presented to the students of the course. During the semester there will be several consultation in the framework of the course. During these consultations, every students will review the related scientific materials collected on the subject, then consult about the essay, and eventually discuss about the presentation with the leader of the course.

Literature

Compulsory:

Bloom, D.E.; Harvey C.F.; Holbrook, N.M.; Holdren, J.P.; Jacob, J.D.; McCarthy, J.J.; Moorcroft, P.R.; Pringle, A.; Schrag, D.P.; Shaw, J.H.; Sprengler, J.D.; Wofsy, S.C. The Habitable Planet – A System Approach to Environmental Science. Annaberg Learner, 398 p.

Recommended literature:

Robbins, R. H. (2014) Global Problems and the Culture of Capitalism. Pearson Education Inc. 427 p.

Schedule:

1st week

Introduction to the practical part of the course

2nd week

The concept of ecological footprint, the method of calculating the ecological footprint.

3rd week

Students calculate their own ecological footprints and evaluate the result of the calculation.

4th week

Students of the course choose a global or regional environmental problem, which is processed in the framework of the practice.

5th week

The content and methodological requirements of the essay and presentation.

6th week

First consultation on the sources of literature related to selected themes.

7th week:

Mid-term test

8th week

Second consultation on the sources of literature related to selected themes.

9th week

First consultation on a Study on a selected themes.

10th week

Second consultation on a Study on a selected themes.

11th week

First consultation on a Presentation on a selected themes.

12th week

Second consultation on a Presentation on a selected themes.

13th week

The first part of the students present their presentations.

14th week

The second part of the students present their presentations.

Requirements:

Participation at **practice classes** is compulsory. A student must attend the practice classes and may not miss more than three times during the semester. In case a student does so, the subject will not be signed and the student must repeat the course. Attendance at practice classes will be recorded by the practice leader. Being late is equivalent with an absence. In case of further absences, a medical certificate needs to be presented.

During the semester there is one test: the mid-term test in the 7th week. Students write an essay on the freely choosen subject and elaborate a presentation which will be presented for the students of the course. They will get a rating for the essay and the presentation. The average of the three grades will be a practical grade.

The minimum requirement for the mid-term test is 51%. Based on the score of the tests separately, the grade for the tests and the examination is given according to the following table:

Score	Grade
0-50%	fail (1)
51-60%	pass (2)
61-70%	satisfactory (3)
71-85%	good (4)
86-100%	excellent (5)

If the score of any test is below 51%, students can take a retake test in conformity with the EDUCATION AND EXAMINATION RULES AND REGULATIONS.

Person responsible for course: Dr. György Szabó, associate professor, PhD
Lecturer: Dr. György Szabó, associate professor, PhD

Title of course: Physical geography of Europe **Code**: TTGBE6007_EN	**ECTS Credit points:** 3

Type of teaching, contact hours

- lecture: 2 hours/week
- practice: -
- laboratory: -

Evaluation: exam

Workload (estimated), divided into contact hours:

- lecture: 28 hours
- practice: -
- laboratory: -
- home assignment: -
- preparation for the exam: 62 hours

Total: 90 hours

Year, semester: 2nd year, 2nd semester

Its prerequisite(s): Biogeography

Further courses built on it: -

Topics of course

Following the regular presentation of Europe's situation, its fragmentation, its general geological evolutionary history and its physical geo-observation phenomena, the complex presentation of large regions constitutes the semester's curriculum. Mostly, Scandinavia, the British Isles, the Netherlands, France, the Alps and the Carpathians, as well as the Iberian and Apennine Peninsula can be presented in more detail. Landscape scenarios highlight the likely consequences of climate change on land use and environmental problems.

Literature

Compulsory:

- Hess, D. (2017) McKnight's Physical Geography: A Landscape Appreciation
ISBN-13: 978-0134195421
- Koster, A.E. (2005) The Physical Geography of Western Europe. Oxford University Press
- Stanners, D. – Bordieau, P. (1995) Europe' environment – The Dobris Assessment, EEA. Copenhagen

Schedule:

1st week

General introduction to the physical geography of the European continent. History of its discovery. The problem of the borders. Vertical and horizontal dissection.

2nd week

Draft of the geological evolution, great orographical cycles. The ice age and its geomorphological consequences. Climate, zones and territories.

3rd week

Hydrology of the continent. Great rivers and lakes. Antropogen influences on the hydrological network. Bordering seas.

4th week

Biogeographical draft. Original and cultural vegetation. Biogeographical pattern, changes and development

5th week

Physical geographical and landscape ecological outline of Scandinavia. System of the natural endowments. Land use and environmental conflicts, landscape protection.

6th week

Physical geographical and landscape ecological outline of Great Britain and Ireland. System of the natural endowments. Land use and environmental conflicts, landscape protection.

7th week

Physical geographical and landscape ecological outline of The Netherlands. System of the natural endowments. Land use and environmental conflicts, landscape protection.

8th week

Physical geographical and landscape ecological outline of Denmark and N-Germany. System of the natural endowments. Land use and environmental conflicts, landscape protection.

9th week

Physical geographical and landscape ecological outline of N-France. System of the natural endowments. Land use and environmental conflicts, landscape protection.

10th week

Physical geographical and landscape ecological outline of S-Germany. System of the natural endowments. Land use and environmental conflicts, landscape protection.,

11th week

Physical geographical and landscape ecological outline of S-France. System of the natural endowments. Land use and environmental conflicts, landscape protection.

12th week

Physical geographical and landscape ecological outline of the Iberian Peninsula. System of the natural endowments. Land use and environmental conflicts, landscape protection.

13th week

Physical geographical and landscape ecological outline of the Alps Mts.. System of the natural endowments. Land use and environmental conflicts, landscape protection.

14th week

Physical geographical and landscape ecological outline of N-Italy. System of the natural endowments. Land use and environmental conflicts, landscape protection.

Requirements:

- for a signature
Attendance at **lectures** is recommended, but not compulsory.

- for a grade
The course ends in a written **examination**.

The grade for the course is given according to the following table:

Score	Grade
0-59	fail (1)
60-69	pass (2)
70-79	satisfactory (3)
80-89	good (4)
90-100	excellent (5)

If the score of student result is below 50, students can take a new written examination in conformity with the EDUCATION AND EXAMINATION RULES AND REGULATIONS.

-an offered grade:

Person responsible for course: Prof. Dr. Péter Csorba, university professor, DSc
Lecturer: Prof. Dr. Péter Csorba, university professor, DSc

Title of course: Physical geography of the world **Code**: TTGBE6008_EN	**ECTS Credit points: 3**

Type of teaching, contact hours

- lecture: 2 hours/week
- practice: -
- laboratory: -

Evaluation: exam

Workload (estimated), divided into contact hours:

- lecture: 28 hours
- practice: -
- laboratory: -
- home assignment: -
- preparation for the exam: 62 hours

Total: 90 hours

Year, semester: 3rd year, 1st semester

Its prerequisite(s): General Physical Geography III. (TTGBG7010)

Further courses built on it: -

Topics of course

Geographical overview of the continents with the exception of Europe. The phases of the paleozoic mountainous formation. Characteristic forms of continental development of the continents. Large-scale units and vertical structure of the continents. Overview of factors determine the Earth's climate. The evolution and peculiarities of the climate of Eurasia, North and South America, Africa, Australia and Antarctica. Review the Hydrography of Asia, Australia, Africa, North, Central and South America. Comprehensive characterization of the soils of the continents with the exception of Europe.

Literature

Compulsory literature:
Holden, J. (2011) Physical Geography – The Basics. Routledge Taylor & Francis Group, 176 p.

Recommended literature:
Dufort, B.; Erickson, S.; Hamilton, M.; Soderquist; D.; Zigary, S. (2016) World Geography. Michigan Open Book Project, 216 p.

Schedule:

1st week Introduction to the course

2nd week Geographical overview of the continents with the exception of Europe.

3rd week The phases of the paleozoic mountainous formation.

4th week Characteristic forms of continental development of the continents.

5th week Large-scale units and vertical structure of the continents.

6th week Overview of factors determine the Earth's climate.

7th week The evolution and peculiarities of the climate of Eurasia and Africa.

8th week The evolution and peculiarities of the climate of North and South America, Australia and Antarctica.

9th week Review the Hydrography of Eurasia.

10th week Review the Hydrography of and Australia and Africa.

11th week Review the Hydrography of North, Central and South America.

12th week Comprehensive characterization of the soils of tropical climate zone.

13th week Comprehensive characterization of the soils of moderate and cold climate zones.

14th week Evaluation of the course, instructions for the exam.

Requirements:

Attendance at **lectures** is recommended, but not compulsory.

The minimum requirement for the examination is 51%. Based on the score of the test, the grade is given according to the following table:

Score	Grade
0-50%	fail (1)
51-60%	pass (2)
61-70%	satisfactory (3)
71-85%	good (4)
86-100%	excellent (5)

If the score of any test is below 51%, students can take a retake test in conformity with the EDUCATION AND EXAMINATION RULES AND REGULATIONS.

