UNIVERSITY OF PÉCS

FACULTY OF SCIENCES (TTK)

ERASMUS STUDY GUIDE 2024/25

https://www.ttk.pte.hu /

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WELCOME NOTE

Dear Prospective Erasmus+ Student,

On behalf of the entire staff of the University of Pécs, let me congratulate you on your successful nomination to our University and I hope, this experience abroad will open numerous opportunities for you, as you anticipated.

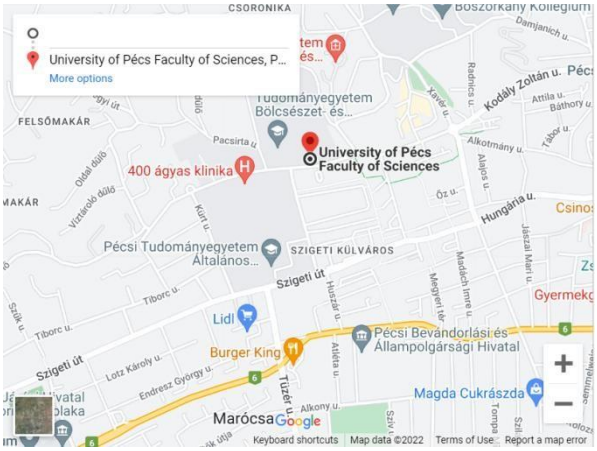
We, at the Faculty of Sciences strive hard to make sure that your decision to choose our institution was the best one and your entire Erasmus+ experience was a joyful one. We

assure you that your thirst for exclusive education will be quenched in our state of the art university.

This guide is a nugget of information for all our incoming Erasmus+ students. It contains all necessary information related to which subjects can you choose and from which institute. There are important notes and practical sum and substance on which things you should consider before you register yourself for the subjects. This will also walk you through all the important details which you will continually utilize during your semester abroad.

You can also find a gist about city life in Pécs in the last part of the guide so, you make sure that you see your stay with us as not only filled with heaps of assignments and semester tasks but, loads of recreational activities in a city brimming with culture. We do hope that you will end your mobility in these words:
"Yes, this semester abroad was a life-changing experience,indeed".

CONTACT INFORMATION

Address	Faculty of Sciences (Természettudományi Kar, TTK) Hungary, Pécs, Ifjúság útja 6, 7624 To view location, click here. 
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INTRODUCTION TO THE FACULTY

The history of higher education in Pécs dates back to the fourteenth century when Louis the Great, initiated the establishment of the institution in the 1367. As a result of an integration

process of several stages, the University of Pécs was founded, which has become one of the most famous, prestigious institutions having a leading role in regional education in Europe. It has ten faculties which cover the full spectrum of high-quality higher education.

The Faculty of Sciences (TTK) comprises of six institutes who are involved in teaching and research for natural sciences (biology, chemistry, physics, geography and earth sciences, informatics, mathematics and sport sciences).

Our bachelor- level education (BSc) was launched in 2006, while master programs (MSc) started in 2009 belonging to these different fields.

The teaching and research staff of the Faculty play an important role in the intellectual life of Southern Transdanubian region and contribute to the scientific development of the region. Their achievements in research are valued highly both in Hungary and in international circles. The high quality of research and teaching is also illustrated by the success achieved by students of the faculty at the National Students Scientific Conferences (OTDK and TDK)

The Faculty has its own library, computer centre, various laboratories belonging to different institutes and departments. With its conference hall, lecture auditoria, session rooms, central hall, spacious dining facility and modern technical background, the faculty is a perfect site for prestigious scientific events.

The Institute of Physical Education and Sport Sciences is responsible for the operation of the recreational activities and the management of sporting life at the university. The Sports Centre which includes the sports hall, gymnasium and modern swimming pool was opened in 1997. Together with this recreational centre, the outdoor facilities in the campus park and botanical garden provide an inspirational setting for the site solely dedicated to students and researches belonging to the field of science.

ERASMUS+ PROGRAMS

The foreign language (English) courses offered under the ERASMUS+ program are very popular among the exchange students. The Faculty of Sciences cooperates with numerous international universities through framework contract. With the help of these partnerships the number of incoming students from other European countries is reasonably high, and at the same time our students are also living with the possibilities of abroad scholarship. The extensive domestic and international relationships allow a high range of collaborations with several professional partners in order to develop joint education and research programs or

the organized exchanges of guest lectures. The Faculty of Sciences has Erasmus+ bilateral agreements with a wide range of universities from all over Europe and other continents.

All incoming exchange students/trainees should be officially nominated by their home university before they start the application process to our university.

Details on the nomination and application process can be found at https://international.pte.hu/mobility-programs/erasmus/online-application-system

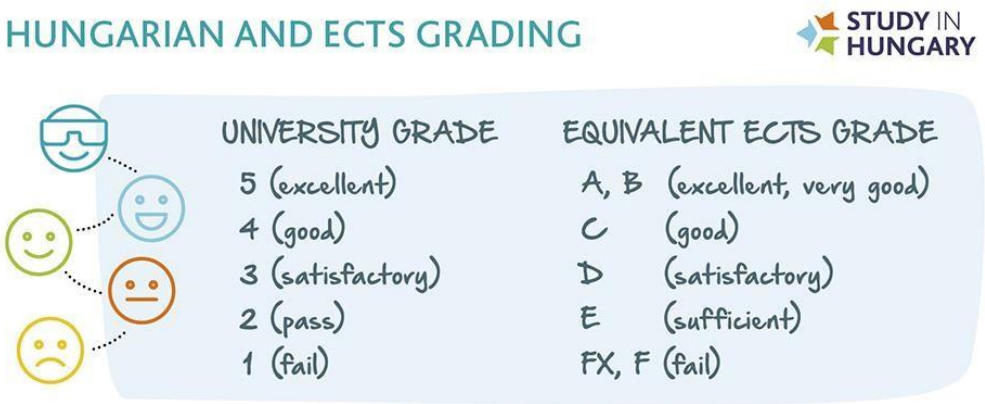
In general, all our full time courses are available for Erasmus+ exchanges students. You can find more details for each program in the coming sections.

The following programs belonging to different institutes offer various courses for our incoming Erasmus+ students:

Institute offering the courses	**Program name**	**Program coordinator**
Institute of Biology	BSc Biology MSc Biology PhD. Biology and Sport Biology	Pollák Edit
Institute of Chemistry	BSc Chemistry MSc Chemistry PhD. Chemistry	Dr Kollár László
Institute of Physics	BSc Physics MSc Physics PhD. Physics	Dr. Márton Zsuzsanna
Institute of Mathematics and Informatics	BSc Computer Science BSc Mathematics MSc Applied Mathematics	Dr. Pauler Gábor,
Institute of Geography and Earth Sciences	BSc Geography BSc Earth Sciences MSc Geography PhD. Earth Sciences	Dr. Czigány Szabolcs
Institute of Sport Sciences and Physical Education	BSc Physical Education	Gép Zsuzsanna

PRACTICAL SUM AND SUBSTANCE BEFORE YOU CHOOSE THE COURSES:-

- Some of the courses are available as lecture in which the subject matter is taught by the lectures while others are either seminar or practice. In a seminar there will be more classroom interaction and students will be divided into groups usually for a class activity. For a practice class, there will a practical demonstration related to the course contents of class.
- Do compare the courses with the ones available in your home institute if you plan on getting your credits recognized.
- Some of our courses are divided into two parts i.e. the first one is lecture and the second one is followed by a practice class. Some of these occur parallel however for some courses please refer to the complete courses' list here to check if you will study lecture/practice during your stay.
- Some of our seminars have a head count limit hence register yourself in the Neptun system only if you see an available head count.
- In case of any clashes with the classes or any other issue with your subjects, direct your queries immediately to erasmus@gamma.ttk.pte.hu so that we can address your issues from the very beginning.
- Students are usually not allowed to pick courses from both bachelor's and master's programs together hence if you intend on doing this you should first confirm from the Erasmus+ coordinator if they will be able to help you or not. The same applies for picking up courses from one or more faculties. In this case you have to inform us about this before you prepare the learning agreement so that we can communicate about your issue to our other faculty. For queries regarding grade conversion please refer to the photo below:



INSTITUTES OF THE FACULTY AND THE POPULAR COURSES OFFERED FOR ERASMUS+ EXCHANGE STUDENTS

INSTITUTE OF BIOLOGY

The institute consists of seven departments covering several important fields of biology: ecology, plant biology, genetics and molecular biology, microbiology, comparative anatomy and developmental biology, cell biology and neurobiology. The main tasks of the staff are to teach different disciplines of biology to BSc and MSc students and to do an outstanding scientific research work along with the PhD students.

Research topics include: comparative research of plant taxa on anatomical, histological and molecular levels, national and regional survey of weed communities, descriptive and comparative analyses of plant communities, induced systemic acquired resistance in plants

during plant – pathogen interactions, pathogenesis-related genes and the regulation of their expression, molecular biology and genetics of the Agrobacterium resistance in grapevine, molecular background of stress processes, isolation of the biosynthetic gene cluster for antibiotic production in the family of Pseudonocardiaceae, detection and characterization of viral zoonotic diseases in Hungary, population biology and community ecology of small mammals, nest predation studies, analysis of microevolutionary processes, chemical neuroanatomy, development and regeneration of peptidergic structures of the nervous system in model invertebrates (earthworms, cockroach and Drosophila), sensory and cognitive function in animal models, the chemical neuroanatomy of the retina and the neuroimmune interactions.

Publications from the institute appear in prestigious journals, such as Ecology, Preslia, Weed Research, Biochemica Biophysica Acta, J Bacteriology, J Clinical Virology, Physiologia Plantarum, J Plant Physiology, Molecular Plant-Microbe Interactions, Cell Tissue Research, J Comparative Neurology, J Neuroscience, J Mol Neurosciences, Regulatory peptides, J Experimental Biology, Environmental Science and Technology.

BSC BIOLOGY

The Biology BSc line offers a full 3-year-education in biology. The study program for the full-time training offers a complete education in biology, with special directions particularly in neurobiology, genetics, microbiology, animal and plant ecology, botany, zoology, and plant physiology. Special directions in the second year have two modules: infra-individual (means more laboratory practice and cellular biology) and supra-individual (means more ecology) courses. Each module has 5-8 subjects with lectures, seminars, and laboratory practices. The basic subjects are presented in lectures, seminars, and laboratory work. The program provides a wider view of the related scientific fields (chemistry and physics). The students will familiarize their knowledge with the most modern instrumentation in our new research center. It covers all aspects of education, research, and innovation in the fields of biomedical, natural, and environmental sciences. It also provides an opportunity to join the research work in 22 different research groups operating in the building. The program requires the completion of 180 credits.

OVERVIEW OF POPULAR COURSES FOR BSC BIOLOGY PROGRAM

The following section gives an overview of important courses which are commonly picked up by our incoming exchange students. The complete list of these available courses is given at the end of the guide. However, you can go through the course curricula for BSc Biology for more details and see all the available courses here.

In case you need further information about any specific course you can contact us to request it.

ENBIOB0101 Mathematics (Lecture)/ ENBIOB0102 Mathematics (Practice)

The aim of the course is to obtain the necessary knowledge and the ability to use certain mathematical techniques for those students who use mathematical analysis in biology/chemistry because of the nature of their curriculum or their interests.

ENBIOB0301 Fundamental Physics

This course introduces the students to the most important fields of physics at basic level. It is a compulsory course for students in biology, geography, mathematics.
The major learning outcomes for this course are problem solving and quantitative reasoning. Upon successful completion of the course, the students will be able to understand the basic concepts of experimental physics. Students will also be able to solve simple problems by studying the appropriate equations.

ENBIOB0201 Fundamental Chemistry I (Lecture)

During the course, students get familiar with the most important fundamentals of material world, atoms and their electron structures. This course also highlights that how the molecules may interact with each other and determines the physical and chemical properties of the given material.

ENBIOB3001 Biological Laboratory Fundamentals (Practice)

The course intends to introduce students to basic glassware, laboratory equipment and methods used in biochemical, comparative anatomy, animal physiology and microbiology laboratory practice. Laboratory rules and safety are also emphasized in the course.

ENBIOB1103 Comparative Anatomy I (Lecture)

Basic course that is designed to provide the students with knowledge related to animal body plan, organs and systems.

ENBIOB1104 Comparative Anatomy I (Laboratory)

This course is a part of laboratory specialization that is designed to provide the students with knowledge related to animal organs' histology and understanding of organ systems' histological organization.

ENBIOB2101 Plant Anatomy and Morphology (Lecture)/ ENBIOB2102 Plant Anatomy and Morphology (Laboratory)

This lecture is a part of the basic professional module and introduces students to the histological and morphological structure of plant body. This lecture serves as a foundation for other botanical courses in main professional module and specialization. Plant cell and histology course is offered as a prerequisite or students can pick it up in parallel.

ENBIOB1301 Cell Biology (Lecture)

Basic course that is designed to provide the students with knowledge related to cell structure and function. The knowledge of this course is needed to study comparative anatomy, basic developmental biology, comparative physiology, molecular biology and basic genetics later.

ENBIOB1302 Cell Biology Laboratory

Practical aspects of cell biology will be taught using laboratory techniques.

ENBIOB0401/ ENBION0501 Organic Chemistry (Lecture/Practice)

This is a part of the ordinary freshman course for non-chemistry majors transferring organic chemistry knowledge through problem solving competencies. It helps understanding the molecular level of biochemical processes.

ENBIOB1201 Zootaxonomy (Lecture/Practice)

Students who successfully complete this course become aware of the principles of taxonomy, have knowledge of the terms of the discipline and correctly apply them, are able to recognize and characterize individual taxa, and are able to produce presentations and summaries on their own taxonomic subjects open to finding out more about the disciplines of taxonomy, for which they have suitable knowledge.

ENBIOB0801 General Ecology (Lecture)

The lecture intends to introduce students to ecology. The aims of the course are to provide up-to-date, general ecological knowledge and approach, to give an insight into the organization of the nature on a supra-individual basis, to introduce the conceptual, structural elements and community organizing processes. The acquired knowledge provides the basis for the specialization courses of ecological courses in the Master`s degree program.

ENBIOB3201 Basic Genetics (Lecture)

This course aims at introducing the most important concepts of genetics. Students completing the course will know the origin and development of the concepts of the field, and have a proficiency in using them. Students are able to interpret and explain the nature of biological variability and genetical processes. Students undertaking this course should be open minded to the scientific fields in intimate relation to genetics, with special emphasis on genomics and evolution, and disciplines based on genetics, must study and master the results of these, and have the basic information for that. They should be able to interpret and present basic experimental results, related to genetics at the time of completion of this course.

ENBIOB1601 Human Biology (Lecture)

The lecture intends to introduce students to the characteristics of the human body. An overview is provided in the phenotypic variations of human kind, morphological features of the head/skull and body. The course gives an insight into the biological, anthropological differences between sexes, or before and after puberty; Descriptions of the primate and human evolution, similarities and tendencies in evolution are also included in the course.

ENBIOB1701 Biogeography (Lecture)

Biogeography is the study of the spatial patterns of biological diversity and its causes, both in the present and in the past. Biogeographers synthesize information from a very broad range of fields, including ecology, evolution, paleontology and climatology. Hence, this course will provide a historical background for the field of biogeography and the ecological foundations needed to understand the distribution and abundance of species and their changes over time. The students get familiarized with processes of speciation, distribution and extinction of species, with natural lows of species area dynamics. At the end of the course, students are able to link a natural path which governs changes in time (evolution) with those controlling changes in space (e.g. continental drift). During this course, students are open to acceptance of the knowledge of closely related biological disciplines, and strive to synthesize the different knowledge subjects. They are also able to independently interpret, depict and

present basic dynamic processes individually and can produce presentations and summaries independently from the knowledge of the subject.

ENBIOB2001 Nature Conservation and Environmental Protection (Seminar) The purpose of the seminar is to form a general and critical eco-conscious and nature conservation view. The acquired knowledge will facilitate students to understand different branch of studies and use them profitably (e.g. biogeography, phyto-sociology, general, plant and zoo ecology, physiology, chemistry and physics). Students will know the main topics of environmental protection and nature conservation, Students will also be able to distinguish, recognize and describe the main purposes, methods and tools of environmental protection and nature conservation. In the end, students will be able to form their own opinion on different topics of environmental protection and nature conservation.