Person responsible for course: Prof. Dr. Péter Csorba, university professor, DSc

Lecturer: Dr. György Szabó, associate professor, PhD
Dr. Tamás Tóth assintant professor, PhD.

Title of course: Global social and political problems **Code**: TTGBE6530_EN	**ECTS Credit points:** 5

Type of teaching, contact hours

- lecture: 2 hours/week
- practice: 2 hours/week
- laboratory: -

Evaluation: exam

Workload (estimated), divided into contact hours:

- lecture: 28 hours
- practice: 28 hours
- laboratory: -
- home assignment: 47 hours
- preparation for the exam: 47 hours

Total: 150 hours

Year, semester: 2nd year, 2nd semester

Its prerequisite(s): Basic elements of economic geography I.-II.

Further courses built on it: -

Topics of course

The course **offers** specific knowledge about the social and economic inequalities of the globalized world as well as about some theories explaining them. It is based on the fundamentals of social and economic geography and uses the approaches of the global value chain and global production network analysis as well as a diverse set of methods to demonstrate them. Within the framework of the practical lessons the students deal with sectoral and regional case studies related to this theoretical approach.
Content of the course: origins of the GVC / GPN framework, definition of global value chain and global production network, value chain governance, economic / social upgrading, interaction of clusters and value chains, sectoral value chain studies of food and energy supply, labor- and technology-intensive industries, tourism as well as higher value-added services. East Central Europe and global value chains: from the "Central European Manufacturing Core" to the Shared Service Centres.

Literature

- Coe, N. M. – Yeung, H. W. C. 2015: Global Production Networks: Theorizing Economic Development in an Interconnected World. Oxford University Press. ISBN: 978-0-19-870391-4
- De Marchi, V. – Di Maria, E. – Gereffi, G. (eds) 2018: Local Clusters in Global Value Chains. Linking Actors and Territories Through Manufacturing and Innovation. Routledge, London, New York. ISBN: 978-1-13-874286-4
- Dicken, P. 2011: Global Shift. Mapping the Changing Contours of the World Economy. Sage, Los Angeles, London, New Delhi, Singapore, Washington D.C.
- Gereffi, G. – Fernandez-Stark, K. 2016: Global value chain analysis: A primer. Duke Center on Globalization, Governance & Competitiveness.

Schedule:

1st week

Positioning global value chain research in economic geography and regional development policy.

2nd week

Theoretical roots of global value chain / global production network research.

3rd week

Global commodity chain and global value chain as framework of spatial socio-economic analysis.

4th week

Global production network as framework of spatial socio-economic analysis.

5th week

Developmental approach of value chain research: the question of economic and social upgrading.

6th week

Regional approach of value chain research: local / regional clusters in global value chains.

7th week

Sectoral case studies 1. Value chains of food production.

8th week

Sectoral case studies 2. Value chains of energy production.

9th week

Sectoral case studies 3. Value chains of labour-intensive industries.

10th week

Sectoral case studies 4. Value chains of technology-intensive industries.

11th week

Sectoral case studies 5. Value chains of tourism.

12th week

Sectoral case studies 6. Value chains of higher value added services.

13th week

Value chain research and East Central Europe: "the Central European Manufacturing Core".

14th week

Value chain research and East Central Europe: the case of the shared service centres.

Requirements:

- *for a signature*

Attendance at **lectures** is recommended, but not compulsory.

Participation at **practice classes** is compulsory. A student must attend the practice classes and may not miss more than three times during the semester. Students are also required to participate actively at the classes. Attendance and active participation will be recorded and evaluated by the teacher.

- *for a grade*

During the semester students have to make a **presentation** and – till the end of the semester – to write an **essay** dealing with a selected sectoral / regional case study related to the topic.

The course ends in an oral **examination**. Based on the result of examination as well as the quality of presentation and essay, the final grade is calculated as an average of them:

- the quality of the presentation and essay (50%)
- the result of the examination (50%)

The grade for the course is given according to the following table:

Score	Grade
0-49	fail (1)
50-59	pass (2)
60-74	satisfactory (3)
75-89	good (4)
90-100	excellent (5)

If the score of student result is below 50, students can take a new examination in conformity with the EDUCATION AND EXAMINATION RULES AND REGULATIONS.
Person responsible for course: Dr. Ernő Molnár, assistant professor, PhD
Lecturer: Dr. Ernő Molnár, assistant professor, PhD

Title of course: Social geography of Europe **Code**: TTGBE6510_EN	**ECTS Credit points:** 3

Type of teaching, contact hours

- lecture: 2 hours/week
- practice: -
- laboratory: -

Evaluation: exam

Workload (estimated), divided into contact hours:

- lecture: 28 hours
- practice: -
- laboratory: -
- home assignment: 12 hours
- preparation for the exam: 50 hours

Total: 90 hours

Year, semester: 2nd year, 2nd semester

Its prerequisite(s): Basic elements of Economic geography I-II

Further courses built on it: -

Topics of course

Introduction: Europe as a physical and human entity, placing Europe into the world. Demography of Europe: natural population growth and migration. Distribution of population: the pattern of languages, geography of religion. Urban development of Europe. Urbanization in Central Europe. Urban structure of European cities. Rural geography of Europe. Economic sectors of Europe: agriculture, industry, tertiary and quaternary sectors. Most important regions of Europe and their characteristics.

Literature

Compulsory:

- Bloulet, B. W. (2012): The EU and neighbors: A geography of Europe in the modern world. John Wiley and Sons
- Murphy, A. B. – Jordan-Bychkov, T. G. – Bychkova-Jordan, B. (2009): The European cultural area. Rowman and Littlefield Publishing

Recommended:

- Nicholas, D. (2003) Urban Europe, 1100-1700. Palgrave, Macmillan

Schedule:

1st week

Introduction: Europe as a physical and human entity, placing Europe into the world.

2nd week

Demography of Europe I - natural population growth: number of births and deaths, future trends.

3rd week

Demography of Europe II – migration: emigration, immigration, current trends and effects of migration,

4th week

Demography of Europe III: age structure of population, population density

5th week

Distribution of population - the pattern of languages I: history of languages, Romance and Germanic languages.

6th week

Distribution of population - the pattern of languages II: Slavic languages, other Indo-European languages, Non-Indo-European languages

7th week

Distribution of population - geography of religion: history of Christianity and its fragmentation (Roman Catholicism, Protestantism, Eastern Orthodoxy), Non-Christian in Europe (e.g. Islam, Judaism)

8th week

Urban development of Europe: medieval, industrial and postindustrial city

9th week

Urbanization in Central Europe (special characteristics of this region), Urban structure of European cities (British city, Nordic city, Mediterranean city, Eastern European city, Central European city)

10th week

Rural settlements in Europe: origin of rural settlements, types of rural settlements

11th week

Agriculture of Europe: physical background of agriculture, specialized types of agriculture in modern Europe (e.g. market gardening, dairying, cash grains)

12th week

Industry of Europe: mining, energy production, different sectors of manufacturing

13th week

The service and information economy in Europe: transportation, communication, tourism, the quaternary sector

14th week

Most important regions of Europe and their characteristics

Requirements:

- for a signature
Attendance at **lectures** is recommended, but not compulsory.

- for a grade
During the semester students have to write an essay dealing with a selected subject of course.

The course ends in a written **examination**. Based on the result of examination and the quality of essay, the final grade is calculated as an average of them:

- the quality of the essay (15%)
- the result of the examination (85%)

The grade for the course is given according to the following table:

Score	Grade
0-50	fail (1)
50-59	pass (2)
60-74	satisfactory (3)
75-87	good (4)
88-100	excellent (5)

If the score of student result is below 50, students can take a new written examination in conformity with the EDUCATION AND EXAMINATION RULES AND REGULATIONS.

-an offered grade:

Person responsible for course: Dr. Gábor Kozma, university professor, DSc
Lecturer: Dr. Gábor Kozma, university professor, DSc

Title of course: Social geography of the World **Code**: TTGBE6511_EN	**ECTS Credit points: 3**

Type of teaching, contact hours

- lecture: 2 hours/week
- practice: -
- laboratory: -

Evaluation: written test of topography and written quiz (10%) needed to be passed before the oral exam (90%)

Workload (estimated), divided into contact hours:

- lecture: 28 hours
- practice: -
- laboratory: -
- home assignment: 22 hours
- preparation for the exam: 40 hours

Total: 90 hours

Year, semester: 3rd year, 1st semester

Its prerequisite(s):

Further courses built on it: -

Topics of course

The objective of the course is to provide a comprehensive overview about the demographic processes, ethnic-religious situation, natural resources, global economic significance and geopolitical status of countries of the world. Specific territorial problems are emphasized which through global processes and relationships could be perceived.

Literature

Johnson, Douglas - Haarmann, Viola - Johnson, Merrill 2014: World Regional Geography. A development approach. – Pearson. 672 p. (ISBN 9780321939647)

Know, Paul - Marston, Sallie 2015: Human Geography: Places and Regions in Global Context (seventh edition). – Pearson. 512 p. (ISBN 9781292028606)

Rowntree, Lester - Lewis, Martin - Price, Marie - Wyckoff, William 2016: Globalization and Diversity (fifth edition). – Pearson. 560 p. (ISBN 9780134075044)

Issues of National Geographic: https://www.nationalgeographic.org

Schedule:

1st week

Siberia

2nd week

Post-Soviet countries of Central Asia

3rd week

Turkey and the countries of the Caucasus

4th week

The states of the Middle East

5th week

Countries on the subcontinent of India

6th week
China
7th week
Japan
8th week
Canada and Australia
9th week
United States of America
10th week
Brazil and Mexico
11th week
Latin America
12th week
South and East Africa
13th week
Middle and Northeast Africa
14th week
North Africa

Requirements:

Participation at lectures is proposed.

The course is evaluated by oral exam in which a written topography test (with blank map) and a written quiz basing on the themes of the lectures are needed to be passed before the oral exam. The subject matters are basing on the lectures and the additional supplements provided.

Score	Grade
0-49	fail (1)
50-62	pass (2)
63-74	satisfactory (3)
75-87	good (4)
88-100	excellent (5)

The final grade is the weighted average of the exam (90%) and the written tests (10%).

Person responsible for course: Dr. János Pénzes, assistant professor, PhD

Lecturer: Dr. János Pénzes, assistant professor, PhD

Title of course: Geographical databases **Code**: TTGBE7013_EN	**ECTS Credit points: 1**

Type of teaching, contact hours

- lecture: 1 hours/week
- practice: -
- laboratory: -

Evaluation: exam

Workload (estimated), divided into contact hours:

- lecture: 14 hours
- practice: -
- laboratory: -
- home assignment: -
- preparation for the exam: 16 hours

Total: 30 hours

Year, semester: 2nd year, 1st semester

Its prerequisite(s): -

Further courses built on it: -

Topics of course

Firstly the student learn the types of data measurement scales: nominal, ordinal, interval and ratio data; with the sampling and sampling design, sampling and measurement error, the data matrix, furthermore with the outlier and missing data issues. Secondly, the students will learn the main data sources of map and tabular datasets of meteorology, hydrology, soil science, geology and social geography.

Literature

- Hardy, A.M. - Bryman, A. (2004): Handbook of data analysis. SAGE, 728 p.
- de Smith, M. J. (2015): STATSREF: Statistical Analysis Handbook - a web-based statistics resource. The Winchelsea Press, Winchelsea, UK
- Carpineto, C. - Romano, G. (2004): Concept Data Analysis: Therory and Applications. Wiley.

Schedule:

1st week Introduction to data science

2nd week How to create appropriate data matrix

3rd week Principles of data collection (sampling: air, water, soil).

4th week Principles of data collection (sampling: air, water, soil)

5th week Principles of creating questioners

6th week Typical mistakes of data collection

7th week Midterm exam.

8th week Databases of meteorology.

9th week Databases of hydrology.

10th week Databases of soil science.

11th week Databases of geology.

12th week Databases of land cover.

13th week Databases of social and economic geography.

14th week Grade-offering exam.

Requirements:
Lecture:

The minimum requirement for the examination is 50% from the midterm and closing tests. Based on the summarized score of the test the grade for the examination is given according to the following table:

Score	Grade
0-49%	fail (1)
50-59%	pass (2)
60-72%	satisfactory (3)
73-84%	good (4)
85-100%	excellent (5)

If the score of any test is below 50, students can take a retake test in conformity with the EDUCATION AND EXAMINATION RULES AND REGULATIONS.

Person responsible for course: Prof. dr. Szabó Szilárd, university professor, DSc

Lecturer: Dr. György Szabó, associate professor, PhD

Title of course: Geographical databases practice **Code**: TTGBL7014_EN	**ECTS Credit points: 1**

Type of teaching, contact hours

- lecture: -
- practice: 1 hours/week
- laboratory: -

Evaluation: mid-semester grade

Workload (estimated), divided into contact hours:

- lecture: -
- practice: 14 hours
- laboratory: -
- home assignment: 6 hours
- preparation for the exam: 10 hours

Total: 30 hours

Year, semester: 2nd year, 1st semester

Its prerequisite(s): -

Further courses built on it: -

Topics of course

In the frame of the course-unit students learn the relevant printed sources of databases and also those one which can be found on the internet. They learn preparation of the analyzable data matrix and, with help of the previously learned knowledge (Geomatics) they practice the data analysis. A relevant aim of the subject is to practice of data analysis and the interpretation of the results.

Literature

- Field, A. (2009). Discovering statistics. SAGE Publications, London, 821 p.
- Hammer, O. (2018): PAleontological STatistics (PAST). Reference Manual, Natural History Museum University of Oslo, https://folk.uio.no/ohammer/past/past3manual.pdf

Schedule:

1st week Mean, median, normal distribution

2nd week Standard deviation, interquartile range

3rd week Outliers (how to handle outliers)

4th week Hypothesis testing I.

5th week Hypothesis testing II.

6th week Midterm summary, practice

7th week Midterm written exam

8th week Revealing connection between datasets

9th week Correlation and regression

10th week Determination of the residual error of the regression

11th week Practice

12th week Problem-oriented practice with geographical examples

13th week Problem-oriented practice with geographical examples

14th week Final written exam

Requirements:

Practice:

Participation at classes is compulsory. A student must attend the courses and may not miss more than three times during the semester. In case a student does so, the subject will not be signed and the student must repeat the course.

During the semester there is one practical test. It can be completed in the 14th week.

The minimum score is 50%. Based on the score of the test, the grade for the test is given according to the following table:

Score	Grade
0-49	fail (1)
50-59	pass (2)
60-72	satisfactory (3)
73-84	good (4)
85-100	excellent (5)

If the score of any test is below 50, students can take a retake test in conformity with the EDUCATION AND EXAMINATION RULES AND REGULATIONS.

Person responsible for course: Prof. dr. Szabó Szilárd, university professor, DSc

Lecturer: Dr. György Szabó, associate professor, PhD

Title of course: Raster based GIS **Code**: TTGBL7015_EN	**ECTS Credit points:** 2

Type of teaching, contact hours

- lecture: -
- practice: -
- laboratory: 2 hours/week

Evaluation: mid-semester grade

Workload (estimated), divided into contact hours:

- lecture: -
- practice: -
- laboratory: 28 hours
- home assignment: 32 hours
- preparation for the exam: -

Total: 60 hours

Year, semester: 2nd year, 2nd semester

Its prerequisite(s):

Further courses built on it: -

Topics of course

The aim is to provide comprehensive knowledge of the main features of raster databases and to learn the features of raster-based data systems. In addition, they are also able to master the steps of data management, mainly by using remote sensing data, so they also know the basic cornerstones of processing remote sensed images.

Literature

Lillesand, Kiefer (1994): Remote Sensing and Image Interpretation. ISBN 0-471-57783-9.
Campbell (2011) Introduction to Remote Sensing. ISBN 0-7484-0663-8
Khorram, Wiele, Koch, Nelson, Potts (2016) Principles of Applied Remote Sensing. ISBN 978-3-319-22560-9.

Schedule:

1st week Introduction

2nd week Data types, main features of data types

3rd week Raster based data in software. Zoom, display, metadata.

4th week Contrast of raster data, histogram

5th week Moving windows, filters

6th week Unsupervised classification

7th week Discussion of previous matters

8th week Supervised classification I.

9th week Supervised classification II.

10th week Boolean processes

11th week Building of raster database, rasterizing vector data

12th week Digital elevation models

13th week Questions

14th week Referring

Requirements:

Participation at classes is compulsory. A student must attend the courses and may not miss more than three times during the semester. In case a student does so, the subject will not be signed and the student must repeat the course

Students have to submit a homework, which contains a comprehensive interpretation of a satellite image, based on the course.

The end-term grade contains the average of submitted homework and the grade of referring from software knowledge.

Person responsible for course: Dr. Gergely Szabó, assistant professor, PhD

Lecturer: Dr. Gergely Szabó, assistant professor, PhD

Title of course: Remote sensing in geography **Code**: TTGBL7024_EN	**ECTS Credit points:** 2

Type of teaching, contact hours

- lecture: -
- practice: 2 hours/week
- laboratory: -

Evaluation: practical grade

Workload (estimated), divided into contact hours:

- lecture: -
- practice: 28 hours
- laboratory: -
- home assignment: 32 hours
- preparation for the exam: -

Total: 60 hours

Year, semester: 3rd year, 2nd semester

Its prerequisite(s):

Further courses built on it: -

Topics of course

Students learn to apply the remotely-sensed databases and use them in different field of Geography. Such as comparative study of remotely sensed images; time series; decision support with satellite images; use of different featured remote sensed databases (e.g. source, resolution, etc.). Projection transformation of satellite images; decision support.