ENBIOB3202 Genetics (Laboratory)

The aim of the genetics practice is to put into practice and deepen theoretical concepts, get acquainted with the most important experimental systems, substantiate experimentally and in practice the basic knowledge, to demonstrate the basic and derivate genetical patterns and, mainly through problems, to improve the problem solving ability of students.

ENBION2201/ ENBIOB2301 Evolution (Lecture)

This course aims at introducing the most important concepts of evolution from the perspectives of life sciences, creating the outlines of evolutionary paradigm for the systematic approach to the knowledge mastered in frames of other fields and subject matters Students completing the course will know the origin and development of the evolutionary paradigm, the biological importance of this paradigm, know the concepts of the field, and have a proficiency in using them. The students should be open minded to the scientific fields in intimate relation to evolution, with special emphasis on genetics-genomics, and disciplines based on molecular biology, are able to study and master the results of these, and have the basic information for that, are determined to apply the evolutionary approach in their further studies. At the end of the course, they are able to interpret and present basic experimental results, and argue for the facts of evolution.

ENBIOB1901 Ethology (Practice)

In this course, the students will get some insight on the huge variation in animal behaviour, investigate how mechanisms within individual (e.g. physiology, neuroendocrine system or genetics) can generate this behavioural variation and we will study the evolutionary factors which shaped this variaton. The students are familiarized with variation in animal behaviour

and with their role in evolution. At the end of the course, students are able to distinguish the innate and learned behaviour; open to accept the knowledge of closely related biological disciplines and strive to synthesize the different knowledge subjects. They are able to independently interpret, depict and present the learned knowledge individually and to produce presentations and summaries independently from the knowledge of the subject.

ENBIOBSV0601 Applied Biotechnology

The aim of the course is to acquaint the students with the biotechnological applications of microorganisms, to teach the principles of research and industry fermentation systems, and to demonstrate the practical application of microbial fermentation and biotransformation systems. The students will be able to know and use the main correlations of applied biotechnology, the basic vocabulary of the field and use their terminology; use the basic methods of the discipline and the tools presented. At the end of the course, they become open to the scientific fields related to the different disciplines of biotechnology, to the directed synthesis of information gained during their previous studies and to understand the contexts. They can independently interpret the basic literature of the field and are receptive to the use of innovative technologies and seek innovative solutions.

ENBIONSV0302 Microtechniques (Practice)

Principle of operation, structure and types of optical examination devices (light microscope, phase contrast, fluorescence and polarization microscope, scanning laser microscope, transmission and scanning electron microscope) are introduced in this course.
Practical tasks include:

- Microscopic measurements, preparation of microscopic slides: vital samples, vital stains, fixed samples, principle of fixation, practical tricks and processing of fixed samples.
- Contrast enhancement of light microscopic sections: general staining, impregnations, special staining methods (indication of granular structures of cytoplasm and connective tissue fibers).
- Classical histochemical methods: detection of nucleic acids, amino acids and proteins, carbohydrates, lipids. Principle and practical tricks of enzyme histochemistry. Characterization and 50 histochemical reactions of the most important enzymes that can be detected histochemically.
- Biological basis of immunocytochemistry, applicable antibodies and labeling molecules. Advantages and disadvantages of direct and indirect immunocytochemical method are some of the practical course contents.

ENBIONSV0303 Microtechniques (Laboratory)

This course revolves around equipments, devices, chemicals and their use in histological and cytological laboratories including parts and use of light microscopes to take microscopic measurements (length, thickness, area) and calculations.

Students will also be enlightened on preparation, native examination and painting of smear, peel, macerate (Giemsa painting, May-Grünwald and Giemsa staining), immersion and perfusion fixation. Washing, dewatering and embedding of fixed samples in paraffin and synthetic resin, preparation of paraffin sections.

Hematoxylin-eosin staining.

Indication of connective tissue fibers (Van Gieson, orcein staining), indication of neurons (Nissl staining, Golgi-Cox impregnation), staining of nucleic acids with gallocyanine, DNA staining by Feulgen reaction, detection of carbohydrates and carbohydrate-containing structures by periodic acid-Schiff reaction, detection of neutral fats by Sudan staining, detection of catalase activity, indication of peripheral neurons by NADH-diphorase reaction, use of the NADPH reaction to detect nitric oxide synthase enzyme activity, detection of acid phosphatase activity by the Gömör method, dilution and storage of antibodies, compilation of antibody diluents, staining of GABA containing neurons by direct and indirect immunocytochemical methods, microphotography including development of black and white negatives and paper images. In this course student will learn determining the useful magnification and will also learn the basics of digital photography.

ENBIONSV0502 General Toxicology (Practice)

This seminar covers the study of toxicology at infra- and supra-individual levels. It presents the toxic effects, the emerging symptoms and the possibilities of measuring the toxicity at the cellular and organic levels. Systematically introduces the important processes that affect the subject of environmental toxicology, the groups of contaminants and natural toxins.

ENBIONSV1502 Models in Neurobiology (Practice)

This course gives special information on preferred models in modern experimental neurobiology. Participating students will freely pick a topic and present it to the audience. The rest of the students will ask related questions and initiate a conversation, discussion on the presented topic. Therefore, besides giving new/additional knowledge on neurobiological topics, this course will train students to articulate their opinion, to form questions driven by their curiosity and to be able to introduce their own knowledge on (or overlapping with) the particular topic.

ENBIONSV0902 Functional Histology

This is a special course for experimental biologists that synthesize knowledge of cell biology, histology, comparative anatomy, physiology and further biochemistry.

ENBIONS0602 Fundamentals in Limnology (Seminar)

This course tends on acquainting students on aquatic environment and aquatic life form, and the relationships between aquatic organisms and their environment. The students will know the characteristics of the aquatic environment and aquatic life forms, and the fundamental processes, relationships and rules in aquatic ecosystems. They will have knowledge on and be able to use the specific terms in limnology. Due to having fundamental knowledge on limnology, the students will be able to specialize themselves in specific fields of limnology (to learn specific ideas and methods of subfields) during their future studies and works.

ENBIOBSV1101 Plant Identification

This course involves observation, preparation and identification of macroscopic lichens, mosses and vascular plant species of ferns, conifers and angiosperms related with morphological and habitat diversity. Identifying and application of diagnostic features (e.g. organization types, bud, leaf, root, stem, bark, spores, flowers, fruits, etc.) by the eye and the use of transmission and binocular microscope on native plant material. Practice is held in laboratory and outdoor localities in natural habitats of South-Hungary (Mecsek mountains and the surroundings) in late spring.

ENBIOBSV1201 Animal Identification and Ecology

The course will help in widening the taxonomic knowledge and ecological approach to the other fundamental and special courses (e.g. zootaxonomy, systematics, ecology, biogeography, zoological monitoring, and applied zoology); identification of species and sampling procedures; the widening of knowledge about model species and animal groups frequently used in ecological modeling; learning of sampling methods and data processing.

ENBIOBSV1301 Biomonitoring (Seminar)

Students get acquainted with theoretical bases of biodiversity monitoring and with the principles of planning and implementing long-term biodiversity monitoring studies

ENBIOBSV1401 Soil Science

The soil science course is a review course which provides an overview of the fundamental concepts of soil science. The main objectives of the seminar are to learn about properties of the soils: abiotic properties, soil microorganisms, fungi, animals, plants and their biological

properties. At the end of the course the students will have the knowledge of specific terminology of soil science and apply these in the practical realm. They will have the knowledge of properties, structure and function of the soil and recognize concepts and theories that explain processes of the soil. They will be able to understand and evaluate results of experiments, make presentations and abstracts related to this subject.

ENBIONV0201 Fundamentals in Plant Sociology

This course informs the students about the main methods and limitation of phytosociology. The students will be able to distinguish, recognize and describe the main phytosociological classes of the Hungarian syntaxa, are open for accepting new results of different phytosociological methods and approaches (dynamic outlook). They will be able to form their own opinion on different topics of phytosociology.

ENBIOBSV1601 Conservation of Flora and Fauna (Seminar)

The purpose of the seminar is to form a general and critical botanical and zoological view that can be a useful tool in nature conservation practice. The acquired knowledge will give a comprehensive view on Hungarian and general biotic values that should be protected. Upon these skills, this knowledge gives the students an opportunity to use and understand the results of other sciences (e.g. Biogeography, Phytosociology, General, Plant and Zoo Ecology, Taxonomy and Physiology).

ENBIOBSV1701 Introduction to Applied Ecology (Seminar)

The course introduces the students to scientific principles and different fields of science of applied ecology. It is a practice-oriented course by integrating knowledge of general ecology, zoology and conservation biology. Another objective is to develop students' analytical and synthetic ecological approaches.

The subject forms the basis of further subject studies and specialization (e.g. professional core material, supra-individual MSc subjects).

MSC BIOLOGY

The Biology MSc line offers full 2-year-education in biology. The study program for full-time training offers a complete education in biology, with special directions particularly in molecular biology (neurobiology, genetics, microbiology), and animal and plant ecology. Special directions from the second semester offer more laboratory practice in molecular biology or more courses in ecology. The basic subjects are presented in lectures, seminars and laboratory or fieldwork. The program provides a wider view of the related scientific

fields (biophysics, biological chemistry). The students will familiarize their knowledge with the most modern instrumentation in our new research centre. It covers all aspects of education, research and innovation in the fields of biomedical, natural and environmental sciences. It also provides an opportunity to join the research work in 22 different research groups operating in the building.

OVERVIEW OF POPULAR COURSES FOR MSC BIOLOGY

The following section gives an overview of important courses which are commonly picked up by our incoming exchange students.

In case you need further information about any specific course you can contact us to request it.

ENMNBIOA0101 Biophysics

In this course, biophysical aspects of physiology and the use of physics based research equipments in biological research are taught. It aims to present biophysical aspects of physiology as well as physical phenomena applications in research equipments. In addition to establishing basic knowledge of biophysical concepts, the focus of students' activities is based on the methods and theories applied in biology research. Upon completing the course, students are expected to understand how the basic principles of natural sciences (as learnt in BSc physics and related courses) are realized in biological organisms; how biomolecules interact with electromagnetic radiation. Students are expected to acquire the understanding of research equipments which can be utilized in their diploma projects.

ENMNBIOA2501 Biostatistics

This course aims at demonstration of the application of basic statistical knowledge and methods that are necessary to answer biological research questions.
Meanwhile, it helps students to acquire skills to use a statistical program for data collection related to their research project.

ENMNBIO13 Developmental and Stress Physiology of Plants

This course aims at highlighting the regulation of the plant cell cycle, meristem and leaf primordium. It also highlights the induction of flowering, the ABC model of flower development, gametogenesis, male and female sterility and the molecular background of self-sterility in Solenaceae and Brassicaceae plants. Moreover, the role of Programmed Cell Death (PCD) in plant development, senescence and stress responses along-with constitutive and inducible defense responses are also taught. Moreover in this course the molecular

background of plant abiotic stress responses and defence against water stresses (flood, drought, osmotic, salt), acclimation in cold and heat stress tolerance, the role of chaperons in the protection of the proteins are also focused.

ENMNBIO2901 Ecological Fundamentals in Environmental Protection and Nature Conservation

Those students who pass this course will know the main ecological aspects of environmental protection and nature conservation, will be able to distinguish, recognize and describe the main purposes, methods and tools of environmental protection and nature conservation, and are open to accept and/or criticize new results of different approaches on environmental protection and nature conservation. They will be able to form their own opinion on different topics of environmental protection and nature conservation.

ENMNBIO2801 Evolution of the Structure and Function in the Living Being The purpose of the subject is to put evolutionary and zoological knowledge into the system of analysis from a different perspective, and to develop an EVO-DEVO (evolutionary developmental biology) approach.

ENMNBIO2701 Molecular Cell Biology

In this course, the origin of the eukaryotic cell, its compartments and organelles will be focused.

ENMNBIOA0601 Proposal Preparation and Scientific Communication

With this course, the students will become armored to collect information related to their scientific projects, conceptualizing and writing simple papers and abstracts. They will be able to integrate themselves into teams generating and writing projects.

ENMNBIO3001 Regulatory Biology

Students will acquire knowledge on regulatory processes of the body at both molecular and systems level. They will understand the most important know scientific results and integrate these with the former knowledge obtained during their BSc studies. They will understand the basics of the newest brain research methodologies.

INSTITUTE OF CHEMISTRY

The first predecessor of the University of Pécs was founded in 1367, but the Institute of Chemistry is much younger than that. Our staff is dedicated to maintaining the highest standards both in teaching and scientific research. We offer chemistry training at the BSc, MSc and PhD level. The Institute is composed of three departments: the Department of Analytical and Environmental Chemistry, Department of General and Physical Chemistry, and the Department of Inorganic Chemistry. If the visitor misses a Department of Organic Chemistry, the reason is because it is located at the Medical School for historical reasons and is currently not part of the Institute of Chemistry despite having very close ties both in teaching and research. Although researchers at the Institute have not yet been awarded an IgNobel or a real Nobel prize, we believe we can transmit our passion about science and chemistry to all students we teach.

BSC CHEMISTRY PROGRAM

The Chemistry BSc program offers a full 3-year education in chemistry. The study program offers a complete education in chemistry, with specialisation in inorganic, organic, analytical, environmental, and physical chemistry. Special courses cover instrumental analysis, advanced organic chemistry and physical chemistry measurements. Courses for profound knowledge in mathematics, chemometrics, theoretical chemistry and biochemistry complete the curriculum. The subjects are presented in lectures (theoretical background of the topics, with the aim to provide a wider view for chemical application), seminars with a discussion of the topics and practising chemical calculations, and laboratory work. The students will familiarise their knowledge with the most modern instrumentation. The program requires the completion of 180 credits.

OVERVIEW OF POPULAR COURSES FOR BSC CHEMISTRY PROGRAM

The following section gives an overview of important courses which are commonly picked up by our incoming exchange students. The complete list of these available courses can be found at the end of the guide. However, you can go through the course curricula for BSc Chemistry for more details and see all the available courses here.

In case you need further information about any specific course you can contact us to request it.

Chemistry BSc/Natural Sciences BSc

Erasmus+ Course List

Course title	Semester	Credits (ECTS)
General and Inorganic Chemistry I. lecture	Fall	8
General and Inorganic Chemistry I. seminar	Fall	6
Organic Chemistry I. lecture	Fall	8
General and Inorganic Chemistry II. lecture	Spring	8
General and Inorganic Chemistry II. seminar	Spring	6
Organic Chemistry II. lecture	Spring	8

General and Inorganic Chemistry I. lecture

Language of instruction:	English
Form of teaching:	Lecture
Class hours per week:	4
Credits (ECTS):	8
Course description:	Week 1: Subject of chemistry, chemistry and other sciences, chemistry and society. Basic terms of chemistry. Stoichiometry: mole-mass relation in chemical reactions. Molar interpretation of a chemical equation. (molecular formula, empirical formula, Avogadro's number, kind of chemical reactions) Week 2: Atomic structure (Rutherford's experiment, the Bohr theory of hydrogen atom, quantum mechanics model). Quantum numbers and atomic orbitals. Week 3: Electron structure of atoms. Electron configurations and orbital diagrams. Pauli exclusion principle, building-up principle,

	Hund's rule. The periodic table. Periodic classification of the elements. Periodic properties (atomic radius, ionization energy, electron affinity). Week 4: Metallic bonding, ionic bond. Covalent bond, electronegativity, polar covalent bond, dipole moment. Week 5: Molecular geometry, VSEPR-model, valence bond (VB) theory, molecular orbital (MO) theory. Week 6: **Test I.** Change of state. Phase change (boiling point, melting point). Phase diagrams. Type of solids. (crystalline and amorphous solids). Intermolecular forces (London-forces, dipole-dipole-forces, hydrogen bonding). Week 7: Type of solution, the solution process, concentration of solutions (mass percentage, mass fraction, molarity, mole fraction, molality). Colligative properties: boiling-point elevation, freezing-point depression, osmosis. Week 8: Colloids. Type of colloids. Type of reactions, heat of reactions. Rate of reaction. Reaction order. Reaction mechanisms, catalysis. Week 9: Reaction of acid, bases. Neutralization. Acid-base concepts (Arrhenius, Bronsted-Lowry, Lewis, Pearson). Water self-ionization, ion-product constant for water, pH. Acid-base equilibria in solution (weak acid and base, salt, hydrolysis, common-ion effect, buffers.) Week 10: Oxidation number, oxidation number method. Oxidation-reduction reactions. Electrochemical cells, Galvanic cells. Electrode potentials, electrodes, Nernst

	equation. Electrolytic cells, fuel cell, lead storage cell. Chemical equilibrium - dynamic equilibrium. (equilibrium constant, Le Chatelier's principle). Homogeneous and heterogeneous equilibrium. Week 11: Coordination compounds. Formation and structure of complexes. Naming of coordination complexes. Structure and isomerism in coordination compounds. Week 12: Valence bond theory of complexes. Crystal field theory. Week 13: **Test II.** Pearson acid-base concept (hard/soft acid/base).
Assessment methods:	Active participation, oral exam and written essays.
Teaching period:	Fall semester

General and Inorganic Chemistry I. seminar

Language of instruction:	English
Form of teaching:	Seminar
Class hours per week:	2
Credits (ECTS):	6
Course description:	Week 1: Concentration calculations I. Week 2: Concentration calculations II. Week 3: Concentration calculations III. Week 4: Concentration calculations IV. Week 5: Gas laws I. Week 6: Gas laws II. Week 7: **Written exam I.** Week 8: Solubility of gases Week 9: Properties of diluted solutions Week 10: Stoichiometric calculations I. Week 11: Stoichiometric calculations II. Week 12: Stoichiometric calculations III.