Literature

Lillesand, Kiefer (1994): Remote Sensing and Image Interpretation. ISBN 0-471-57783-9.
Campbell (2011) Introduction to Remote Sensing. ISBN 0-7484-0663-8
Khorram, Wiele, Koch, Nelson, Potts (2016) Principles of Applied Remote Sensing. ISBN 978-3-319-22560-9.

Schedule:

1st week Introduction

2nd week Date sources in remote sensing

3rd week Time series analysis - basics

4th week Time series analysis – information-extraction

5th week Decision support based on remote sensing

6th week Indices in remote sensing

7th week Error matrices

8th week Projection transformations - basics

9th week Projection transformation in remotely sensed data

10th week Hyperspectral remote sensing

11th week Quantitative interpretation of satellite images

12th week Digital elevation models in remote sensing

13th week Questions

14th week Referring

Requirements:

Participation at classes is compulsory. A student must attend the courses and may not miss more than three times during the semester. In case a student does so, the subject will not be signed and the student must repeat the course

Students have to submit a homework, which contains a historical or recent geographical topic (e.g. retreating glaciers, shrinking lakes, etc.), showing with remotely sensed data.

The end-term grade contains the average of submitted homework paper.

Person responsible for course: Dr. Gergely Szabó, assistant professor, PhD

Lecturer: Dr. Gergely Szabó, assistant professor, PhD

Title of course: Digital terrain modelling **Code**: TTGBG7020_EN	**ECTS Credit points:** 2

Type of teaching, contact hours

- lecture: -
- practice: 2 hours/week
- laboratory: -

Evaluation: mid-semester grade

Workload (estimated), divided into contact hours:

- lecture: -
- practice: 28 hours
- laboratory: -
- home assignment: 16 hours
- preparation for the exam: 16 hours

Total: 60 hours

Year, semester: 3nd year, 1st semester

Its prerequisite(s): -

Further courses built on it: -

Topics of course

The course aims to give the students an overview of DEM applications and analysis in geo-scientific research and investigation. You will gain experience in working with different digital tools for geographical information handling. This course focuses on the generation, analysis, classification and application of digital elevation models (DEMs) in combination with remotely sensed data on environmental topics like landform distribution, slope hazards and other processes, both terrestrial and sub-marine. The course gives specialised lectures and training in: geomorphometrical description of the earth surface, generation of DEMs and interpolation procedures, terrain parameterisation, topographic classification, applications of topographic analysis on geomorphological processes and slope hazard.

Literature

Compulsory:

- Li, Z. - Zhu, C. – Gold, C. (2005): Digital terrain modelling: principlies and methodology. CRC Press. p. 340
- Wilson, J.P. – Gallant J.C. (2000): Terrain analysis: principles and Applications. John Wiley and Sons Inc., p. 520.

Recommended:

- Hengl, T. – Reuter, H.I. (2008): Geomorphometry – Concepts, Software, Applications. Elsevier, p. 722.

Schedule:

1st week

Introduction, theoretical background. Study and aims of geomorphometrical analyses, clarify of fundamental concepts, trends and aspects in terrain analyses.

2nd week

Morphometrical parameters, choosing and combination of parameters, relative qualifying methods, operations with sets, choosing of resolutions. Types of status, process and potential maps. Classical, one-factor morphometrical mapping.

3rd week

Types, analyses and legend of geomorphological maps. Evaluating geomorphological maps (morphometrical, morphogenetical).

4th week

Special (derived and complex) geomorphological maps (hydrological, forecast about meander wandering, geomorphological relief qualification).

5th week

Landscape and field rating (methods, factors, agricultural and forestry rating maps).

6th week

Interpretation of digital terrain models, possible types of DTM-s. Visualization possibilities of DTMs (contour maps, hypsometrical representation, shaded relief, 3D-visualization). Preparing of digital terrain models.

7th week

Global database of DTMs (SRTEN, ASTER, AUDAM) and their features.

8th week

Software applications I. Introduction to applied software and basic user steps. Downloading DTMs from the WEB. Visualization of DTMs, implementation raster and topological analyses.

9th week

Software applications II. Visualization of basic morphometrical parameters (aspect, slope), reclassifying parameters. The connection between geomorphic features and derived parameters. Preparing path profile.

10th week

Software applications III. Raster analyses: area and perimeter calculations, examination of elevation data distribution with histogram. Visibility analyses. Using of different neighborhood filters (max., min., median).

11th week

Software application IV. Hydrological analyses (generating streamline structure, watershed analyses, 3D visualisation and analyses, flood modeling).

12th week

Software applications V. Computing of complex geomorphometrical parameters (Hammond-index, HWI-index, TPI-index).

13th week

Practice, systematization of knowledge, discussing of problems.

14th week

Written exam.

Requirements:

- for a grade

Attendance at **lectures** is compulsory.

A student must attend the practice classes and may not miss more than three times during the semester. In case a student does so, the subject will not be signed and the student must repeat the course. Attendance at practice classes will be recorded by the practice leader. Being late is equivalent with an absence. In case of further absences, a medical certificate needs to be presented. Missed practice classes should be made up for at a later date, to be discussed with the tutor. Students are required to bring the drawing tasks and drawing instruments of the course to each practice class. Active participation is evaluated by the teacher in every class. If a student's behavior or conduct doesn't meet the requirements of active participation, the teacher may evaluate his/her participation as an absence because of the lack of active participation in class.

Students have to **submit all the two designing tasks** as scheduled minimum on a sufficient level.

During the semester there are two tests: the mid-term test in the 8th week and the end-term test in the 15th week. Students have to sit for the tests.

The minimum requirement for the mid-term and end-term tests and the examination respectively is 60%. Based on the score of the tests separately, the grade for the tests and the examination is given according to the following table:

Score	Grade
0-59	fail (1)
60-69	pass (2)
70-79	satisfactory (3)
80-89	good (4)
90-100	excellent (5)

If the score of any test is below 60, students can take a retake test in conformity with the EDUCATION AND EXAMINATION RULES AND REGULATIONS.

Person responsible for course: Dr. Gábor Négyesi, assistant professor, PhD

Lecturer: Dr. Gábor Négyesi, assistant professor, PhD
Dr. Boglárka Balázs, assistant professor, PhD

Title of course: Geoecology **Code**: TTGBE6011_EN	**ECTS Credit points:** 3

Type of teaching, contact hours

- lecture: 1 hours/week
- practice: 2 hours/week
- laboratory: -

Evaluation: mid-semester grade

Workload (estimated), divided into contact hours:

- lecture: 14 hours
- practice: 28 hours
- laboratory: -
- home assignment: 18 hours
- preparation for the exam: 50 hours

Total: 110 hours

Year, semester: 2nd year, 1st semester

Its prerequisite(s): Soil geography TTGBE6001_EN

Further courses built on it: Landscape ecology TTGBE6008_EN

Topics of course

The aim of the course is to introduce students into the theory and practice of analyzing spatial patterns and mosaics of natural ecosystems shaped by abiotic factors (heat, light, water, relief, soil, base rock, etc.). The characteristics of local biogeochemical cycles especially of water and coal, and the geoecological characterization of typical of habitats in Central Europe. Geoecological studies and their space-time scale. The practical part of the course is to know the most important geo-ecological factors in field data collection, sampling and measurement methods. It is an indispensable prerequisite for indicating the living phenomena required for field sampling methods, for the interpretation, representation and analysis of field data. Introduction into the methods of field data collection, sampling and measurements. The possibilities of data processing, depicting, interpretation and analysis. Mapping of ecosystems.

Literature

Compulsory:

- Hugett, R. J. (1995): Geoecology – an evolutionary approach, Routledge, London, 320.
- Kruckeberg, A. R. (2002): Geology and plant life: The effects of landforms and rock types on plants. Seattle, Univ. of Washington Press. ISBN: 0–295–98203–9, 304.

Recommended:

Schedule:

lectures

1st week

Subject of geoecology. Approaches, research methods.

2nd week

Time-space scale of geoecological studies. Ecotops as units of geoecological studies.

3rd week

Role of topography and morphology of the surface in shapeing of ecotops.

4th week

Local water cycles of ecotops.
5th week
Local carbon cycles of ecotops.
6th week
Local cycles of main plant nutrients and microelements in ecotops.
7th week
Functioning of ecotops. Types of Central European ecotops.
8th week
Peatlands and bogs and their typical processes.
9th week
Fluvial and riverine ecotopes.
10th week
Grassland ecotops on plain landscapes. Differences according the parent material of soils.
11th week
Forests and forest steppe ecotops in plain landscapes. Interactions with groundwater table.
12th week
Slopeing forested ecotops and functioning. Effects of base rock quality.
13th week
Lacustrine ecotops.
14th week
Mapping of spatial pattern of ecotop-complexes.

practice
1st week
Sampling designe, orientation with sampling tools in the field.
2nd week
Evaluation of landforms, topography and morphology.
3rd week
Mapping of base rock and parent material diversity.
4th week
Soil sampling of surface samples, field evaluation. Soils field data collection.
5th week
Groundwater sampling. Tools, methods, field practice, database evaluation.
6th week
Sampling of vegetation I. Grasslands. Data collecting, evaluation.
7th week
Sampling of vegetation I. Forests. Data collecting, evaluation.
8th week
Sampling of animal communities. I. Insects.
9th week
Sampling of animal communities. II. Vertebrates.
10th week
Ecotop mapping. Delineation of habitats and ecotops.
11th week

Compilation of geoecological maps based on field data collection.

12th week

Application of databases from maps and remote sensed data in ecotope mapping.

13th week

Evaluation of geoecological surveys from conservational point of view and regarding the ecosystem services.

14th week

Mapping and evaluation of ecosystem interactions and networking.

Requirements:

- for a signature

Attendance at **lectures** is recommended, but not compulsory.

- for a grade

During the semester students have to write an essay dealing with a selected subject of course focussing attention on their home country.

The course ends in a written **examination**. Based on the result of examination and the quality of essay, the final grade is calculated as an average of them:

- the quality of the essay (15%)
- the result of the examination (85%)

The grade for the course is given according to the following table:

Score	Grade
0-50	fail (1)
50-59	pass (2)
60-74	satisfactory (3)
75-87	good (4)
88-100	excellent (5)

If the score of student result is below 50, students can take a new written examination in conformity with the EDUCATION AND EXAMINATION RULES AND REGULATIONS.

-an offered grade:

Person responsible for course: Dr. Tibor Novák, associate professor, PhD

Lecturer: Dr. Tibor Novák, associate professor, PhD

Title of course: Bases of environmental management **Code**: TTGBG6014_EN	**ECTS Credit points:** 3

Type of teaching, contact hours

- lecture: 1 hours/week
- practice: 2 hours/week
- laboratory: -

Evaluation: term mark

Workload (estimated), divided into contact hours:

- lecture: 14 hours
- practice: 28 hours
- laboratory: -
- home assignment: 24 hours
- preparation for the exam: 24 hours

Total: 90 hours

Year, semester: 2nd year, 2nd semester

Its prerequisite(s):

Further courses built on it: -

Topics of course

Students will learn the tools of environmental management, environmental planning, environmental development, and environmentally friendly technologies. We deal with the purpose of waste management (sustainable natural resource management), its main principles and priorities. Students will learn about the technological processes and technical possibilities of communal solid waste management from recycling and energy utilization to disposal. We deal with communal waste management tasks and their costs. Students will learn about the environmental impacts of production processes, low-waste (clean) technologies, the most important operations for managing gas (steam), liquid and solid industrial waste. We also deal with the technical possibilities of environmental energetics.

Literature

George Tchobanoglous – Frank Kreith: Handbook of solid waste management (2002)
L.F.M. Rebellon: Waste management – an integrated vision (2012) ISBN 978-953-51-0795-8

Schedule:

1st week

Object and tools of environmental management

2nd week

General questions on waste management (its purpose and main principles, priority order, strategy).

3rd week

Technological processes and technical possibilities of municipal solid waste management.

4th week

Pre-treatment of waste, technology processes in sorting. Technological steps of utilization in its material

5th week

Composting and biogas production.

6th week

Thermal treatment, pyrolysis, plasma technology. Rules, technological conditions and monitoring of landfill. Environmental conditions for landfill site selection.

7th week

The system of municipal solid waste management in Hungary and in the EU. Regulation on municipal solid waste. Long-term tasks of municipal solid waste management.

8th week

Environmental impacts of production processes, clean technologies.

9th week

The most important ways to handle gases (vapor).

10th week

Technological possibilities for reducing water pollution. Wastewater treatment technologies.

11th week

Energy consumption and the development of energy sources; The first pillar of environmentally conscious energy management is to reduce emissions that are harmful to the environment.

12th week

The second pillar of environmentally conscious energy management: renewable energy sources.

13th week

The energetic utilization of biomass.

14th week

The third pillar of environmentally conscious energy management: to increase energy efficiency.

Requirements:

- for a signature

Attendance at **lectures** is recommended, but not compulsory.

Participation at **practice classes** is compulsory. A student must attend the practice classes and may not miss more than three times during the semester. In case a student does so, the subject will not be signed and the student must repeat the course.

-for a grade

During the semester there is a task to be submitted and an end-term test in the 15th week.

The term mark is calculated as an average of them:

- the result of task to be submitted
- the result of the end-term test

The minimum requirement for the end-term test respectively is 60%. Based on the score of the test separately, the grade for the test and the task to be submitted is given according to the following table:

Score	Grade
0-59	fail (1)
60-69	pass (2)
70-79	satisfactory (3)
80-89	good (4)
90-100	excellent (5)

Person responsible for course: Dr. István Fazekas, assistant professor, PhD

Lecturer: Dr. István Fazekas, assistant professor, PhD

Title of course: Regional environmental protection **Code**: TTGBE6009_EN	**ECTS Credit points:** 3

Type of teaching, contact hours

- lecture: 2 hours/week
- practice: -
- laboratory: -

Evaluation: practical grade

Workload (estimated), divided into contact hours:

- lecture: 28 hours
- practice: -
- laboratory: -
- home assignment: -
- preparation for the exam: 62 hours

Total: 90 hours

Year, semester: 2nd year, 1st semester

Its prerequisite(s): -

Further courses built on it: -

Topics of course

Content and subjects of the course: The interaction between man and the natural environment. Relationship between social economic development and environmental impacts. The concept of ecological footprint. The natural types of European forests. The causes and consequences of forest degradation. The environmental impacts of afforestation and logging. Regional pollution of the air in the world. The evolution of air pollution. Reasons and expected impacts of climate change in the world. Combating climate change. Pollution of surface and groundwater on continents. Soil status of the continents, the main soil degradation factors. Surface and groundwater status developments in Hungary. The state of the soils in Hungary.

Literature

Compulsory:

Harper, C., & Snowden, M. (2017): Environment and society: Human perspectives on environmental issues. Taylor & Francis. p. 466
Hardoy, J. E., Mitlin, D., & Satterthwaite, D. (2013): Environmental problems in an urbanizing world: finding solutions in cities in Africa, Asia and Latin America.
Tedsen, E., & Kraemer, R. A. Regional environmental challenges and solutions in the Pan-Atlantic Space.
Howes S. & Wyrwoll P. (2012): Asia's Wicked Environmental Problems

Schedule:

1st week

Description of the semester work. Introduction of the interaction between man and the natural environment.

2nd week

Relationship between social economic development and environmental impacts. The concept and evolution of ecological footprint.

3rd week

The natural types of European forests. The causes and consequences of forest degradation.

4th week

The environmental impacts of afforestation and the effects of forest management on tropical forests.

5th week

Regional background pollution of air in the world I. Sources of sulfur dioxide and nitrogen oxides emissions, environmental impacts.

6th week

Regional background pollution of air in the world II. The role of aerosols, smoke types, heavy metals, tropospheric and stratospheric ozone in the evolution of air state. Territorial types of air pollution.

7th week

Evaluating the causes and impacts of climate change. The fight against climate change.

8th week

Pollution of surface water and groundwater in the world I. Sources of organic matter load on water, investigation of the temporal changes of pollution.

9th week

Pollution of surface and groundwater in the world II. The effects of the use of fertilizers, plant protection products and toxic substances on water quality. The acidification of waters.

10th week

Soil status in the world. The main soil degradation factors (water erosion, deflation, soil compaction, water, acidification, secondary salinization, pollution) are presented.

11th week

The evolution of air pollution in Hungary. Time trends of the release of the main air pollutants, analysis of the background factors of change.

12th week

Surface and groundwater status developments in Hungary. Description of the national system of water qualification. Important sources of pollution, analysis of factors influencing the water quality.

13th week

Surface and groundwater status developments in Hungary. Description of the national system of water qualification. Important sources of pollution, analysis of factors influencing the water quality.

14th week

Consultation. Evaluation of the semester work, a precise description of the examination requirements.

Requirements:
Attendance at **lectures** is recommended, but not compulsory.

The course ends in an **examination**.