	Week 13: Stoichiometric calculations IV. Week 14: **Written exam II.**
Assessment methods:	Active participation, written exam and midterm tests.
Teaching period:	Fall semester

Organic Chemistry I. lecture

Language of instruction:	English
Form of teaching:	Lecture
Class hours per week:	4
Credits (ECTS):	8
Course description:	Week 1: Atomic orbitals, molecular orbitals, hybridization, strucrure of molecules, covalent bonds Week 2: Representative carbon compounds: functional groups; Organic reactions and their mechanism; Acids and bases Week 3: Stereochemistry: isomerism, conformation, configuration, chirality; Structure determination of organic compounds Week 4: Alkanes, their structure, conformation, sp^3 hybridization, nomenclature, physical properties, chemical reactions. Week 5: Unsaturated hydrocarbons: their structure, sp^2 and sp hybridization, nomenclature, physical properties, chemical reactions, synthesis. Week 6: Unsaturated hydrocarbons in industry and biology: polymerization, terpenes, steroids, carotenoids). Week 7: Aromatic hydrocarbons: aromaticity, Hückel's rule. Aromatic electrophilic substitution reactions. Week 8: Alkyl halides: the character of a Hlg-C bond, synthesis, chemical reactions, their role in industry. Week 9: Organometallic compounds: structure; synthesis; reactivity, S_N and A_E reactions, reactions of Mg, Li, Cu, Cd, Zn organic compounds, synthesis and application of Si-organic derivatives.

	Week 10: Alcohols, phenols, ethers and their derivatives. Structure, physical and chemical properties, reactions. Their role in biological processes. Week 11: Aliphatic and aromatic nitro compounds, azo and diazo compounds: structure, synthesis, physical and chemical properties and importance. Week 12: Amines: structure, synthesis, physical and chemical properties, basicity. Biologically active amines, alkaloids, drugs and hormones. Week 13: Sulphur containing compounds: structure, physical and chemical properties, reactions. Their role in biological processes.
Assessment methods:	Active participation, oral exam and written essays
Teaching period:	Fall semester

General and Inorganic Chemistry II. lecture

Language of instruction:	English
Form of teaching:	Lecture
Class hours per week:	4
Credits (ECTS):	8
Course description:	Week 1: Nonmetals and their compounds. Hydrogen and its isotopes, its use and application. Hydrides. Week 2: General characterization of metals. Alkali metals, their occurrence, physical and chemical properties. The hydrides, halides, oxides, hydroxides, sulfides, polysulfides and carbonates of alkali metals. The crystal energy and solubility of alkali salts. The biocoordination chemistry of alkali metals (introduction). Week 3: Alkaline earth metals, their occurrence, physical and chemical properties. Their compounds and use. Week 4: The elements of group III and their physical and chemical properties. Hydrides, oxides. Their compounds and use. Preparation of boron and aluminum. Organic compounds of boron and aluminum. Week 5: The elements of group IV and their physical and chemical properties. Comparison of C and Si compounds. The stereochemistry of C, the main types of carbon compounds. Hydrides and halides. Oxides, oxoacids, oxohalides. The characterization of some compounds with C-N bond, their practical importance. Carbides. Week 6: The elements of the nitrogen group, their occurrence, physical and chemical properties. Their compounds, the comparison of the stereochemistry of N and P. Hydrides, the

	synthesis of NH_3. Oxides and oxoacids, their structure and chemical properties, their practical importance. Week 7: Chalcogens, physical and chemical properties, their compounds with hydrogen and halogens. Water. Oxo-compounds of S, Se, and Te. Week 8: The occurrence of halogens, physical and chemical properties. Interhalogens. Hydrogen halides and oxo-compounds (oxides, oxoacids). The structure and properties of oxoacids. Week 9: The occurrence of noble gases, their physical and chemical properties. General characterization of transition metals, physical and chemical properties. The variability of their oxidation states and their electronic structure. Complex formation and its consequences. The optical and magnetic properties of transition metal complexes. The production of transition metals, reduction of oxides and halides, thermal decomposition of halides and carbonyls, electrolysis. Transition metal hydrides, halides, their structures, and stabilities. Halogeno-complexes. Transition metal oxides, hydroxides, sulfides, cyanides, thiocyanates. Carbonyl complexes and their bonding properties. Week 10: Ti, Zr, Hf and their compounds. V, Nb, Ta and their compounds. Week 11: Cr, Mo, W and their compounds. Mn, Tc, Re and their compounds. Week 12: Fe, Co, Ni and their compounds. Platinum metals and their most important compounds. Cu, Ag, Au and their compounds. Zn, Cd, Hg and their compounds. The biocoordination chemistry of Fe and Cu (introduction).

	Week 13: Lanthanides and actinoids. The electronic structure of lanthanides, the atomic and ionic radii. The production of transurane elements. Complexes and practical applications of lanthanides and actinoids.
Assessment methods:	Active participation, oral exam and written essays
Teaching period:	Spring semester

General and Inorganic Chemistry II. seminar

Language of instruction:	English
Form of teaching:	Seminar
Class hours per week:	2
Credits (ECTS):	6
Course description:	Week 1: Detailed Balancing of chemical equations Week 2: Redox calculations I. Week 3: Redox calculations II. Week 4: Redox calculations III. Week 5: Electrolysis I. Week 6: Electrolysis II. Week 7: **Written exam I.** Week 8: Galvanic cells Week 9: pH calculations of strong acids and bases I. Week 10: pH calculations of strong acids and bases II. Week 11: pH calculations of weak acids and bases I. Week 12: pH calculations of weak acids and bases II. Week 13: pH calculations of weak acids and bases III. Week 14: **Written exam II.**
Assessment methods:	Active participation, written exam and midterm tests
Teaching period:	Spring semester

Organic Chemistry II. lecture

Language of instruction:	English
Form of teaching:	Lecture
Class hours per week:	4
Credits (ECTS):	8
Course description:	Week 1: Aldehydes and ketones – structure, physical, chemical properties, reactions, important representatives. Week 2: Nucleophilic addition and condensation reactions of aldehydes and ketones Week 3: Monosaccharides – structure, mutarotation, reactions and biological importance. Week 4: Di- and polysaccharides – food reserve and structural material polysaccharides. Week 5: Carboxylic acids and their derivatives – structure, physical, chemical properties Week 6: α-Position substituted carboxylic acid derivatives, di- and polycarboxylic acids, representatives; Esters of inorganic acids, biological significance (phosphatides, phospholipids). Week 7: α-Amino acids, peptides and proteins, biological importance. Week 8-9: Heterocycles (5- and 6-membered heteroaromatic compounds, structure, biologically important representatives, chemical mode of action of coenzymes); Week 10: Heterocycles in nucleotides, nucleosides, nucleic acids. Week 11-12: Vitamins. Week 13: Degradation of organic compounds and their effect on biological environment (ozone degradation, pesticides, chemical fertilizer, combustion end-products)
Assessment methods:	Active participation, oral exam and written essays

Teaching period:	Spring semester

INSTITUTE OF MATHEMATICS AND INFORMATICS

The institute consists of four departments covering the fields of theoretical and applied mathematics, informatics and biorobotics. The academic staff consists of over 25 people on permanent positions, most of them with PhD degrees, 8 with Habilitation and 3 are Doctors of the Hungarian Academy of Sciences. They are teaching different disciplines of mathematics and informatics to BSc and MSc students and are doing a significant scientific research work.

The main research topics are related to algebra, number theory, mathematical analysis, geometry, combinatorics and graph theory, mathematical logic, applied mathematics, as well as certain fields of informatics and biorobotics. Publications from the institute appear in prestigious journals, such as Journal of Fourier Analysis and Applications, Journal of Mathematical Analysis and Applications,
Journal of Number Theory, Acta Arithmetica, The Ramanujan Journal, Results in Mathematics, Acta Mathematica Hungarica, Studia Logica, Journal of Chemometrics, Publicationes Mathematicae Debrecen, Mathematics, Mediterranean Journal of Mathematics, Linear Algebra and Its Applications, Colloquium Mathematicum, International Journal of Intelligent Technologies and Applied Statistics, Analysis Mathematica, Discrete Applied Mathematics, Journal of Algebra and Its Applications, International Journal of Wavelets Multiresolution and Information Processing. Department of Mathematics and Applied Mathematics The members of Departments of Mathematics and Applied Mathematics are involved in the Bachelor (BSc) programmes of Mathematics and Computer Science and the Master (MSc) programme of Applied Mathematics.

The research topics include: group theory, algebraic and analytic properties of arithmetic functions, harmonic and wavelet analysis, finite geometry, code and graph theory, and their applications.

Several English-language courses, individual consultations and research possibilities are offered to ERASMUS fellowship holders and other foreign students.

DEPARTMENT OF INFORMATICS AND IT AND BIOROBOTICS

These two departments keep its focus on several very important aspects of informatics teaching:

- modernatisation of courses
- emphasise research and study publications
- offering practical, market-conform courses
- teaching of biorobotics based on state-of-the-art technologies; modelling and measuring movements of the human body

The main direction of research is biorobotics related to science and IT training. On the one hand, biorobotics is responsible for applying knowledge about the natural regulation of biological systems (neural motion control) in the control of artificial structures, e.g. robots. On the other hand, the use of robots in the rehabilitation of the movement of biological systems, e.g. human limbs, if the control of movement has changed or been eliminated due to neurological injury (e.g. stroke or spinal cord serenity). We use experimentation, IT and mathematical methods to understand and teach about movement control.

BSC COMPUTER SCIENCE

Supercomputer, great student-teacher ratio, valid degree all over the EU, highly qualified and internationally recognized professors, up to date knowledge, friendly classroom atmosphere, personal interactions with the teachers, flexible and high quality education – this is how we can describe our BSc Computer Science program.

What we can offer:

- Software-oriented thinking
- Strong mathematic and algorithmic basics (e.g. encryption, telecommunications, modern industry standards, etc.)
- Software and system design
- Modern technologies
- Backend / frontend
- Instructors from the industry
- Student-friendly environment
- Keeping group numbers low
- Optional one-on-one consultations with instructors

OVERVIEW OF POPULAR COURSES FOR BSC COMPUTER SCIENCE

The following section gives an overview of important courses which are commonly picked up by our incoming exchange students. The complete list of these available courses can be found at the end of the guide.

However, you can go through the course curricula for BSc Computer Science for more details and see all the available courses here.

If you need more details regarding any specific course you can request it via an email.

Basic of Computer Science (STA-PTIB0801)

Semester:	Fall
Form of teaching:	Lecture and Practice
Class hours per week:	2+2
Credits (ECTS):	8
Language of instruction:	English
Course description:	Week 1 Course introduction. Algorithmic problems, modelling. Week 2 Complexity of algorithms. Week 3 Insertion and sorting. Week 4 Packing and covering. Matching problem. Binary trees, decision trees. Graph search. Preorder, inorder and postorder tree traversals. Week 5 Connected graphs, shortest path. Knapsack problem. Suboptimal algorithms. Week 6 Longest path, Eulerian and Hamiltonian graphs. Week 7 Set Cover Problem. Graph coloring, chromatic number, planar graphs, 4-colour theorem, Kuratowski's and Wagner's theorems. Week 8 Graph diagnostics. Tournament and its winner. Generalization: logical formulas. Week 9 Parallel computing. Week 10 Modular algorithms. Polynomial division, Euclidean algorithm for integers and polynomials. Week 11 Faster multiplication and division of large numbers. Week 12 Chinese Remainder Theorem

	Week 1 *Turing Machines. Introduction of simulatorsoftware. 1-tape TM.* *Week 2* *2-tape TM.* *Week 3* *3-tape TM.* *Week 4* *K-tape TM.* *Week 5* *Midterm exam.* *Week 6* *Sorting, next greater element. Graph search and traversals.* *Week 7* *Packing problems.* *Week 8* *Shortest and longest paths. Graph coloring.* *Week 9* *Graph diagnostics and generalization.* *Week 10* *Euclidean algorithm, polynomial division.* *Week 11* *Faster multiplication and division of large numbers* *Week 12* *Chinese remainder theorem.* *Week 13* *Endterm exam.*
Assessment methods:	Written test Assignment to be submitted during the semester

Calculus I. (STA-PTIA0201)

Semester:	Fall
Form of teaching:	Lecture and Practice
Class hours per week:	2+2
Credits (ECTS):	8
Language of instruction:	English
Course description:	Week 1: Convergence and divergence of number sequences. Bounds of a number series. Relationship between convergence and boundedness. Week 2: Operations with convergent sequences sum, difference, multiplication, quotient of convergent sequences.

	Week 3: Monotone sequences. Limit value calculation procedures. Convergence rate estimation. Week 4: Convergence and divergence of infinite series. Operations on convergent series. Week 5: Necessary condition, necessary and sufficient condition for convergence. Simple convergence criteria for positive member series: the major and minor criteria. Week 6: Simple convergence criteria: the quotient and root criteria and their consequences. Absolute and conditional convergent series. Leibniz series. Week 7: Sequences of functions. Polynomials and rational functions. Power series. Elementary functions. Week 8: Operations with functions: sum, difference, multiplication, quotient, composition of functions. The limit of functions (finite, infinite, finite and infinite limits). Week 9: Operational rules for the limit of a function. Interpretation of a power with irrational exponent. Notable function limits, limit calculation procedures. Week 10: Continuity of functions, operations with continuous functions. Week 11: Differential and differential quotient. Geometric, physical, chemical applications of differential coefficients. Rules of operations of differentiation. Week 12: Rules of operations of differentiation: differential ratio of sum, difference, product, quotient of differentiable functions, differential ratio of complex function. Differentiation of elementary functions. Week 13: Evaluation and closure of the semester, making up for any shortcomings.

Assessment methods:	Written test Assignments to be submitted during the semester

Discrete Mathematics I. (STA-PTIB0101)

Semester:	Fall
Form of teaching:	Lecture and Practice
Class hours per week:	2+2
Credits (ECTS):	8
Language of instruction:	English
Course description:	Week 1 Paradoxons in naiv set theory, Neumann universe Week 2 Relations, equivalence and partial ordering relations Week 3 Counting techiques Week 4 Binomial and polynomial theorems Week 5 Numbers, natural, integer, rational, real, complex Week 6 Naiv and formal concepts of graph Week 7 Trees, Week 8 Graph isomorhphism, Week 9 Eulerian, Hamiltonian graphs Week 10 Satisfiability problem, Davis-Putnam algorithm Week 11 Coloring the nodes of a graph Week 12 Maximal, maximum clique, k-clique problems Selected applications
Assessment methods:	Written test Assignment to be submitted during the semester

Elementary Linear Algebra (STA-PTIB0301)

Semester:	Fall
Form of teaching:	Lecture and Practice
Class hours per week:	2+2
Credits (ECTS):	8

Language of instruction:	English
Course description:	Week 1.The concept of a matrix. Operations of matrices, their properties and applications. Using indices. Example for special matrices. Week 2.Elementary row and column operations. Linear equation systems. Echelon forms, reduced echelon forms, matrix equivalence. Gaussian elimination, Gauss-Jordan reduction. Week 3. Determinants: their evaluation and applications. Week 4.Elementary matrices. Inverse of a matrix. Equivalence of matrices. Week 5. Real vector spaces. Examples. Subspaces. Linear independence, Span. Week 6. Rank of a matrix. Kronecker-Capelli theorems. Applications 1. Week 7. Basis, dimension. Orthonormal basis. Change of a basis. Isomorphism of vector spaces. Week 8. Linear operators. Rank and nullity of a matrix. Properties of linear operators. Week 9. Linear operators and their matrices on orthonormal bases. Week 10 Inner product spaces. Gram-Schmidt orthogonalization. Orthogonal complement. Week 11. Eigenvalues and eigenvectors. Characteristic polynomials. Week 12. Diagonalization of symmetric matrices Week 13. Applications
Assessment methods:	Written test Assignment to be submitted during the semester

Elementary Programming (STA-PTIA1201)

Semester:	Fall
Form of teaching:	Practice
Class hours per week:	4
Credits (ECTS):	8
Language of instruction:	English
Course description:	Week 1: Installing and using Python Week 2: Variables, data types, operators Week 3: Type conversions Week 4: Conditional statements Week 5: Functions Week 6: Arrays Week 7: Collections Week 8: Control stuctures Week 9: Test Week 10: Exceptions Week 11: Classes, Inheritance, Modules, Packeges Week 12: File Handling Week 13: Basic GUI
Assessment methods:	Written test Assignment to be submitted during the semester

Methodology of Programming II. (STA-PTIA1-1302)

Semester:	Fall
Form of teaching:	Practice + Seminar
Class hours per week:	2+2
Credits (ECTS):	8
Language of instruction:	English
Course description:	Week 1: Network Architecture, API, DMZ Week 2: Multi-layered Application Logic, MVC Week 3: Spring Boot, Rest API Week 4: Build Spring Boot Application, Establish database connection Week 5: Interfaces, Micro Services Week 6: RESTfull APIs, Custom Annotations Week 7: Custom Exception Week 8: Swagger UI Week 9: Logging Errors and Exceptions Week 10: Aspect Oriented Programming Week 11: Creational Design Patterns Week 12: Structural Design Patterns Week 13: Behavioral Design Patterns, Miscellaneous Design Patterns
Assessment methods:	Written test Assignment to be submitted during the semester

Programming I. (STA-PTIB1601)

Semester:	Fall

Form of teaching:	Practice
Class hours per week:	4
Credits (ECTS):	8
Language of instruction:	English
Course description:	Week 1 Annunciation of course requirements. Foundations of algorithmic thinking. Week 2 Examples for aiding algorithmic thinking Week 3 Methods of program design. C++ programming environment. Loading the program, learning to use it, managing the framework. Week 4 Basic programming, basic syntax. Declaring integer and float variables, data representations, number constants, arithmetic operators, expressions. Week 5 Character type variables, character constants. Operators, precedencies. Week 6 Control structures: conditional control transfer (if, switch-case) Week 7 Debugging. Week 8 Control structures: iterations. Week 9 Pointers, arrays. Week 10 String variables. Week 11 Functions and its parameters. Week 12 Functions, standard functions. Week 13 Summary, evaluation of course fulfillment.
Assessment methods:	Written test Assignment to be submitted during the semester

Relational Database (STA-ONINF2-2001)

Semester:	Fall
Form of teaching:	Lecture and Practice

Class hours per week:	2+2
Credits (ECTS):	8
Language of instruction:	English
Course description:	Week 1: Module 1 -SQL and Relational Databases Week 2: Information and Data Models Week 3: Types of Relationships Week 4: Mapping Entities to Tables, Relational Model Concepts Week 5: Relational Model Constraints and Data Objects Week 6: Relational Model Constraints Introduction and advanced Week 7: Data Definition Language (DDL) and Data Manipulation Language (DML) Week 8: CREATE TABLE statement, Week 9: INSERT statement; SELECT statement; UPDATE and DELETE statements Week 10: String Patterns, Ranges, and Sets Week 11: Sorting Result Sets; Grouping Result Sets Week 12: Working with multiple tables Week 13: Join Overview; Inner Join; Outer Join Week 14: Exam
Assessment methods:	Written test Assignment to be submitted during the semester

System engineering (STA-PTIB1501)

Semester:	Fall
Form of teaching:	Lecture and Practice
Class hours per week:	2+2

Credits (ECTS):	8
Language of instruction:	English
Course description:	Week 1: Module 1 -SQL and Relational Databases Week 2: Information and Data Models Week 3: Types of Relationships Week 4: Mapping Entities to Tables, Relational Model Concepts Week 5: Relational Model Constraints and Data Objects Week 6: Relational Model Constraints Introduction and advanced Week 7: Data Definition Language (DDL) and Data Manipulation Language (DML) Week 8: CREATE TABLE statement, Week 9: INSERT statement; SELECT statement; UPDATE and DELETE statements Week 10: String Patterns, Ranges, and Sets Week 11: Sorting Result Sets; Grouping Result Sets Week 12: Working with multiple tables Week 13: Join Overview; Inner Join; Outer Join Week 14: Exam
Assessment methods:	Written test Assignment to be submitted during the semester

Webprogramming (STA-PTIB1-1501)

Semester:	Fall
Form of teaching:	Practice + Seminar
Class hours per week:	2+2
Credits (ECTS):	8
Language of instruction:	English
Course description:	Week 13 Designing web pages, web ergonomics. Testing websites from user perspective. Basic standards and their importance in web design. Displaying web pages using different devices and browsers. Good and bad example pages. Selecting the proper web hosting service. Uploading and publishing web content. Web development using localhost. Week 14 Basics of HTML. Structure and components of a standard webpage. Main parts of the HTML structure. Understanding and using basic HTML tags. Validating HTML files. Week 15 Importance of separating style and content. Basic structure and the general syntax of CSS. A basic style sheet. Internal style sheets and inline styles. Style classes and selectors. Cascading order and inheritance in CSS. Validating Cascading Style Sheets. Week 16 Formatting letters, words, and paragraphs with CSS. Aligning text. Styling lists, tables, and hyperlinks. Adding colours, graphics, and multimedia

	elements to web pages. Understanding the CSS box model and positioning. Working with margins and padding. Week 17 Creating web pages using CSS templates. The typical terms of use of CSS templates. Finding, downloading, and customizing templates. Formatting and cleaning the code. Week 18 Basic elements and syntax of PHP, Combining HTML and PHP. Using variables. Data types, operators and expressions. Different types of variables, changing data types. Controlling flow with conditions and loops. Week 19 Using arrays in PHP. Understanding the most common array functions and tools. Associative and multidimensional arrays. Week 20 Creating forms with HTML5. HTML5 form elements and their properties. Week 21 Processing forms with PHP. Using the GET and POST methods. Striping out HTML tags and special characters from the input. Security issues. Week 22 Creating and managing relational databases using command line and graphical user interfaces. Reviewing the data types of the selected database management system. Creating, modifying and deleting tables. Making queries from single and joined tables. Week 23 Connecting to databases using PHP. Formatting and displaying query results in web pages. Processing and storing user inputs in databases. Manipulating data values using web resources. Week 24 Embedding external components (e.g. Google Maps, Social plugins, YouTube videos, etc) into websites. The risks of using third party modules. Week 13 Final exam.
Assessment methods:	Written test Assignment to be submitted during the semester

INSTITUTE OF GEOGRAPHY AND EARTH SCIENCES

The Institute of Geography and Earth Sciences of the University of Pécs was founded in 1998. It had been preceded by the unit for the teaching and research into geographical problems from the beginning of modern higher education in the city (1922). The department has developed into the largest institute of the Faculty of Sciences, and is also among the largest geographical workshops throughout Hungary. Due the evolution of the last decades, its profile has been extended significantly. In addition to Bachelor (BSc), Master (MSc) in Geography and teacher of geography (MA) training, it also offers BSc in Earth Sciences and MSc in Geoinformatics. The Doctoral School of Earth Sciences is also an integral part of the institution with various possibilities to precede postgraduate education in this field of research. Totally, there are about 100 Bachelor, 80 Master and 30 postgraduate students taking part in the institute's training programs. With offering full-time programs in Geography and Earth Scineces with about 50 English-Language courses each semester, individual consultations and research possibilities, ERASMUS fellowship holders and other foreign students are especially welcome. The institute has a staff of more than 30 geographers, geologists, meteorologists and other professionals. The structure embraces six departments and three trans-disciplinary research centers. The departments are organized to cover the main, priority research fields of the institute.
For more information contact our international coordinator, Éva Máté PhD at maesaet.pte@pte.hu

Geography BSc

During this 6-semesters long Bachelor degree program students can learn and acquaint themselves with: the most important relations between geography and related disciplines; the analysis and adequately interpreting the problems and challenges of geographical space from a physical and human geographical approach; and the methodological fundamentals essential for the complex and integrated analysis of environmental spatial problems in classrooms, labs and fields. Applied geography specialization is offered for all international students and combines environmental geography, regional development, GIS and tourism. The program includes a six-week professional practice at self-selected private and public businesses and companies; however, the practice is also available at the university and IGES. By completing

the professional practice, you will gain a broad range of practical and project management skills and knowledge to explain, analyze, interpret and execute various planning programs.

Erasmus+ Course List

However, you can go through the course curricula for BSc Geography for more details and see all the available courses here.

Course title	Semester	Credits (ECTS)	Course code
Introduction to Geography	fall	4	ONFOL1-2501
Geomathematics and Geostatistics	fall	4	AFOLNA0101
Social Studies for Geographers	fall	6	AFOLNA0301
Meteorology and Climatology	spring	4	ONFOL1-0501
Introduction to Astronomy	fall	2	AFOLNA0701
Introduction to Geology (L)	fall	3	ONFOL1-0202
Introduction to Geology (P)	fall	2	AFOLNA0402
Introduction to GIS I.	fall	4	AFOLNA0101
Introduction to GIS II.	spring	4	AFOLNA0102
Introduction to Scientific Work	fall	3	AFOLNA1301
Geomorphology	spring	4	AFOLNA1401
Historical Geology and Paleontology	spring	3	ONFOL1-2701
Introduction to Pedology	fall	4	ONFOL1-2601
Biogeography	fall	3	ONFOL1-1301
Hydrogeography	spring	4	ONFOL1-0801
Introduction to Human Geography	fall	2	ONFOL1-1101
Population, Place and Identity	spring	6	ONFOL1-2801
Urban Geography	fall	6	AFOLNA3301
Economic Geography	fall	6	AFOLNA2201
Physical Geography of Europe	fall	6	ONFOL1-2301
Human Geography of Europe	fall	6	ONFOL1-2401
Physical Geography of the Carpathian Basin	spring	6	ONFOL1-1901
Human Geography of Hungary	spring	6	ONFOL1-1801
Field Trip	spring	3	ONFOL1-0901
Introduction to ArcGIS	spring	4	AFOLNS-0101
Introduction to Remote Sensing	spring	3	AFOLNS-0201
Urban Development	spring	4	AFOLNS3-0501
Transport Geography and Planning	spring	3	AFOLNS3-0701
Regional Policies	spring	3	AFOLNS3-0301
Global Tourism	fall	3	AFOLNS4-0301

ONFOL1-2501 Introduction to Geography

Language of instruction:	English
Form of teaching:	Lecture and practice
Class hours per week:	2 L + P
Credits (ECTS):	4
Course description:	The aim of this course is to prepare first grade students for their university studies in geography. For this reason, during the course they learn the basic definitions, proper nomenclature and important topographical phrases of geography, ensuring their successful progress during their studies. At the end of the semester, students are able to understand the university level geography theories, compare and evaluate the basics of physical and human geography. They are also aware of the most important geographical knowledge based on cartography and maps. The course has two components: the lectures and the seminars. With the lectures, students learn basic geographical theories, at seminars they practice and implement their basic knowledge. This course is also ideal for students, who don't have a geography as a major, but want to have a brief introduction to this field.
Assessment methods:	Series of written tests during the semester, final oral exam at the end of the semester.
Teaching period:	Fall semester

AFOLNA0101 Geomathematics and Geostatistics

Language of instruction:	English
Form of teaching:	Practice
Class hours per week:	3 P
Credits (ECTS):	4
Course description:	This course aims to provide an understanding and knowledge of basic mathematical and statistical methods It also aims to provide a routine in the solution of the simpler mathematical and statistical problem related to the earth sciences knowledge. Upon successful completion of this course, students are able to apply basics mathematical and statistical tools and students are expected to be able to solve simpler mathematical problems and accomplish statistical analysis at basics level.
Assessment methods:	Series of written tests during the semester
Teaching period:	Fall semester

AFOLNA0301 Social Studies for Geographers

Language of instruction:	English

Form of teaching:	Lecture and practice
Class hours per week:	2 L + 2 P
Credits (ECTS):	6
Course description:	This course aims to provide students with insight into the geography-related economic, demographic and sociological knowledge forming an important basis for the later interpretation and the geographical approach of their subjects. It also focuses to give insight into some research topics and methodological issues of social sciences, particularly economics and into regional/practical appearance and the cause-effect relationships of specific issues in social sciences. On successful completion of this course students are expected to be familiar with the epistemological and methodological foundations of social sciences, learn the basic skills of social research, basic concepts and theories necessary for understanding the problems and conflicts of our society, the main directions of the observed changes and the possibilities of interventions needed.
Assessment methods:	Written test
Teaching period:	Fall semester

ONFOL1-0501 Meteorology and Climatology

Language of instruction:	English
Form of teaching:	Lecture
Class hours per week:	3 L
Credits (ECTS):	4
Course description:	This course aims to provide an understanding of the structure of the atmosphere, the physical processes which impact the weather and the climate. On successful completion of this course students are expected to understand the basic concepts about the atmosphere and they be familiar with phenomena occur in the atmosphere and are expected to be able to give explanation about the different atmospherical phenomena. They are able to involve critically in the debates about the climate changes. They are also able to apply their knowledge in the other fields of the earth sciences.
Assessment methods:	Oral exam
Teaching period:	Spring semester

AFOLNA0701 Introduction to Astronomy

Language of instruction:	English
Form of teaching:	Lecture
Class hours per week:	2L
Credits (ECTS):	2
Course description:	During the course, students will get to know the life and death of the Sun and other stars, and the elements and structure of Milky Way or other galaxies. They will become aware of the fundamentals of the astronomy:

	the history of the development of astronomy, the basics of the astronomical geography: like orientation and navigation star constellation. Coordinate systems; About the solar system: planet Earth shape, size, and movements, terrestrial and Jovian planets characteristics, the origin and the development of Solar System, small celestial bodies, moons, asteroids, comets. The Sun as a star, basics about other stars, galaxies and the origin of the Universe.
Assessment methods:	Oral exam
Teaching period:	Fall semester

ONFOL1-0202 Introduction to Geology (Lecture)

Language of instruction:	English
Form of teaching:	Lecture
Class hours per week:	2 L
Credits (ECTS):	3
Course description:	This course introduces students to the basics of geology. Through a combination of lectures, labs, and field observations, lecturers will address topics ranging from mineral and rock identification to the origin of the continents, from geologic mapping to plate tectonics, and from erosion by rivers and glaciers to the history of life. The subject matter examined in the course covers the basics of geology and the objectives of the course are to provide students with a general understanding of this discipline. The course will focus on the chemistry and properties of minerals, the composition of igneous, sedimentary and metamorphic rocks and some of the earth processes responsible for rock and mineral formation. After the completion of the course, students will be better able how to observe and think about landscapes and other aspects of Earth; and will better understand the relevance of geology to their local geologic setting and the larger societal issues, like resources. They will also understand main geologic concepts and demonstrate an ability to apply geologic concepts.
Assessment methods:	Written test
Teaching period:	Fall semester