The minimum requirement for the examination is 60%. Based on the score of the examination is given according to the following table:

Score	Grade
0-59	fail (1)
60-69	pass (2)
70-79	satisfactory (3)
80-89	good (4)

90-100	excellent (5)
Person responsible for course: Dr. György Szabó, associate professor, PhD	
Lecturer: Tamás Mester, assistant lecturer	

Title of course: Regional environmental protection - practice **Code**: TTGBG6010_EN	**ECTS Credit points:** 1

Type of teaching, contact hours

- lecture: -
- practice: 1 hours/week
- laboratory: -

Evaluation: practical grade

Workload (estimated), divided into contact hours:

- lecture: -
- practice: 14 hours
- laboratory: -
- home assignment: 16 hours
- preparation for the exam: -

Total: 30 hours

Year, semester: 2nd year, 1st semester

Its prerequisite(s): -

Further courses built on it: -

Topics of course

The concept and significance of ecological footprint. Methodology for calculating ecological footprint. Europe's natural features at the beginning of the Holocene. The interactions between man and his environment from the Paleolithic to the metals till the beginning. Interactions between man and his environment from the machining of metals to the middle ages. Natural Disasters in Ancient Europe. Man and his environment from the beginning of the Middle Ages to the Industrial Revolution. The environmental impacts of the first and second industrial revolution. Man and his environment in the 20th century. The environmental impacts of modern agriculture, energy production and transport. The urban environment - a general assessment, the air pollution of cities. Water supply, water quality, noise pollution of major cities of the world. The housing stock of world's major cities and land use in urban areas, the quantity and management of urban waste. The student's presentation on the above topics, then the evaluation of the performance and the supervising of the presentations. A complex rating of the urban environment.

Literature

Compulsory:

Gunilla Ölund Wingqvist (2014) How to define a regional environmental problem
Karen L. O' Brien Robin M. Leichenko (2000) Double exposure: assessing the impacts of climate change within the context of economic globalization
Ewing B., A. Reed, A. Galli, J. Kitzes, and M. Wackernagel (2010) Calculation Methodology for the National Footprint Accounts, 2010 Edition. Oakland: Global Footprint Network.

Recommended:

Filon Toderoiu (2010) Ecological footprint and biocapacity – methodology and regional and national dimensions

Schedule:

1st week

Description of the semester work. Allocation of the presentation themes.

2nd week

The concept and significance of the ecological footprint. Methodology for calculating ecological footprint.

3rd week

Students present their calculations of their own ecological footprint and discuss the ways of reduction.

4th week

Europe's natural features at the beginning of the Holocene. Student's presentation. The evaluation of the presentation and discussing the topic.

5th week

Interactions between man and his environment in Europe from the Paleolithic. The spread of agriculture in Europe. Student's presentation. The evaluation of the presentation and discussing the topic.

6th week

Interactions between man and his environment in Europe from the beginning of machining of metals to the middle age. Environmental impacts of the use of metals. Natural Disasters in Ancient Europe. Student's presentation. The evaluation of the presentation and discussing the topic.

7th week

Man and his environment in Europe from the beginning of the Middle Ages to the Industrial Revolution. The environmental impacts of agriculture and energy production in the period before the industrial revolution. Student's presentation. The evaluation of the presentation and discussing the topic.

8th week

The environmental impacts of the first and second industrial revolution. Student's presentation. The evaluation of the presentation and discussing the topic.

9th week

Man and his environment in Europe in the 20th century. The environmental impacts of modern agriculture, energy production and transport. Student's presentation. The evaluation of the presentation and discussing the topic.

10th week

The urban environment in Europe - a general assessment, the air pollution of cities. Student's presentation. The evaluation of the presentation and discussing the topic.

11th week

Water supply, water quality, noise pollution of European cities. A complex rating of the urban environment, international initiatives for cities. Student's presentation. The evaluation of the presentation and discussing the topic.

12th week

The housing stock of European cities and land use in urban areas, the quantity and management of urban waste. Student's presentation. The evaluation of the presentation and discussing the topic.

13th week

Written examination.

14th week

The evaluation of the semester work, description and justification of the practice notes.

Requirements:

- for a signature

Participation at **practice classes** is compulsory. A student must attend the practice classes and may not miss more than three times during the semester. In case a student does so, the subject will not be signed and the student must repeat the course. Active participation is evaluated by the teacher

in every class. If a student's behaviour or conduct doesn't meet the requirements of active participation, the teacher may evaluate his/her participation as an absence because of the lack of active participation in class.

Students have to **make a PowerPoint presentation** as scheduled minimum on a sufficient level.

- for a grade
The course ends in an **examination**. Based on the average of the grades of the designing tasks and the examination, the exam grade is calculated as an average of them:

- grade of the presentation
- the result of the examination

The minimum requirement for the mid-term and end-term tests and the examination respectively is 60%. The grade for the test and the presentation is given according to the following table:

Score	Grade
0-59	fail (1)
60-69	pass (2)
70-79	satisfactory (3)
80-89	good (4)
90-100	excellent (5)

Person responsible for course: Dr. Szabó György, associate professor, PhD

Lecturer: Tamás Mester, assistant lecturer

Title of course: Regional policy and tourism **Code**: TTGBG6514_EN	**ECTS Credit points:** 3

Type of teaching, contact hours

- lecture: 1 hours/week
- practice: 2 hours/week
- laboratory: -

Evaluation: mid-semester grade

Workload (estimated), divided into contact hours:

- lecture: 14 hours
- practice: 28 hours
- laboratory: -
- home assignment: 48 hours
- preparation for the exam: -

Total: 90 hours

Year, semester: 3rd year, 1st semester

Its prerequisite(s): -

Further courses built on it: -

Topics of course

The course deals with the presentation of the system of Hungarian and international regional development, the development of its institutional system, principles and goals, and the methodology of their establishment, through the examination of tourism. Main topics: The EU's regional policy aspects of tourism, main trends in solving domestic and international spatial problems. Main stages of domestic spatial development related to tourism development. Analysis of tourism as a development tool and development problem problem. The content and form requirements of the spatial development documents and their methodological expectations. Understanding and analyzing the contents of current, valid regional- and tourism development documents.

Literature

Sharpley, R. – Telfer, D.J. (2002): Tourism and Development: Concepts and Issues, Channel View Publications, 397 p
Nunkoo, R. - Smith, S.L.J. (2014) (eds.): Trust, Tourism Development and Planning, Routledge, 190 p
Nijkamp, P. (1995): Sustainable Tourism Development, Routledge, 225 p

Schedule:

Requirements:

- for a signature

Attendance at **lectures** is recommended, but not compulsory.

- for a grade

Writing an **essay** in a topic chosen by the student.
The course ends in a written test

Score	Grade
0-59	fail (1)
60-69	pass (2)
70-79	satisfactory (3)
80-89	good (4)
90-100	excellent (5)

Person responsible for course: Dr. Ernő Molnár, assistant professor, PhD

Lecturer: Dr. Zsolt Radics, assistant professor, PhD

Title of course: The economic and social impacts of tourism **Code**: TTGBE6516_EN	**ECTS Credit points:** 3

Type of teaching, contact hours

- lecture: 2 hours/week
- practice: -
- laboratory: -

Evaluation: exam

Workload (estimated), divided into contact hours:

- lecture: 28 hours
- practice: -
- laboratory: -
- home assignment: 42 hours
- preparation for the exam: 20 hours

Total: 90 hours

Year, semester: 3rd year, 1st semester

Its prerequisite(s): -

Further courses built on it: -

Topics of course

Formation and history of tourism and its development into an industry. Concept, types, system and scientific research of tourism. Its positive and negative economic effects. The role of traffic in the international and national tourism flows. Relationship between internet and tourism. Formation and development of rural and farm hospitality. Rules of the tourism taxation. Concept, functioning and necessity of the tourism destination management. Plans and ideas for the tourism improvement.

Literature

Compulsory:

- Rátz, T. – Puczkó, L. (2002): The Impacts of Tourism. Häme Polytechnic, Hämeenlinna, p.408.
- Holden, A. (2000): Environment and tourism. Abingdon, Oxon; N.Y., NY : Routledge. p. 274.
- Jónás-Berki, M. – Aubert, A. – Marton, G. – Raffay, Z. (2012): The place and role of local tourism destination management organisations int he tourism sector of Hungary. – The Role of Tourism in Territorial Development 5. pp. 141– 154.
- Michalkó, G. – Kiss, K. – Kovács, B. – Sulyok, J. (2009): The impact of tourism on subjective quality of life among Hungarian population. Hungarian Geographical Bulletin 2009. Vol. 58. No 2. pp. 121–136.
- Puczkó, L. – Rátz, T. (2006): Product Development and Diversification in Hungary. In: Hall, D. – Smith, M. – Marciszewska, B. (eds.): Tourism in the New Europe: The Challenges and Opportunities of EU Enlargement. CABI Publishing, Wallingford, pp.116-126.

Schedule:

1st week

The evolution of tourism and its major development stages. Conditions for creating mass tourism. Comprehensive legal regulations in the development of tourism.

2nd week

Defining the concept of tourism from several perspectives. Types of tourism, system and its scientific research trends.

3rd week

Types of tourists (mainly tourist-typology of Cohen, Smith, Plog) and features of the host community (Doxey and Buttler models).

4th week

The consequences of the development of tourism. The effects of tourism on job creation, social situation, infrastructure and price levels. Managing seasonal problems.

5th week

Positive and negative economic impacts of tourism. Income transfer, multiplier effect, additionality, simplified multiplier model. Tourism Satellite Account (TSA).