AFOLNA0402 Introduction to Geology (Practice)

Language of instruction:	English
Form of teaching:	Practice
Class hours per week:	2 P
Credits (ECTS):	2
Course description:	This course aims to provide an understanding of the visible properties of minerals, rocks, and fossils and of the geological map and its usage. During the course students will also apply applied geological concepts to illustrate their own measurements. On successful completion of this course students are expected to be able to identify the most common minerals, rocks and

	fossils and be able to use geological compass and able the illustrate the measured data.
Assessment methods:	Series of written tests during the semester
Teaching period:	Fall semester

AFOLNA1001 Introduction to GIS I. (Laboratory)

Language of instruction:	English
Form of teaching:	Practice
Class hours per week:	3 P
Credits (ECTS):	4
Course description:	This course aims to provide an understanding of the basics of GIS and digital cartography. It also provides information about vector graphic tools of the Inkscape software and introduces technical steps of digital mapping. On successful completion of this course students are expected to be able to map geo data using the Inkscape software, to have an understanding of special terms and fundamentals of cartography, to be familiar with tools of vector graphics. They are also expected to be able to evaluate formerly prepared data for cartographic purposes and map physical and human geographic cases. They are able to understand, interpret and present spatial data and accomplish basic cartographic tasks using Inkscape.
Assessment methods:	Written tests
Teaching period:	Fall semester

AFOLNA1002 Introduction to GIS II. (Laboratory):

Language of instruction:	English
Form of teaching:	Practice
Class hours per week:	3P
Credits (ECTS):	4
Course description:	This course aims to provide an understanding of geoinformatics and QGIS software and provides quantitative discussion of basic nomenclature of geoinformatics and methods of data analysis. On successful completion of this course students are expected to be able to comprehend fundamental concepts of GIS, to have an understanding of GIS techniques, to be familiar with QGIS software and vector and master geo data processing. At the end of the course, students are expected to be able to evaluate georeferencing tool of QGIS, to be able to digitize vector data and present thematic maps. Students should be able to comprehend basic field survey techniques and able to collect data.
Assessment methods:	Written tests
Teaching period:	Spring semester

AFOLNA1301 Introduction to Scientific Work

Language of instruction:	English
Form of teaching:	Practice
Class hours per week:	2 P
Credits (ECTS):	3
Course description:	The aim of this seminar is to prepare students to create their own scientific works. Step by step, the major elements of a research project, based on an example of a bachelor thesis will be introduced and each element will be practiced. Course topics will include the principles of the scientific investigation, basics of scientific ethics, and fundamentals of geographical methodology. Students finishing this course will be able to recognize spatial-related scientific problems, to form relevant hypothesis or research questions. They have the skills to use databases, including publication databases and search engines (WoS, Scopus, Google Scholar) and also reference manager programs (Mendeley). They will be able to read and analyze scientific papers critically. They know some of the possible data sources of geographical researches, and have the basic competence to download and handle statistic data. With knowing their own skills and preferences, they will be able to create a research plan for bachelor level. They will know the overall structure of the scientific works/papers, and are able to cite and create list of references.
Assessment methods:	Various tasks must be submitted during the semester
Teaching period:	Fall semester

AFOLNA1401 Geomorphology

Language of instruction:	English
Form of teaching:	Lecture and practice
Class hours per week:	L + 2 P
Credits (ECTS):	4
Course description:	On successful completion of this course students are acquainted with the landscape of the Earth, the laws, interactions, processes which influence geomorphic evolution and are familiar their dynamics. On successful completion of the course, students are expected to be able to: interpret the impact of physical geographical processes on the Earth's surface, recognize surface landforms on which the everyday activities of humanity takes place, reveal their origin and to evaluate environmental changes (climate change, human impact) from a geomorphological perspective. In addition to have an understanding of phenomena and interrelationships, students in teacher training become able to apply the logic of transmitting geomorphological information, its variability and the incorporation of geomorphological knowledge in teaching geography. At the end of the course, students in earth sciences become capable of finding topics of contact between geology and geomorphology, recognizing and explaining the impact of geological processes on the Earth's surface. Students will be able to present the economic structure of a country.
Assessment methods:	Oral exam

Teaching period:	Spring semester

ONFOL1-2701 Historical Geology and Paleontology

Language of instruction:	English
Form of teaching:	Lecture and practice
Class hours per week:	3 L
Credits (ECTS):	3
Course description:	The aim of the course is to present the history of planet Earth, namely introducing into the periods and milestones of Earth history, describing the major events and eras, periods, epochs, ages; introducing the dynamic Earth concept and its continuously changing model; understanding the mutual dependencies of bio- and geodiversities and presenting the best examples; Presenting the evolution of life on Earth and its major steps. Learning that the evolutionary steps are not accidental but always based on the previous developments and always understandable from the previous developments of life. Students undertaking this the course should know the geologic time scale, the major moments/milestones of evolution of life on Earth. They should know the basics and principals of stratigraphy, faciology, and evolutionary theory; they should know the methods of geological timing, the names and durations of geologic eons, periods and epochs (only for Cenozoic) and the appropriate nomenclature and terms and are able to use them in right context. Moreover, students are expected that they know the scientists and their achievements who contributed the most to geology and palaeontology. Based on the acquired knowledge they should be able to understand and explain the development of Earth and its life forms and put the milestones of the development in right order and able to explain the evolution on Earth and recognize the turning points in evolution. On the field they must be able to recognize and understand the litho- and biofacies. They will be competent enough to explain the Darwinian evolutionary theory and are able to cite examples from the fossil record. They know the micro- and macroevolution and able to cite examples for both from the fossil record. They are able to explain the big five extinction events of the Phanerozoic and their possible causes and are able to explain their impacts on the further developments of life in Earth.
Assessment methods:	Oral exam
Teaching period:	Spring semester

ONFOL1-2601 Introduction to Pedology

Language of instruction:	English
Form of teaching:	Lecture and practice
Class hours per week:	L + 2 P + FW
Credits (ECTS):	4
Course description:	This course format includes a mixture of lectures and hands-on activities in the lab and field. A 45- minute lecture and a 90-minute lab are scheduled

	per week. The lab is scheduled immediately after class in the late afternoon, and this entire block of time is utilized to sample soils at local field sites. Students will complete weekly lab and field-based assignments aimed at critical thinking about fundamental concepts in soil science. The general goal of the course is to provide an insight into the complex zonal knowledge on climate-vegetation-fauna-soil relations and soil management, which may generate a sound foundation for the subsequent global geographical studies. Students will also be expected to understand the basic models and nexus of soil science and pedology, and the role of soils on agriculture, crop production and global economy, as well as human welfare. Students who successfully complete the course will have an understanding of the methodological and theoretical basis of pedology and soil sciences. On successful completion of the course students are expected to be able to understand the basic processes in the pedosphere. They also will be able to collect relevant data to analyse and identify the role of soils, soil physical, chemical and biological processes on global systems, including human society and economy. They also will be able to critically evaluate and judge the problems and issues related to soil health, soil contamination and the general condition of soils as integral parts of the global ecosystems. They will also work independently on soil-related ecological and interdisciplinary problems and present them to decision makers and stakeholders. They will be able to assess and comprehend data and literature related to soil science, pedology and ecosystem analysis.
Assessment methods:	Series of written tests during the semester, final oral exam at the end of the semester.
Teaching period:	Fall semester

ONFOL1-1301 Biogeography

Language of instruction:	English
Form of teaching:	Lecture
Class hours per week:	2 L
Credits (ECTS):	3
Course description:	The general goal of the course is to provide an insight into the complex zonal knowledge on climate-vegetation-fauna-soil relations, which may generate a sound foundation for the subsequent global geographical studies. Students will also be expected to understand the basic models and nexus of biogeography. Students who successfully complete the course will have an understanding of the methodological and theoretical basis of biogeography. On successful completion of the course students are expected to be able to understand the basic processes biogeography and ecology. They also will be able to collect relevant data to analyse and identify the role of ecosystems, biomes and biogenic factors on global systems, including human society and economy. They also will be able to critically evaluate and judge the problems and issues related to populations and communities. They will also comprehend independently ecological and supra-individual problems of the members of any ecosystem and present that to decision

	makers and stakeholders and they will be able to assess and comprehend data and literature related to biogeography and ecosystem analysis.
Assessment methods:	written test
Teaching period:	Fall semester

ONFOL1-0801 Hydrogeography

Language of instruction:	English
Form of teaching:	Lecture and practice
Class hours per week:	L + 2 + FWP
Credits (ECTS):	4
Course description:	The course combines theoretical and experimental elements aimed at providing practical experience in the measurement and analysis of hydrological processes; methods of analysis applicable to solving practical problems related to environmental, land use, low input management problems. The main aims of the course are: to provide an understanding of the water cycle, to provide a quantitative discussion of water bodies, to apply water concepts to contemporary problems in water resources management This course familiarizes students with selected hydrological measurement and analytical techniques. Learning outcomes: Students are going obtain skills on different kind of investigation procedures.
Assessment methods:	written tests, lab practice
Teaching period:	spring semester

ONFOL1-1101 Introduction to Human Geography

Language of instruction:	English
Form of teaching:	Lecture
Class hours per week:	2 L
Credits (ECTS):	2
Course description:	The aim of the course is to function as an introductory class, guiding the students into the world of geography and human geography, providing an insight into its structure, research topics, current issues, and methods. Its primary goal is to introduce those new global disciplines, which are in sharp contrast with their former studies in public education. It is also among the missions to introduce the practical, applied aspect of human geography, in order to make practical sense of the introduced topics, issues. This course familiarizes students with selected fields of human geography, up-to-date global issues, and with its practical application in planning. At the time of course completion, students are going to obtain a basic overview and a useful vocabulary in the discussed disciplines of human geography.

Assessment methods:	Written test
Teaching period:	Fall semester

ONFOL1-2801 Population, Place and Identity

Language of instruction:	English
Form of teaching:	Lecture and practice
Class hours per week:	2 L + 2 P
Credits (ECTS):	6
Course description:	The main objectives of the course are to help the students acquire basic knowledge and skills used in modern population geography and adjacent disciplines. Students undertaking this course will know the basic definitions and concepts of population geography and can will be able to use the basic terminology of the field. With the knowledge of the context of population geography, students will be able to collect data, analyse demographic datasets, understand and prepare age structure diagrams etc. They will also pursue to analyse and evaluate the major concepts of population geography; and be able to individually analyse, understand and represent basic demographic processes with the help of relevant data. They will also be able to prepare figures, presentations, briefings and supporting materials for decision makers. Students will be able to present the economic structure of a country.
Assessment methods:	Series of written tests during the semester, final oral exam at the end of the semester
Teaching period:	Spring semester

AFOLNA3301 Urban Geography

Language of instruction:	English
Form of teaching:	Lecture and practice
Class hours per week:	2 L + 2 P + FW
Credits (ECTS):	6
Course description:	The aim of the course is to give an introduction of the fundamental terms, concepts and models regarding the spatiality of human settlements. Students will have an overlook about the differences and similarities in the urbanisation of the different regions around the globe. In the seminars supporting the course students will improve their skills in the field of spatial analysis. They will be able to recognise analyse and interpret the spatial processes, patterns of functions, morphology and social groups in urban and in rural space. They will be able to use databases to support these analyses, classify and evaluate settlements. During the course the students' skills in individual reading and interpreting scientific papers will be improved, and also their abilities in team-based problem solving, presentation and scientific writing. The curricular goal of the course is to lay down fundamentals to the course of "Urban planning and development".

Assessment methods:	Essay, group work, final oral exam at the end of the semester.
Teaching period:	Fall semester

AFOLNA2201 Economic Geography

Language of instruction:	English
Form of teaching:	Lecture and practice
Class hours per week:	2 L + 2 P
Credits (ECTS):	6
Course description:	The aim of the course is to introduce the students into the world of economic geography, providing an insight into its structure, research topics, current issues and methods. Its primary goal is to present the structure and the historical background of nowadays economies. After the successful completion of the course, students are expected to be able to understand many of the models of economic geography and its theory. It is also among the mission of this course to introduce the practical, applied aspect of economic geography, in order to make practical sense of the topics. The student will be able to collect data, make economic geographic analyses and understand the literature of the economic geography independently. During the course, students are going to obtain a basic overview and a useful knowledge in the discussed disciplines of economic geography. On successful completion of the course, they can make basic analysis of the economy and understand the relationship of its fields. Students are also expected to be able to comprehend the main trends and models of economy and compare the countries by many dimensions of their economic activity. Students will be able to present the economic structure of a country.
Assessment methods:	Series of written tests during the semester, final oral exam at the end of the semester.
Teaching period:	Fall semester

ONFOL1-2301 Physical Geography of Europe

Language of instruction:	English
Form of teaching:	Lecture and practice
Class hours per week:	2 L + 2 P
Credits (ECTS):	6
Course description:	On successful completion of this course students are acquainted with the landscape of Europe, the laws, interactions, processes which influence geologic, hydrologic, and climatological geomorphic evolution and become familiar their dynamics. Students are also expected to be able to: interpret the impact of physical geographical processes on the surface of Europe, recognize surface landforms on which the everyday activities of

	humanity take place, reveal their origin and to evaluate environmental changes (climate change, human impact) from a physical geographical perspective. In addition to having an understanding of phenomena and interrelationships, students in teacher training become able to apply the logic of transmitting geographical information, its variability and the incorporation of physical geographical knowledge in teaching geography. Students in earth sciences become capable of finding topics of contact between geology, hydrology, climatology and geomorphology, recognizing and explaining the impact of geological processes on the surface of the European continent.
Assessment methods:	Series of written tests during the semester, final oral exam at the end of the semester.
Teaching period:	Fall semester

ONFOL1-2401 Human Geography of Europe

Language of instruction:	English
Form of teaching:	Lecture and practice
Class hours per week:	2 L + 2 P
Credits (ECTS):	6
Course description:	A versatile analysis of the regions and countries of Europe is one of the most unique tasks in geography. The aim of the course is to give a thorough understanding on what is Europe. Its evolving concept, its political context, population characteristics, economic structures, ethno-national and cultural variety etc. The lectures are problem oriented and follow an up-to-date analysis of current issues besides the investigation of the deeply embedded regional characteristics. Seminars are attached to the lectures, which focus on oral and written presentations as well as readings and tests based on the material of the lectures and other sources. The students successfully completing the course: know the basic concepts of regional geography of Europe, possess the basic professional vocabulary in the field; are able to make data collection and analysis with the background knowledge of regional human geographical processes of Europe; are open to get to know the cultures of the difference nations of Europe and possesses basic information for this.
Assessment methods:	Series of written tests during the semester, final oral exam at the end of the semester.
Teaching period:	Fall semester

ONFOL1-1901 Physical Geography of the Carpathian Basin

Language of instruction:	English
Form of teaching:	Lecture and practice
Class hours per week:	2 L + 2 P
Credits (ECTS):	6

Course description:	Although this course focuses on the area of Hungary, it also looks at the whole Carpathian Basin. Students will develop depth, breadth, and integration of learning in physical geography. Upon completion of the course on physical geography of Carpathian Basin students: • will be able to be familiar with fundamental concepts on physical geography of Carpathian Basin and its principles at the level of macro regions; • will be able to list and identify on blank maps core geographical names of Carpathian Basin; ● will have an understanding of core concepts around physical geography of Carpathian Basin. Upon successful completion of this course students are expected to be able: • to evaluate existing data in the context of physical geography; • to analyse with a thematic guide physical macro regions of Carpathian Basin; • to recognise individual types of landscapes and to assess their core properties; • to analyse the impact of Quaternary climate variations on Carpathian Basin and to assess its role in the landscape development; • to interpret and present the effects of society on natural factors. Upon completion of this course students • will be able to identify diverse viewpoints, including different geo-disciplinal perspectives; • will be able to identify scientific issues underlying global, national, local, and personal decisions and communicating positions that are scientifically and technologically informed.
Assessment methods:	Series of written tests during the semester, final oral exam at the end of the semester.
Teaching period:	Spring semester