6th week

The impact of tourism on population. The correlations of population growth, urbanization, ICT and cultural components change with tourism.

7th week

The environmental impacts of national and international tourism. Indirect and direct, reversible and irreversible environmental impacts. Economic impacts of ecotourism.

8th week

The function of transport in tourism. The place of transport in the tourism system. Development stages of public transport. Relationship between transport modes and tourism. Special forms of transport in tourism.

9th week

The impact of the Internet on tourism (e-tourism). Online travel trends. Online accommodation brokers and coupon sites. E-marketing and online pricing strategy. The e-tourist features. The Széchenyi Resting Card.

10th week

Rural-farm catering. The development of rural tourism in Hungary. FATOSZ and the National Certification Mark. Farm-catering, farm-development programs. Leader areas.

11th week

Tourism taxation and its effects. The reasons and purposes of introducing the IFA. Additional State Aid related to IFA. The rate of IFA, the possibilities of exemptions and discounts.

12th week

Tourist destinations and the TDM. TDM's concept and its characteristics. The TDM process in the Hungary. Functions and tasks of TDM Organizations. The Hungarian TDM Alliance.

13th week

Statistical measurement of tourism. Potential sources of tourism data collection and methodology for evaluation.

14th week

Plans and ideas for tourism development. Operational programs and tourism development. The COSME and the EDEN programs. The National Tourism Development Concept (2014-2024).

Requirements:

- for a signature

Attendance at **lectures** is recommended, but not compulsory.

- for a grade

Writing an **essay** in a topic chosen by the student.
The course ends in an oral **examination**.

Score	Grade
0-59	fail (1)
60-69	pass (2)
70-79	satisfactory (3)
80-89	good (4)
90-100	excellent (5)

Person responsible for course: Dr. István Zoltán Pásztor, assistant professor, PhD

Lecturer: Dr. István Zoltán Pásztor, assistant professor, PhD

Title of course: Principles of infrastructure **Code**: TTGBE6525_EN	**ECTS Credit points: 3**

Type of teaching, contact hours

- lecture: 2 hours/week
- practice: -
- laboratory: -

Evaluation: exam

Workload (estimated), divided into contact hours:

- lecture: 28 hours
- practice: -
- laboratory: -
- home assignment: 22
- preparation for the exam: 40 hours

Total: 90 hours

Year, semester: 3rd year, 2nd semester

Its prerequisite(s):

Further courses built on it: -

Topics of course

The objective of the course is to know the definition and division of the concept of infrastructure; the formation and characteristic features of infrastructural systems; the methods of transport geography based on graph theory; mechanism of developments in the field of transport subsectors; development and spatial features of different transportation and communication modes.

Literature

Bannister, David 2011: Transport and Urban Development. – Routledge, New York. 304 p. (ISBN 978-0-415-51215-2)

Knowles, Richard - Shaw, Jon - Docherty, Iain (eds.) 2007: Transport Geographies: Mobilities, Flows and Spaces. – Routledge, New York, 320 p. (ISBN 978-1-4051-5322-5)

Rodrigue, J-P. - Comtois, C. - Slack, B. 2006: The geography of transport systems. – Routledge, New York. 284 p. (ISBN 978-0-415-48-3247)

Schedule:

1st week

Definitions and divisions of the infrastructure

2nd week

General features, principles and effects of the infrastructure

3rd week

The creation of infrastructural networks

4th week

Methods to evaluate infrastructural networks

5th week

Evaluation of infrastructural developments, supply and demand side of infrastructure

6th week

Overview about the development of transport

7th week

The role of road network in the economic and territorial development

8th week

The role of rail transport in the economic and territorial development

9th week

The role of other transport modes in the economic and territorial development

10th week

The role of combined transport in the economic and territorial development

11th week

The role of logistics in the regional development

12th week

The European and Hungarian transport policy

13th week

The introduction of communication infrastructure

14th week

The communal infrastructure of settlements

Requirements:

Participation at lectures is proposed.

The course is evaluated by written exam. The subject matters are basing on the lectures and the additional supplements provided.

Score	Grade
0-49	fail (1)
50-62	pass (2)
63-74	satisfactory (3)
75-87	good (4)
88-100	excellent (5)

Person responsible for course: Dr. János Pénzes, assistant professor, PhD

Lecturer: Dr. János Pénzes, assistant professor, PhD

Title of course: Method of application planning **Code**: TTGBG6512_EN	**ECTS Credit points: 3**

Type of teaching, contact hours

- lecture: 1 hours/week
- practice: 2 hours/week
- laboratory: -

Evaluation: mid-semester grade

Workload (estimated), divided into contact hours:

- lecture: 14 hours
- practice: 28 hours
- laboratory: -
- home assignment: 48 hours
- preparation for the exam: -

Total: 90 hours

Year, semester: 3rd year, 2nd semester

Its prerequisite(s):

Further courses built on it: -

Topics of course

. The subject deals with the methodology of preparing the Hungarian and international tenders, the methodology of project management. The aim of the course is that students acquire appropriate information and knowledge on the possibilities of raising funds, they are generally familiar with the basic management processes.

Literature

Project Management Institute (PMI) (2008): A Guide to the Project Management Body of Knowledge (PMBOK), 4th Edition, Pennsylvania, Project Management Institute.
Soderlund, J. (2004): Building Theories of Project Management: Past Research, Questions for the Future. International Journal of Project Management, 22, pp. 183–191.

Schedule:

Requirements:

- for a signature

Attendance at **lectures** is recommended, but not compulsory.

- for a grade

Writing an **essay** in a topic chosen by the student.
The course ends in a written test

Score	Grade
0-59	fail (1)
60-69	pass (2)
70-79	satisfactory (3)
80-89	good (4)
90-100	excellent (5)

Person responsible for course: Dr. Zsolt Pénzes, assistant professor, PhD
Lecturer: Dr. Zsolt Pénzes, assistant professor, PhD

Title of course: Cross-border co-operation: theory and practice **Code**: TTGBE6523_EN	**ECTS Credit points: 3**

Type of teaching, contact hours

- lecture: 2 hour/week
- practice: -
- laboratory: -

Evaluation: exam

Workload (estimated), divided into contact hours:

- lecture: 28 hours
- practice: -
- laboratory: -
- home assignment: -
- preparation for the exam: 62 hours

Total: 90 hours

Year, semester: 2nd year, 2nd semester

Its prerequisite(s): -

Further courses built on it: -

Topics of course

The students get acquainted with the definition of (state) borders, border regions and cross-border co-operations, become able to interpret and evaluate the related special literature and models within the disciplines of economic geography, regional geography, political geography and cultural geography. They become aware of the actual political (legal and financial) interpretation and embeddedness of the topic, get to know the common and dissimilar characteristics of the various types of cross-border co-operations, become able to categorise cross-border co-operations based on their similar parameters, so as to enable them to manage cross-border co-operations both theoretically and practically.

Literature

1. Czimre K. (2006): Cross-border Co-operation: Theory and Practice. – Debreceni Egyetem Kossuth Egyetemi Kiadó, Debrecen. 146 p.
2. Practical Guide to Cross-border Cooperation. Third Edition 2000. European Commission. AEBR. 405p.

Schedule:

1st week

Cross-border co-operations interpreted by geographers. Interpretation of borders in the geography researches. Geographical tools, methods and processes in the definition of borders and cross-border regions. Introduction to the aims, tasks and applied methods in the study of borders. Discussion of terminological problems: EU internal borders vs. EU external borders, euregion vs. euroregion.

2nd week

Comparative analysis of literature related to borders and border regions 1. Types of co-operations to overcome borders. Study of borders and border regions in Europe: (1) Economic geography and regional geography (Flow approach, Cross-border approach, Human approach), (2) Political geography and cultural geography. Geographical study of borders and border regions outside Europe.

3rd week

Comparative analysis of literature related to borders and border regions 2. Study of borders and border regions in Hungary: history and traditions. Introduction to the institutional framework. Description and evaluation of border studies in Hungary by border segments: changes in the concept of borders and the specialities of the central issue of border studies by border segments.

4th week

Comparative analysis of literature related to borders and border regions 3. Comparison of the border and border region models: Peter Haggett, Remigio Ratti, Oscar Martinez, József Tóth, etc. Interpretation of theories and border models in the 21th century Europe.

5th week

Actual political interpretation of borders and border regions: EU approach 1. Characteristics of European border regions. Changes in the territorial aspects of border regions in the European Union – historical survey. Border regions in the European spatial structure. Types of cross-border co-operations: euroregions, working communities, EGTC-k. EU institutions supporting cross-border co-operations. Legal background of the European cross-border co-operations. The most important cross-border co-operation legislation and documents in the European Union.

6th week

Actual political interpretation of borders and border regions: EU approach 2. Financial background of the European cross-border co-operations. Community Initiatives in the service of European cross-border co-operations: Interreg, Phare CBC, European Neighbourhood Policy Instrument, European Neighbourhood Instrument etc.