ONFOL1-1801 Human Geography of Hungary

Language of instruction:	English
Form of teaching:	Lecture and practice
Class hours per week:	2 L + 2 P
Credits (ECTS):	6
Course description:	This course gives an insight into population and settlement geography of Hungary and the rapidly changing regional characteristics in the primary, secondary and tertiary sectors of economy. It also explains the factors behind Hungarian regional structure, through the basic characteristics of socio-economic system. It enables the students to understand the processes shaping the regional structure and encourages them to build relationships between physical and human geographical knowledge. It also informs students about the current social geographical problems so that they start analyzing the trends over the last few decades of regional economic development. On successful completion of this course students are expected to be familiar with the economic historical antecedents of Hungary's regional processes,

	analyse trends over the last few decades and outline present and future directions of development trends, as well as the underlying correlations of the regional economic development after the turn of millennium and the subsequent period. Students will gain theoretical knowledge of physical and social geography, be able to collect, organize and interpret social and economic geography data, create presentations, pointing out the practical problems arising from the current social, economic and regional processes and their potential solutions as well; to be open to learn about Hungarian social and regional inequalities; and be able to (building on the social sciences and the general human and economic geographical knowledge) evaluate the country's role and place in the world realistically, and show the practical problems arising from the current economic and social trends and interpret and discuss special content related to the human geography of Hungary.
Assessment methods:	Series of written tests during the semester, final oral exam at the end of the semester.
Teaching period:	Spring semester

ONFOL1-0901 Field Trip

Language of instruction:	English
Form of teaching:	Field work
Class hours per week:	3 days
Credits (ECTS):	3
Course description:	The purpose of the course is to synthesize the students' knowledge about physical geography, social geography, departmental and regional geography that they learned during four semesters. During the field trip, the students explore the physical and social geographical characteristics of the travelled landscape and settlements with the help of the teachers' lectures and they develop their geographical approach. The field trip serves the alignment of the student' knowledge with preparations, making of field diary and the ending report. The students who complete the course know the basic physical, social and regional geographical implications of the selected area. They know and use the characteristics of the geographical thinking and they use the terminology. They can see through the coherence of the physical, environmental, social and economic processes. The students are able to make field observations first with the guidance of the teachers then independently and they interpret the information obtained there. They are prepared to draw up logical and geographical statements about the observed phenomenon. During the field trip the eco-conscious approach of the student get a confirmation based on facts. The known phenomenon and processes make their commitment towards sustainability more pronounced and conscious. On the track of the strengthening of knowledge, they are able to raise their knowledge to a higher level and they are able to cooperate and be acquainted with the opinion of their teachers and teammates. The field trip takes three days and organised in the area around the Lake Balaton.
Assessment methods:	Written test
Teaching period:	Spring semester

AFOLNS-0101 Introduction to ArcGIS

Language of instruction:	English
Form of teaching:	Lecture
Class hours per week:	3 P
Credits (ECTS):	4
Course description:	The "Introduction to ArcGIS" will introduce you to geospatial information technology: how to create simple maps, how and where to access spatial data and statistics, how to open and analyze data types commonly used in geography. You will also learn how to use geospatial software: not just ArcGIS, but virtually all geospatial applications with graphical interfaces. The ArcGIS Basics course material will also help you in many other courses: you can create maps for presentations, for your thesis, or run human or physical geographic analyses that would take days in a spreadsheet.
Assessment methods:	Written test
Teaching period:	Spring semester

AFOLNS-0201 Introduction to remote sensing

Language of instruction:	English
Form of teaching:	Lecture
Class hours per week:	2 P
Credits (ECTS):	3
Course description:	The course aims to provide a comprehensive overview of the wide range of concepts in remote sensing and to act as a supporting, deepening and broadening seminar, integrating a number of practical elements. Students who successfully complete the course will: i) be familiar with the basic concepts of remote sensing and have a basic vocabulary in the field; ii) be able to independently download, pre-process, display optical and satellite radar images in a given IT environment, compose composites and visually interpret the resulting images.
Assessment methods:	Written test
Teaching period:	Spring semester

AFOLNS3-0501 Urban development

Language of instruction:	English
Form of teaching:	Practice
Class hours per week:	2 P +FW
Credits (ECTS):	4
Course description:	By fulfilling this course, students get acquainted with the basic concepts and practice of urban development. Students successfully fulfilled this

	course will be able to overlook the theories and concepts in urban planning, to put concrete problems into conceptual frameworks, to analyse an evaluate the factors of urban development, to involve the interest reconciliation of different stakeholders, to reveal the economic and financial background of development, to interpret the documents and master plans used by this activity, and should have the skills and competence to contribute in creation analysis for decision support. In the frames of this course, students also will be introduced the structure, functions and everyday mechanism of settlements. The social and economic processes effecting the settlement operation will also be discussed, integrated in the stages of modern urbanisation. Successfully fulfilled this course, students will be able to interpret and analyse settlement development plans and structural plans and would be ready to join the planning work of local communities.
Assessment methods:	Essay, submitted before the end of the semester. Written test from the most important concepts in urban development. Oral evaluation of the essay. Active cooperation at the field trip
Teaching period:	Spring semester

AFOLNS3-0701 Transport Geography and Planning

Language of instruction:	English
Form of teaching:	Lecture
Class hours per week:	2 L
Credits (ECTS):	3
Course description:	The aim of this course is to expand the students' human geographical knowledge into the direction to the topic of the flows in geographical space. The course focuses mainly to the general questions, concepts and connections of transportation geography. With successfully fulfilling this course, students will be able to the analyse and evaluate of transportation and communication networks, get knowledge about the different social and economic impact of the different types and branches of transportation.
Assessment methods:	Written test
Teaching period:	Spring semester

AFOLNS3-0301 Regional policies

Language of instruction:	English
Form of teaching:	Lecture
Class hours per week:	2 L
Credits (ECTS):	3
Course description:	Objectives of the course are to help the students acquire basic knowledge and skills used in modern regional development and adjacent disciplines. Students visiting the course: will know the basic definitions and concepts

	of regional development, can use the basic terminology of the field. Are able, with the knowledge of the context of regional development, to collect data, analyse regional development datasets, understand and prepare regional analysis etc.; are open to cultures and histories of different cultures and nations, have the basic knowledge to do so. pursue to analyse and evaluate the major concepts of development geography; are able to individually analyse, understand and represent basic demographic processes, are able with the help of relevant data, to prepare figures, presentations, briefings and supporting materials for decision makers.
Assessment methods:	Written test
Teaching period:	Spring semester

AFOLNS4-0301 Global tourism

Language of instruction:	English
Form of teaching:	Lecture
Class hours per week:	2 L
Credits (ECTS):	3
Course description:	The aim of the course is to introduce the students into the world of global tourism, providing an insight into its structure, research topics, current issues, methods and present most important trends. Students must be able to recognise the role of geographical factors in tourism and must be aware of the research analysis methods of regional tourism geography. They should also be able to analyse trends and processes in international and domestic tourism. Acquisition of tourism geography skills is of basic importance for future tourism experts, as this allows them to know the domestic and international regional processes and trends of tourism, the major countries of origin and destinations, and all the related geographical information. Students are introduced to the theoretical foundations of tourism geography and the methodology of analyses used. They can also learn the current situation of tourism in the world, the macro-regions of UNWTO, and the main trends in present global tourism. Special attention is paid to learn the methodology of regional analyses as well.
Assessment methods:	Written test
Teaching period:	Fall semester

Earth Sciences BSc

The IGES offers you a general and fundamental scientific knowledge to understand the mutually interrelated processes of Earth Sciences. You may familiarize yourself with a wide array of disciplines including the principles of geology, meteorology, astronomy, climatology and hydrology. And, you will learn the methods used in Earth Sciences, and you will make connections with laboratory microscopes, geology hammers in the field and computer models in the office. You may specialize yourself in the field of geology to explore the deeper correlations of subsurface dynamics and how recent landforms have evolved over geologic timescales. This is all done and conveyed to you by a young and dynamic team of faculty in a custom designed and student-specific training algorithm.

Erasmus+ Course List

You can go through the course curricula for BSc Earth Sciences for more details and see all the available courses here.

Course title	Semester	Credits (ECTS)	Course code
Meteorology	fall	3	ENAFOTNA0501
Introduction to Remote Sensing	spring	3	AFOLNS-0201
Climatology	spring	3	ENAFOTNA1301
Introduction to hydrology and hydrogeology	fall	3	AFOTNAA-1501
Field Work I.	fall	4	ENAFOTNA3601
Mineralogy	fall	3	AFOTNA1-0301
Stratigraphy	spring	3	AFOTNA1-1901
Igneous and metamorphic petrology	spring	3	ENAFOTNA1-0501
Sedimentary petrology			ENAFOTNA1-1301

ENAFOTNA0501 Meteorology

Language of instruction:	English
Form of teaching:	Lecture
Class hours per week:	2 L
Credits (ECTS):	3

Course description:	This lecture helps to understand the different weather phenomena and how the data are collected from the atmosphere to evolve more accurate weather forecast methods
Assessment methods:	Oral exam
Teaching period:	Fall semester

AFOLNS-0201 Introduction to Remote Sensing

Language of instruction:	English
Form of teaching:	Practice
Class hours per week:	2 P
Credits (ECTS):	3
Course description:	The scope of the course is to present an overlook about the wide spectrum of the concept of remote sensing with a sort of practical exercises to deepen the knowledge. The students will get knowledge about the basic concepts of remote sensing,and will be able to use the specific terminology required, find and download optical and radar-based satellite images individually. They will also able to pre-process images and visualise them in certain software environment, to create composite maps and to interpret images visually. Basic concepts in remote sensing, it objectives and historical evolution. Physical features of electromagnetic radiation, interactions in the Earth's atmosphere and on the surface. Passive and active methods in remote sensing. Managing archives, possibilities for downloading data. Creating composite images. Visual interpretations: specific questions of mapping water surfaces, settlements, vegetation, soils. utilizing satellite radar data in practice. Introduction to Google Earth Engine: basics, code editor, search, reclassification, filters other functions.
Assessment methods:	Written test
Teaching period:	spring semester

ENAFOTNA1301 Climatology

Language of instruction:	English
Form of teaching:	Lecture
Class hours per week:	2 L
Credits (ECTS):	3
Course description:	On successful completion of this course students are expected: to be familiar with the most important processes impact the climate. They are able to interpret the climate changes occurred in the past. to be able to understand the climate system and critically engaged in the debates about the interpretation of the climate change, they can couple the geological data to the history of the climate change.
Assessment methods:	Written test
Teaching period:	spring semester

AFOTNAA-1501 Introduction to hydrology and hydrogeology

Language of instruction:	English
Form of teaching:	Lecture
Class hours per week:	2 L
Credits (ECTS):	3
Course description:	The subject belongs to the modules of the basic earth sciences, giving basic knowledge for the methodical and differential modules. This course familiarizes students with selected hydrogeological measurement and analytical techniques. During the course, students are going obtain skills on different kind of investigation procedures. The main aims of the course are to provide an understanding of the properties of subsurface water bodies and to provide a quantitative discussion of static and dynamic physical processes. The students will also apply subsurface water concepts to contemporary problems in water resources management.
Assessment methods:	Written test
Teaching period:	Fall semester

ENAFOTNA3601 Field Work I

Language of instruction:	English

Form of teaching:	Field work
Class hours per week:	4 days
Credits (ECTS):	4
Course description:	This course will introduce students to the wonderful world of rocks. During the 4-5 field days we are going to visit four different places in the Mecsek Mountains. During the fieldwork students are going to develop their field-related skills. How to find and describe outcrops, and create a nice and neat fieldnotes. During the file days we will have the opportunity to examine sedimentary and igneous rock on the field.
Assessment methods:	Maps, protocols, descriptions must be submitted
Teaching period:	Fall semester

AFOTNA1-0301 Mineralogy

Language of instruction:	English
Form of teaching:	Lecture
Class hours per week:	2 L
Credits (ECTS):	3
Course description:	Aims: Understandig the structure and the chemical and physical properties of crystalline state and amorphous phase materials. Understanding crystal symmetry, crystal morphology, crystal growth and properties of minerals. Classifications and the occurrence of mineral species. Knowledge: On succesful completions of this course students are expected to be able to distinguish mineral species, recognize rock forming primary and secondary minerals. They also will have the knowledge to observe symmetry in nature and the ability to identify mineral species macroscopically both in field and in laboratory too.
Assessment methods:	Written test
Teaching period:	Fall semester

AFOTNA1-1901 Stratigraphy

Language of instruction:	English
Form of teaching:	Lecture
Class hours per week:	2 L
Credits (ECTS):	3
Course description:	Stratigraphy is a sub-science of geology that deals with the division, classification, relative position of the rock units that make up the earth"s crust, the characteristics of their connections, and the analysis and interpretation of all of these. The use of classic stratigraphic methods (lithostratigraphy, biostratigraphy and chronostratigraphy) is a fundamental tool for the interpretation of geological processes, establishing their chronological order, and thus for geohistorical reconstruction. Among modern stratigraphic methods, chemostratigraphy primarily provides

	important basic data for climate reconstructions. Seismic stratigraphy is the most important tool for research of basin-filling sediments.
Assessment methods:	Written test
Teaching period:	Spring semester

ENAFOTNA1-0501 Igneous and metamorphic petrology

Language of instruction:	English
Form of teaching:	Practice
Class hours per week:	2 P
Credits (ECTS):	3
Course description:	The course reviews igneous activity in different tectonic environments, including continental rifts, oceanic spreading ridges, and subduction zones, as well as within tectonic plates. The second part of the course will familiarize with the principles of metamorphic petrology with emphasis on the importance of fluid-rock interactions.
Assessment methods:	Written test
Teaching period:	Spring semester

ENAFOTNA1-1301 Sedimentary petrology

Language of instruction:	English
Form of teaching:	Practice
Class hours per week:	3 P
Credits (ECTS):	4
Course description:	This course deals with the petrographic attributes and origins of terrigenous and carbonate sedimentary rocks and sedimentary particles including fossils and bioclasts as well as other authigenic minerals and precipitates such as sulphates, apatite, glauconite and pyrite. The course also treats the diagenesis of sediments, including cementation, recrystallization, silicification and dolomitization. Hands-on microscopy is emphasized.
Assessment methods:	Written test
Teaching period:	Fall semester

Geography MSc

During this 4-semester Master degree program, our students will focus on GIS methods and remote sensing tool applied in surface geomorphology both in a classroom environment and in the field. They will have the opportunity to join in and participate in research and scientific projects run by IGES. The Institute has research collaborations with global companies like ESA and SARMap, and international relations with research groups from Switzerland, Poland, Spain, Slovenia, China and the US. These projects may provide internships for our students to experience the international atmosphere and scientific skills and knowledge. The master program provides a broad spectrum of geography and related disciplines and combines environmental geography, geomorphology and GIS for all international students. The program also includes a six-week professional practice at self-selected private and public businesses and companies, however, the practice is also available at the university and at the IGES. By completing the professional practice, the student will gain a broad range of practical and project management skills and knowledge to explain, analyse, interpret and execute various planning programs.

Erasmus+ Course List

You can go through the course curricula for MSc Geography for more details and see all the available courses here

Course title	Semester	Credits (ECTS)	Course code
Modeling and Simulations in Earth Sciences	spring	3	MNFOTN0501
Geographical Applications of GIS	fall	2	MNGEO14
Research Methodology	fall	3	MNGEOA03
Landscape Ecology and Landscape Evaluation	fall	4	MNGEO20
Geographical Approaches of Regional Development	fall	3	MNGEO21
Political Geography	fall	4	MNGEO22
Space, Society and Sustainability	spring	2	MNGEOA17
Regional Geography of the Continents I.	spring	6	ONFOLAK1-0501
Regional Geography of the Continents II.	fall	6	ONFOLAK1-0502
GIS Database Modeling	fall	3	ENMNGEOS1-02
Applied Geomorphological Mapping	fall	4	ENMNGEOS1-03
Engineering and Anthropogenic Geomorphology	spring	3	ENMNGEOS1-04

Quaternary Research	fall	3	ENMNGEOS1-05
Surface Modeling	spring	3	ENMNGEOS1-06
3D Visualization	spring	3	ENMNGEOS1-07
Fieldwork in Geomorphology	spring	4	ENMNGEOS1-08
Geomorphic Systems	spring	4	ENMNGEOS1-09
Research Methods in Geomorphology	fall	3	ENMNGEOS1-12

MNFOTN0501 Modeling and Simulations in Earth Sciences

Language of instruction:	English
Form of teaching:	Practice
Class hours per week:	2 P
Credits (ECTS):	3
Course description:	Geoinformatics is not a theoretical science. If you thought you"d never get your hands dirty if you didn"t get soaked in the rain, you were wrong. Collecting data is indeed a painful process, but it is often a very important and essential one. Models are accurate, they describe the world around us well, if we fill them with as much complete data as possible and use as many advanced tools as possible to achieve our goals. Well, in this course we will do just that.
Assessment methods:	Written test
Teaching period:	Spring semester

MNGEO14 Geographical Applications of GIS

Language of instruction:	English
Form of teaching:	Lecture
Class hours per week:	2 L
Credits (ECTS):	2
Course description:	Geographical information system (GIS) software is now used in many areas of life: public administration, regional development, registration of infrastructural elements, nature and environment protection, flood protection. This course provides an understanding of the importance of GIS to social and urban development or to physical environment and provides

	a discussion of static and dynamic spatial processes, and problem management with GIS software. This course also helps students to apply concepts to contemporary spatial problems in geography. On successful completion of this course students are expected to have an understanding of contemporary spatial problems in geography and a problem management with GIS software. Subject-specific skills. They will be able to understand the spatial functions of GIS software, navigate between digital data models, understand the functions of the data acquisition methods and the spatial analysis.
Assessment methods:	Written test
Teaching period:	Fall semester

MNGEOA03 Research Methodology

Language of instruction:	English
Form of teaching:	Practice
Class hours per week:	2 P
Credits (ECTS):	3
Course description:	This course provides an understanding of complex, geographical researches and polishes skills both for social and nature sciences used in geographical researches. Students can apply new methods in their own research field. On successful completion of this course students are expected to be able to develop and complete a thorough research proposal, analyse its structure, and the questions of organization and view geographic research question in a complex form. They will also be able to prepare a reference list of relevant publications of a freely chosen field according to the international standards. This course prepares them to plan, create and design a scientific poster, and figures and images to present research results and even

	analyse maps. Students will be familiar with a wide range of research methods and will learn key principles of research design. Intellectual and methodological debates will be discussed in order to assist students to develop informed opinions and a critical appreciation for others' research. Students will be equipped with the knowledge and ability to undertake methodologically sound, original research projects and will develop a set of transferable workplace skills.
Assessment methods:	Various tasks must be submitted
Teaching period:	Fall semester

MNGEO20 Landscape Ecology and Landscape Evaluation

Language of instruction:	English
Form of teaching:	Lecture
Class hours per week:	3 L
Credits (ECTS):	4
Course description:	This course provides an understanding of the landscape, ecosystems and their importance for human society. It also introduces ecosystems services and their manifestations in the different landscape types. With the help of knowledge gained from this course, students can apply modern ecological concepts in natural resources management. On successful completion of this course students are expected to be able understand the operation of ecological processes in the landscape. Students will be capable of evaluation natural resources for various types of land utilization. They will be able to interpret landscape pattern and the related functions, interaction between natural and human processes and impacts on the landscape, to use different land evaluation techniques to solve practical tasks in natural resources management.
Assessment methods:	Written test
Teaching period:	Fall semester

MNGEO21 Geographical Approaches of Regional Development

Language of instruction:	English
Form of teaching:	Practice
Class hours per week:	2 P
Credits (ECTS):	3
Course description:	This course aims to provide an understanding of the geographical and spatial basis of regional development and even provides an insight of different theoretical spatial approaches. It will give some international examples of geographical approaches of regional development. On successful completion of this course students are expected to have an understanding of the different geographical approaches used in regional development both from a theoretical/historical and a geographical/spatial point of view. By the end of term, students are expected to be able to compare different approaches to regional development; understand the underlying spatial theories.
Assessment methods:	written test
Teaching period:	Fall semester

MNGEO22 Political Geography

Language of instruction:	English
Form of teaching:	Lecture
Class hours per week:	2 L+ 2P
Credits (ECTS):	4
Course description:	It provides an understanding of the general concepts of political geography. Students will be able to apply political geography concepts to contemporary geopolitical problems of the world. On successful completion of this course students are expected to

	have an understanding of pattern of world political geography.
Assessment methods:	Oral exam
Teaching period:	Fall semester

MNGEOA17 Space, Society and Sustainability

Language of instruction:	English
Form of teaching:	Practice
Class hours per week:	2 P
Credits (ECTS):	2
Course description:	This course is an advanced level course in human geography. After students have learnt the fundamentals of several branches of geography, this course will inform them about some core questions of the connection between space and society. The course is organized about the abstract nature of space and the production of space. It provides a more complex understanding of geographical space, including the concept of space production and helps students to integrate the concept of sustainability into the discourse of space production. It also improves the students' skills in individual reading and processing papers in spatial sciences, including some classical reading of this field. On successful completion of this course, students are expected to be familiar with the leading concepts and terms of the contemporary human geography, including space production, place and space, region and city, (uneven) development, segregation, exclusion, polarisation, gentrification, globalisation, sustainable development, resilience and so on. They will be able to read, process and understand theoretical papers in spatial sciences, construct presentation and individual study about spatial phenomenons, based on wide-range of readings
Assessment methods:	Essay

Teaching period:	Spring semester

ONFOLAK1-0501 Regional Geography of the Continents I.

Language of instruction:	English
Form of teaching:	Lecture
Class hours per week:	2 L + 2 P
Credits (ECTS):	6
Course description:	On successful completion of this course, students are acquainted with the landscape of Asia and Australia, the laws, interactions, processes which influence geologic, hydrologic, and climatological geomorphic evolution and get familiar with their dynamics, as well as their basic human geographical features, including population dynamics, economic geography, political geography and their regional differences. On successful completion of the course students are expected to be able to: interpret the impact of physical geographical processes on the surface of the World, recognize surface landforms on which the everyday activities of humanity take place, reveal their origin and to evaluate environmental changes (climate change, human impact) from a physical geographical perspective. Moreover, they should be able to recognize and understand the basic social, political and economic place-based patterns, processes and problems of the continents. Students involved in the class become capable of finding topics of contact between geology, hydrology, climatology, geomorphology and social processes, recognizing and explaining the impact of geological processes on the surface of the continents, as well as the interaction between nature and society. On successful completion of the course students are expected to be able to assess and comprehend the physical

	characteristics of continents and socio-economic attributes of countries.
Assessment methods:	Oral exam
Teaching period:	Spring semester

ONFOLAK1-0502 Regional Geography of the Continents II.

Language of instruction:	English
Form of teaching:	Lecture
Class hours per week:	2 L + 2 P
Credits (ECTS):	6
Course description:	On successful completion of this course, students are acquainted with the landscape of the Americas and Africa, the laws, interactions, processes which influence geologic, hydrologic, and climatological geomorphic evolution and are familiar their dynamics, as well as their basic human geographical features, including population dynamics, economic geography, political geography and their regional differences. On successful completion of the course students are expected to be able to: – interpret the impact of physical geographical processes on the surface of the World, – recognize surface landforms on which the everyday activities of humanity take place, – reveal their origin and to evaluate environmental changes (climate change, human impact) from a physical geographical perspective – recognize and understand the basic social, political and economic place-based patterns, processes and problems of the continents. Subjectspecific skills: Students in earth sciences become capable of finding topics of contact between geology, hydrology, climatology, geomorphology and social processes, recognizing and explaining the impact of geological processes on the surface of the continents, as well as

	the interaction between nature and society. Subject-specific skills: On successful completion of the course students are expected to be able to critically engaged with the continents physical geographical characteristic, and social geographical features of the countries.
Assessment methods:	Oral exam
Teaching period:	Fall semester

ENMNGEOS1-02 GIS Database Modeling

Language of instruction:	English
Form of teaching:	Practice
Class hours per week:	2 P
Credits (ECTS):	3
Course description:	It provides an understanding of the fundamentals of Database Management Systems so that students can apply database concepts to GIS problems in the fields of physical and human geography. On successful completion of this course students are expected build simple DBMS in MS Windows and Linux environment and are expected to get ordered data from widely used DBMSs. The student will be able to form SQL statements and queries upon completion of this course.
Assessment methods:	practical exam
Teaching period:	Fall semester

ENMNGEOS1-03 Applied Geomorphological Mapping

Language of instruction:	English
Form of teaching:	Lecture
Class hours per week:	2 P + FW
Credits (ECTS):	4
Course description:	It provides an understanding of landform mapping to students so that they can use digital tools for designing and using geomorphic maps. They can

	also apply old and new trends in geo-morphological mapping. On successful completion of this course, students are expected to be familiar with the main problems and issues of detailed geomorphic mapping and be able to design and draw a geomorphic map with digital tools and to interpret and evaluate geomorphic maps.
Assessment methods:	Practical exam
Teaching period:	Fall semester

ENMNGEOS1-04 Engineering and Anthropogenic Geomorphology

Language of instruction:	English
Form of teaching:	Practice
Class hours per week:	2 P
Credits (ECTS):	3
Course description:	It provides an understanding of the anthropogenic landforms and geomorphic hazards and risk. This course acquaints students with the key issues in engineering way of landforms. On successful completion of this course, students are expected to have an understanding of engineering approaches of natural and anthropogenic landforms so that they gain familiarity and confidence with some of the key methods used to evaluate slope stability and an ability to interpret anthropogenic landforms.
Assessment methods:	written test
Teaching period:	spring semester

ENMNGEOS1-05 Quaternary Research

Language of instruction:	English
Form of teaching:	Lecture
Class hours per week:	2 L
Credits (ECTS):	3

Course description:	This course helps students to develop an understanding of nature and impacts of Quaternary climate change. In this course, students acquire and develop scientific skills relating to studying Quaternary research and of the evolution of Quaternary landforms. On successful completion of this course students are expected to be familiar with Quaternary research issues and state-of-art results of the quaternary studies. Subject-specific skills: By the end of the course students should have gained: – the ability to describe and explain the Quaternary climate change and the ability to engage with some of the key debates in Quaternary science research, Students will also gain familiarity and confidence with some of the key archives and methods used to trace past climate and environmental change, – an appreciation of the wider significance of the Quaternary record.
Assessment methods:	Oral exam
Teaching period:	Fall semester

ENMNGEOS1-06 Surface Modeling

Language of instruction:	English
Form of teaching:	Practice
Class hours per week:	2 L
Credits (ECTS):	3
Course description:	This course aims to provide an understanding of the surface modeling techniques and model types and provides a quantitative discussion of phenomena-based model analysis and interpretation. Students will be able to apply model building and data analysis concepts to contemporary problems surface modeling Knowledge and on successful completion of this course students are expected to be able to build various kind of surface models; to have an

	understanding of basic terms and types of surface models; to be familiar with model analysis steps to able to extract landforms and interpret Earth surface processes.
Assessment methods:	Practical exam
Teaching period:	Spring semester

ENMNGEOS1-07 3D Visualization

Language of instruction:	English
Form of teaching:	Practice
Class hours per week:	2 P
Credits (ECTS):	3
Course description:	This course aims to provide an understanding of the 3D digital and spatial visualization and equips students with skills of 3D computer graphics and utilization of GIS software. On successful completion of this course students are expected to be familiar with using the 3D computer graphics and GIS software and students are expected to be able to: plan, create and modify 3D objects, make informative 3D maps and models.
Assessment methods:	practical exam
Teaching period:	Spring semester

ENMNGEOS1-08 Fieldwork in Geomorphology

Language of instruction:	English
Form of teaching:	Field work
Class hours per week:	1 L + 5 days FW
Credits (ECTS):	4
Course description:	The course will be based on field work and in the detailed study of sights of interest in relation to geomorphology. Through this training, students will develop observational and analytical skills allowing to better understand the interrelationships between landscape elements. Specific training on

	geomorphological and geological description and analysis will be the basis of the course, which will serve as a complement to in-class geomorphological and in general physical geography classes. On successful completion of this course students are expected to have an understanding of the basic geomorphological processes that impact our environment, and specifically, students will have the ability to design and plan field work based on target objectives and to relate the different components of the landscape in order to understand their dynamics and allowing to propose genetical hypothesis for their formation. They will also be able to assess, comprehend and be critically engaged with all subdisciplines of physical geography and related phenomena that influence geomorphological development and evolution of a given area such as: - ability of using different types of maps, ability of developing detailed field-based mapping (geomorphological and geoecological), ability to develop hypothesis and fieldwork methodologies to solve problems arising from geomorphological, geological, topographical knowledge in order to contribute to laboratory and office-based research.
Assessment methods:	Practical exam
Teaching period:	Spring semester

ENMNGEOS1-09 Geomorphic Systems

Language of instruction:	English
Form of teaching:	Lecture
Class hours per week:	3 L
Credits (ECTS):	4
Course description:	This course aims to provide an understanding of the physical processes on the Earth's surface and offers a systematic and quantitative approach to dynamic physical processes. It presents the relevant parameters

	for the description of landforms and reveals contemporary problems (natural hazards) related to geomorphic processes Knowledge: On successful completion of this course students are expected to be get an overview of the interactions between the physical processes operating on the Earth's surface. They will obtain an understanding of the importance of the individual agents in shaping the relief, in the evolution of landforms and the practical implications on human society. Students are expected to be able to assess the relative importance of drivers of change on the Earth's surface, to explain processes on the basis of General Systems theory. Students will also be able to judge the threats presented by natural hazards and the impacts of global climate change on the operation of geomorphic systems and will be familiar with the evaluation of geomorphic hazards and mitigation efforts.
Assessment methods:	Oral exam
Teaching period:	Spring semester

ENMNGEOS1-12 Research Methods in Geomorphology

Language of instruction:	English
Form of teaching:	Lecture
Class hours per week:	2 L
Credits (ECTS):	3
Course description:	The main objective of the course is to develop skills in landform recognition and interpretation, topographic contouring, map navigation, topographic profiles, fundamental surveying skills with the alidade and total station, and mineral and rock resource calculation. All of these skills will be developed in the field environment as part of the laboratory component. The lecture will provide the theoretical underpinnings of the field methods used in the lab.

Assessment methods:	Oral exam
Teaching period:	Fall semester

INSTITUTE OF PHYSICAL EDUCATION AND SPORT SCIENCES

The Institute of Sport Sciences and Physical Education has a long and rich tradition in both teaching and research. The physical educator teacher program was established in 1946 at the Institutes predecessor the Pedagogical College of Pécs. The Institute is one of the most influential educational organisation in the field of sport and physical education. The Institutions mission today is to provide Bachelor and Master programs in sport scientific related fields. The students can obtain Physical Educator Trainer or Sport Manager Bachelor Degree. In our Physical Educator-Trainer BSc both full and part time (correspondent) trainings are available. Apart from these programs, the Institution is also active as a higher-level vocational training centre. We are offering NTR (National Training Registry) programs in the fields of coaching, pedagogy training and further training, and we also contribute in many doctoral programs aiming for scientific renewal. The Institute of Physical Education and Sport Sciences is responsible for the operation of the Recreation Centre and the management of sporting life at the university.

BSC PHYSICAL TRAINING

The general aim of the program is to train students to become coaches. Trainers who gain a well-established theoretical and practical knowledge and skills to be able to plan and implement training sessions for junior players, youth and adult athletes, too. Coaches who become responsible to select athletes, improve and guide their personality and to enhance their performance. The curriculum is organized in five modules: team and individual sports, medical aspects of sport, social aspects of sport, sport sciences, and professional practice. Each module has approximately 5-10 subjects. Students participate in internships every semester. During the first three semesters as a visitor then later they are asked to conduct and lead workouts alongside with the teachers. The subjects are presented in lectures, seminars, practices, and laboratory work, too.