7th week

Actual political interpretation of borders and border regions: EU approach 3. The role of the Association of European Border Regions (AEBR). The effect of the Schengen Agreement on cross-border co-operations. The impact of enlargements and accessions on the changes in the length and ratios of borders and the relationship systems of border regions.

8th week

Cross-border co-operation forms in the European Union and Central Europe 1. The concept and goal of euroregions. The role of euroregions in the institutionalisation process. The organisational structure of euroregions. Euroregional co-operations: promoting and inhibiting factors. Borders inside the euroregions. Potential uniting and inhibiting factors of euroregions. Possible advantages of euroregional co-operations on the different levels of co-operation. Opportunities and threats of euroregional co-operations.

9th week

Cross-border co-operation forms in the European Union and Central Europe 2. The concept and goal of European Territorial Co-operations (ETC). The role of ETCs in the institutionalisation process. The organisational structure of ETCs. European Territorial Co-operations: promoting and inhibiting factors. Borders inside the ETCs. Potential uniting and inhibiting factors of ETCs. Possible advantages of ETCs on the different levels of co-operation. Opportunities and threats of ETCs.

10th week

Geographical and economic aspects of the categorisation of cross-border co-operations: cross-border co-operations along the EU28 internal borders 1. Description of co-operations between the border regions of the Old Member States on the basis of a single framework. Summary of the chief characteristics of the category, model selection.

11th week

Geographical and economic aspects of the categorisation of cross-border co-operations: cross-border co-operations along the EU28 internal borders 2.

Description of co-operations between the border regions of the New Member States on the basis of a single framework. Summary of the chief characteristics of the category, model selection.

12th week

Geographical and economic aspects of the categorisation of cross-border co-operations: cross-border co-operations along the EU28 external borders 1. Description of co-operations

between the border regions of the EU and the EFTA States on the basis of a single framework. Summary of the chief characteristics of the category, model selection.

13th week

Geographical and economic aspects of the categorisation of cross-border co-operations: cross-border co-operations along the EU28 external borders 2. Description of co-operations between the border regions of the EU and the Candidate and Potential Candidate States on the basis of a single framework. Summary of the chief characteristics of the category, model selection.

14th week

Geographical and economic aspects of the categorisation of cross-border co-operations: common characteristics of the new cross-border co-operations along the internal and external borders. Direct causes of cross-border co-operations in Central Europe. The impact of the Fifth Enlargement on the changes in the border types. New perspectives offered by the EU enlargement. Effects caused by the changes in the support system. Impacts of the Schengen Agreement.

Requirements:

- for a signature

Attendance at the lectures is recommended but not compulsory.

- for a grade

There are tests taken during the first 10-15 minutes of the lectures which are graded individually. At the end of the course the average is taken for the tests which makes up for the final grade.

Person responsible for course: Dr. Klára Czimre, assistant professor, PhD

Lecturer: Dr. Klára Czimre, assistant professor, PhD

Title of course: Applied geoinformatics in landscape protection and regional policy **Code**: TTGBG7035_EN	**ECTS Credit points: 3**

Type of teaching, contact hours

- lecture: 1 hours/week
- practice: 2 hours/week
- laboratory: -

Evaluation: mid-semester grade

Workload (estimated), divided into contact hours:

- lecture: 14 hours
- practice: -
- laboratory: 28 hours
- home assignment: 28 hours
- preparation for the exam: 20 hours

Total: 90 hours

Year, semester: 2nd year, 2nd semester

Its prerequisite(s): -

Further courses built on it: -

Topics of course

Students will get introduced with the most relevant parts of GIS is needed to solve environmental problems in their field.
During the practical part of the course unit the students work in small groups and solve different environmental issues. They have to cooperate and to learn how to split the tasks into smaller pieces. All the important elements of the theoretical part will be applied on the practice. Students presents their solved tasks and learn the basic presentation techniques.

Literature

1. Zhu, X. (2016): GIS for Environmental Applications: A Practical Approach. Routledge, 490 p.
2. Wade, T. - Sommer, S. (2006): A to Z GIS: An Illustrated Dictionary of Geographic Information Systems, ESRI Press, 268 p.
3. Bajjali, W. (2017): ArcGIS for Environmental and Water Issues. Springer, 353 p.

Schedule:

Lectures:

1st week Genereal introduction to QGIS software

2nd week Layer management

3rd week Layer and attribute data management.

4th week Thematic maps – qualitative scale

5th week. Thematic maps – quantitative scale

6th week Map layout.

7th week Midterm summary, practice.

8th week Midterm written exam

9th week Creation of point features.

10th week Creation of line features, topology

11th week Creation of polygon features, topology

12th week Query by attributes

13th week Query by location

14th week Grade-offering exam.

Requirements:

Practice:

Participation at classes is compulsory. A student must attend the courses and may not miss more than three times during the semester. In case a student does so, the subject will not be signed and the student must repeat the course.

During the semester there is one practical test. It can be completed in the 14th week.

The minimum score is 50%. Based on the score of the test, the grade for the test is given according to the following table:

Score	Grade
0-49	fail (1)
50-59	pass (2)
60-72	satisfactory (3)
73-84	good (4)
85-100	excellent (5)

If the score of any test is below 50, students can take a retake test in conformity with the EDUCATION AND EXAMINATION RULES AND REGULATIONS.

Person responsible for course: Prof. Dr. Szabó Szilárd, university professor, DSc

Lecturer: Prof. Dr. Szabó Szilárd, university professor, DSc

Title of course: Thesis I. **Code**: TTGBG7503_EN	**ECTS Credit points: 5**

Type of teaching, contact hours

- lecture: -
- practice: 2 hours/week
- laboratory: -

Evaluation: mid-semester grade

Workload (estimated), divided into contact hours:

- lecture: -
- practice: 28 hours
- laboratory: -
- home assignment: 122 hours
- preparation for the exam: -

Total: 150 hours

Year, semester: 3rd year, 2nd semester

Its prerequisite(s): -

Further courses built on it: -

Topics of course

Overview of the scientific literature. Data collection related to thesis and processing and evaluation of collected data. Writing individual chapters and then correcting and finalizing the thesis based on the supervisor's instructions.

Literature

Compulsory literature:
Umberto Eco (1985) How to write a Thesis? Massachusetts Institute of Technology ISBN: 978-0-262-52713-2

Recommended literature:

Schedule:

1st week Introduction to the course
2nd week Consultation on the student's thesis.
3rd week Consultation on the student's thesis.
4th week Consultation on the student's thesis.
5th week Consultation on the student's thesis.
6th week Consultation on the student's thesis.
7th week Consultation on the student's thesis.
8th week Consultation on the student's thesis.
9th week Consultation on the student's thesis.
10th week Consultation on the student's thesis.
11th week Consultation on the student's thesis.
12th week Consultation on the student's thesis.
13th week Consultation on the student's thesis.
14th week Consultation on the student's thesis.

Requirements: Attendance at **consultations** is recommended, but not compulsory. The practical grade is determined by the student's work during the semester. The aspects considered are: collecting scientific literatures, conducting independent research work, participating in consultations.
Person responsible for course: Dr. György Szabó, associate professor, PhD
Lecturer: Dr. György Szabó, associate professor, PhD

Title of course: Thesis II. **Code**: TTGBG7504_EN	**ECTS Credit points: 5**

Type of teaching, contact hours

- lecture: -
- practice: 2 hours/week
- laboratory: -

Evaluation: mid-semester grade

Workload (estimated), divided into contact hours:

- lecture: -
- practice: 28 hours
- laboratory: -
- home assignment: 122 hours
- preparation for the exam: -

Total: 150 hours

Year, semester: 3rd year, 2nd semester

Its prerequisite(s): -

Further courses built on it: -

Topics of course

Overview of the scientific literature. Data collection related to thesis and processing and evaluation of collected data. Writing individual chapters and then correcting and finalizing the thesis based on the supervisor's instructions.

Literature

Compulsory literature:
Umberto Eco (1985) How to write a Thesis? Massachusetts Institute of Technology ISBN: 978-0-262-52713-2

Recommended literature:

Schedule:

1st week Introduction to the course
2nd week Consultation on the student's thesis.
3rd week Consultation on the student's thesis.
4th week Consultation on the student's thesis.
5th week Consultation on the student's thesis.
6th week Consultation on the student's thesis.
7th week Consultation on the student's thesis.
8th week Consultation on the student's thesis.
9th week Consultation on the student's thesis.
10th week Consultation on the student's thesis.
11th week Consultation on the student's thesis.
12th week Consultation on the student's thesis.
13th week Finalize the student's thesis
14th week Evaluation of the course, instructions for the final exam.

Requirements: Attendance at **consultations** is recommended, but not compulsory. The practical grade is determined by the student's work during the semester. The aspects considered are: collecting scientific literatures, conducting independent research work, participating in consultations.
Person responsible for course: Dr. György Szabó, associate professor, PhD
Lecturer: Dr. György Szabó, associate professor, PhD