OVERVIEW OF POPULAR COURSES FOR BSC PHYSICAL TRAINING

The following section gives an overview of important courses which are commonly picked up by our incoming exchange students. The complete list of these available courses can be found at the end of the guide.

However, you can go through the course curricula for BSc Physical Training for more details and see all the available courses here.

If you need more details regarding any specific course you can request it via an email.

Physical Training BSc

Study Abroad Course List

For course syllabi, please contact the Study Abroad Office!

Course title	Semester	Credits (ECTS)	Course code
Accident Prevention, First aid, and Sport Hygiene (lecture)	Fall	2	ENAEDZN1101
Anaerobic Training in Performance Enhancement (lecture)	Fall	3	ENTESV23
Anatomy I. (lecture)	Fall	2	ENAEDZN1001
Basic of individual sports (basics of athletics, swimming, martial arts, sports gymnastics) (practice)	Fall	8	ENAEDZN0401
Basics of Theory of Training II. (Lecture)	Fall	2	ENAEDZN0702
Biochemistry (lecture)	Fall	3	ENTES1101
Biomechanics (lecture)	Fall	2	ENAEDZN0801
Calisthenics I. (practice)	Fall	2	ENAEDZN0101
Exercise Physiology (practice)	Fall	2	ENAEDZN1501
Human Biology (lecture)	Fall	2	ENAEDZN0901/ ENBIOB1601
Informatics (practice)	Fall	2	ENAEDZN2701
Introduction to Psychology I. (lecture)	Fall	2	ENAEDZN2001
Methods of Physical Education and Inclusion (lecture and practice)	Fall	4	ENAEDZNA2301
Pedagogy I. (Introduction to Pedagogy) (lecture)	Fall	2	ENAEDZN1901
Performance Testing (practice)	Fall	2	ENAEDZN1801
Physiology, Sportphysiology I. (lecture)	Fall	2	ENAEDZN1301
Programs of Youth Sports (practice)	Fall	2	ENAEDZN3201/ ENAEDZNA3201
Recreation Theory, Sports in Alternative Environment (practice)	Fall	3	ENMNREKA4301
Social Sciences I. (Philosophy) (lecture)	Fall	2	ENAEDZN2501
Social Sciences III. (Sport Pedagogy and Sociology of Sport) (lecture)	Fall	4	ENAEDZN2503
Sportmanagement (lecture)	Fall	2	ENAEDZN2901
Sportpsychology (lecture)	Fall	2	ENAEDZN2101
Anatomy II. (lecture)	Spring	2	ENAEDZN1002
Basics of Theory of Training I. (lecture)	Spring	2/1	ENAEDZN0701/ ENAEDZNA0701

Calisthenics II. (practice)	Spring	2	ENAEDZN0102
ENAEDZN2601 (practice)	Spring	2	ENAEDZN2601
Dietetics (lecture)	Spring	2	ENAEDZN1401
Doping and sports (lecture)	Spring	3	ENTESV08
Event Management (practice)	Spring	2	ENAEDZN3001
Introduction of Research Methods in Sport (practice)	Spring	4	ENAEDZN2801
Leadership and Organization of Sport Camps (lecture)	Spring	3	ENAEDZN3101
Motor Development (lecture)	Spring	2/4	ENAEDZN0501/ ENTES1701
Motor Learning Motor Control (lecture)	Spring	2	ENAEDZN0601
Pedagogy II. (Public Education) (lecture)	Spring	2	ENAEDZN1902
Physical Activity, Exercise and Aging (lecture)	Spring	6	
Physical Education Games (practice)	Spring	2	ENAEDZN0201
Physiology, Sport physiology II. (lecture+practice)	Spring	4	ENAEDZN1302
Prevention, Physical Therapy, Rehabilitation (practice)	Spring	4	ENAEDZN1601
Social Sciences II. (Communication, Introduction to Sociology, Basic of Sport Law) (lecture)	Spring	6	ENAEDZNA2502
Sport Injuries (lecture)	Spring	2	ENAEDZN1701
Sup Yoga (practice)	Spring	2	STA-ENTTTESV9601
Yoga (Hatha yoga) (practice)	Spring	4	ENTESV06

(ENAEDZN1101)Accident prevention, First Aid and Sport Hygiene

Language of instruction:	English
Form of teaching:	Practice
Class hours per week:	2 P
Credits (ECTS):	2
Course description:	The job of trainers and sports experts is an activity performed in the interest of humans' health. Sport activities, work-outs, competitions expose humans to a higher risk for accidents and injuries, therefore acquiring the most up-to-date first aid knowledge is of major importance for the staff working in these fields. The objective of the course is to teach first aid, accident prevention and sports health knowledge to future trainers and sports experts. Students will be able to save lives via Basic Life Support (BLS) in sudden cardiac arrest and – as it is expected from trainers- they will be able to provide professional first aid while waiting for the paramedics to arrive.
Assessment methods:	Active participation, 1 written test during the semester (the satisfactory level is at least 50%). An oral or written presentation on a part of the subject must be prepared during the semester. The written tests are based on the lectures and the recommended readings. Oral or written exam and to introduce BLS.
Teaching period:	Fall semester

(ENTESV23) Anaerobic Training in Performance Enhancement

Language of instruction:	English
Form of teaching:	Lecture
Class hours per week:	2
Credits (ECTS):	3
Course description:	The course will develop the students' understanding of the current coaching theories and practices as it relates to strength and conditioning. Knowledge of physiological and biomechanical principles as they apply to sports performance and long-term preparation based on the current research in sports science.
Assessment methods:	Practical tests and analyses Assigned readings. Short presentations. Quizzes/exams.
Teaching period:	Fall semester

(ENTES0101, ENAEDZN1001) Anatomy I.

Language of instruction:	English
Form of teaching:	Lecture
Class hours per week:	2
Credits (ECTS):	4/2
Course description:	The aim of the course is to familiarize students with the structure and the build-up of the human body, the anatomy of the skeletal system and the muscular system, as well as the anatomical structure and main function of the circulatory system to acquire important relationships for further studies. Understanding the anatomy of the motion systems is essential for the building of physiological and sport physiological knowledge.
Assessment methods:	Active participation, 1 written test during the semester (the satisfactory level is at least 50%). An oral or written presentation on a part of the subject must be prepared during the semester. The written tests are based on the lectures and the recommended readings. Oral or written exam.
Teaching period:	Fall semester

(ENAEDZN0401) Basic of Individual Sports (basics of athletics, swimming, martial arts, sports gymnastics)

Language of instruction:	English
Form of teaching:	Practice
Class hours per week:	8
Credits (ECTS):	8
Course description:	The knowledge gained in this course is important in the many-sided sport preparation of young athletes. The basics of fundamental sports such as athletics, swimming, gymnastics, and combatting will be learned. Students will be able to recognize the importance of fundamental movement skills learned in these sports in performance development and injury prevention, and to incorporate the methodological principles into their own sport training programs.
Assessment methods:	An end-of-semester quiz will be written. Fundamental movement techniques learned in each sport will be evaluated at the end of the semester.
Teaching period:	Fall semester

(ENAEDZN0702) Basics of Theory of Training II.

Language of instruction:	English
Form of teaching:	Lecture
Class hours per week:	2
Credits (ECTS):	6

Course description:	Using the definitions, principles, and terminology discussed in the Basics of Theory of Training I., students will acquire the types of motor skills and the methodology of motor skill development (strength, endurance, speed, coordination, and flexibility). Students will be able to apply this knowledge in conditioning and workout planning for youth and adult athletes. The physiological background of motor skill development will also be discussed.
Assessment methods:	An end-of-semester written exam will be taken. An end-of-semester essay must be prepared. An oral presentation on a part of the subject must be prepared during the semester period.
Teaching period:	Fall semester

(ENTES1101) Biochemistry

Language of instruction:	English
Form of teaching:	Lecture
Class hours per week:	2
Credits (ECTS):	3
Course description:	The subject covers the core principles and topics of cellular metabolism in resting and exercise. Proper knowledge of biochemistry is required to understand the different biomolecules and the cellular biochemical pathways, and to further study the adaptation of these mechanisms during physical exercise. The course focuses the biomolecules oxidation, degradation and anabolic metabolic processes.
Assessment methods:	Active participation, 1 written test during the semester (the satisfactory level is at least 51 %). An end-of-semester written exam will be taken.
Teaching period:	Fall semester

(ENAEDZN0801) Biomechanics

Language of instruction:	English
Form of teaching:	Lecture
Class hours per week:	2
Credits (ECTS):	2
Course description:	In the course, students will be introduced to the interdisciplinary nature of biomechanics. Using previous knowledge in the fields of biology, anatomy, and physiology they will understand the laws and mechanisms responsible for human movement. Acquiring two major topics: principles of mechanics, and the neuromechanical basis of muscle, students will understand the background of muscular force production and forces acting on human body during physical activity.
Assessment methods:	An end-of-semester written exam will be taken. An end-of-semester essay must be prepared. An oral presentation on a part of the subject must be prepared during the semester period.
Teaching period:	Fall semester

(ENAEDZN0101) Calisthenics I.

Language of instruction:	English
Form of teaching:	Practice
Class hours per week:	2
Credits (ECTS):	2
Course description:	The aim of the course is for students to get to know the movements that can occur in different joints of the body and to combine them with each other as versatile as possible according to the purpose, from simple to multiple complex exercises. Be able to adapt them using different training equipment. Also, understand the essence of joint stabilization, methods of its development.
Assessment methods:	During the term-time the student can present the practical requirements three times. During the semester, homework must be prepared and handed in. The average of the results of the practical requirements, the results of the final test and the homeworks account for 50-50% of the final grade.
Teaching period:	Fall semester

(ENAEDZN1501) Exercise Physiology

Language of instruction:	English
Form of teaching:	Practice
Class hours per week:	2
Credits (ECTS):	2
Course description:	The lecture intends to introduce students to the possible measurements strategies of sport performance. An overview is provided in the delineation of test systems, performance measurement types and skills. The course gives an insight into the sport performance of different ages, differences between sexes, or before and after puberty.
Assessment methods:	Mid-semester works Attending lectures is highly recommended. Written exam is based on lectures, accessible electronic sources and lecture materials. Written exam in the exam period.
Teaching period:	Fall semester

(ENAEDZN0901/ ENBIOB1601) **Human Biology**

Language of instruction:	English
Form of teaching:	Lecture
Class hours per week:	2
Credits (ECTS):	2
Course description:	The lecture intends to introduce students to the characteristics of the human body. An overview is provided of the phenotypic variations of human morphological features of the head/skull and body. The course gives an insight into the biological, anthropological differences between sexes, or before and after puberty.
Assessment methods:	Mid-Semester works: Written exam is based on lectures, accessible electronic sources and lecture materials. Homeworks: Regularly, according to the needs, properly understanding the topics. Acceptable level is at least 50%. To register for an exam, all the homework must be uploaded, and scored at least to the acceptable level. Written exam in the exam period.
Teaching period:	Fall semester

(ENAEDZN2701) Informatics

Language of instruction:	English
Form of teaching:	Practice
Class hours per week:	2
Credits (ECTS):	2
Course description:	Acquisition of basic IT knowledge essential for university studies and coaching, dissemination of IT culture and the transfer of practical skills required to use computer tools. Beginning with high school students, learn the basics of IT and computer management: dissertation, topic presentation, and internet search.
Assessment methods:	During the semester, you must prove your skills in the curriculum 2 times during a semester. (Content: material presented during the semester, Submit 1 homework assignment. (PPT based on a previously described structure from an optional subject.) Min. 70% visit.
Teaching period:	Fall semester

(ENAEDZN2001) Introduction to Psychology I.

Language of instruction:	English
Form of teaching:	Lecture
Class hours per week:	2
Credits (ECTS):	2
Course description:	The aim of this course is to introduce students to the study of psychology. It is intended to provide broad coverage of the field by presenting basic theories, research, and applied use of psychology. It will give students a background from which to either pursue more advanced psychological courses, or to retain the information as a basic knowledge of psychology in general. Areas that will be covered include research methods, biological bases of behavior, human development, sensation, perception, learning, intelligence, motivation, emotions, personality, mental disorders and their treatment, and social psychology. These areas will be approached from both theoretical and applied perspectives. Also, the development of personality and the formation of identity form are a major part of the studies. In addition, the course introduces a range of topics in psychology, including social psychology, individual differences
Assessment methods:	Active participation, written exam at the end of the semester
Teaching period:	Fall semester

(ENAEDZNA2301) Methods of Physical Education and Inclusion

Language of instruction:	English
Form of teaching:	Practice
Class hours per week:	4
Credits (ECTS):	4
Course description:	In the framework of the training, students learn about the social issues of acceptance and inclusion. By evaluating the experiences of the integration process taking place in the European Union, we also provide an international perspective on the topic. The participants in the training also have the opportunity to learn about the work of inclusive and integrating schools. They get an insight into the current way of life of people with disabilities and their possibilities They can experience the new responsibilities of physical education teachers and the challenges related to integration. Students can gain knowledge about the role of prevention, rehabilitation and recreation in relation to the lifestyle of people with disabilities. The participants of the program can get to know the sports of people with disabilities and the main domestic results. In the training, they can learn about adaptive sports movements. Introduce the students to the current situation of the integration process in Europe and Hungary. The students should acquire knowledge about the alternative and adapted methods inherent in the teaching of physical education. Get an idea of the specifics of inclusive pedagogy. Get to know the methods used in alternative schools and the specifics of teaching physical education.
Assessment methods:	Preparation of a report or presentation on the topic to be covered once during the semester.

	Active participation in the exercises, compilation of the chosen topic in the order of tasks. 80 % participation in theoretical lectures and exercises during the semester - based on the quality of short presentations and reports - based on the grade of the oral exam (colloquium).
Teaching period:	Fall semester

(ENAEDZN1901) Pedagogy I. (Introduction to Pedagogy)

Language of instruction:	English
Form of teaching:	Lecture
Class hours per week:	2
Credits (ECTS):	2
Course description:	The task of the subject is to introduce the students to the interpretation of educational science, to familiarize them with the functions, key questions, and sub-fields of the scientific field. Through the presentation of the results of the discipline, it introduces you to the institutional system and actors of education, and deals with the analysis of the role of the participants. The goal is to present the diversity of educational science and pedagogy
Assessment methods:	An oral or written presentation on a part of the subject must be prepared during the semester. On the basis of small performances and the quality of the presentations- on the basis of the grade of the oral exam (colloquium) or on the basis of a written examination
Teaching period:	Fall semester

(ENAEDZN1801) Performance Testing

Language of instruction:	English
Form of teaching:	Practical
Class hours per week:	2
Credits (ECTS):	2
Course description:	The aim of the course is to provide the students with comprehensive and systematic knowledge of motor skills, their age characteristics and different methods of functional assessments. Students will acquire the ability to determine the level of motor skills of different age groups with laboratory measurements and field tests and interpret the results of these tests.
Assessment methods:	Exams Presentations Practical assessment
Teaching period:	Fall semester

(ENAEDZN1301) Physiology, Sportphysiology I.

Language of instruction:	English
Form of teaching:	Lecture
Class hours per week:	2
Credits (ECTS):	2
Course description:	The subject is part of the „basic principles" module and covers the fundamental principles of homeostasis in resting and exercise. Proper knowledge of human physiology is required to understand the different regulatory mechanisms and further study the adaptation of these systems during physical exercise. The first part of the course focuses on blood and muscle movement in physiological terms.
Assessment methods:	An oral or written presentation on a part of the subject must be prepared during the semester. An end-of-semester essay must be prepared. Written exam is based on lectures, accessible electronic sources and lecture materials.
Teaching period:	Fall semester

(ENAEDZN3201/ ENAEDZNA3201) Programs of Youth Sports

Language of instruction:	English
Form of teaching:	Practice
Class hours per week:	2
Credits (ECTS):	2
Course description:	Long-Term Athlete Development is a practical course for foreign students in a sports coaching program. The main object is the most important measurements in practice, definitions and basic theories of giftedness. Sports talent, methodology of selecting and talent management in sports games, describes the theory and practice of youth development and long-term development sports programs.
Assessment methods:	An oral presentation must be prepared according to the given topics and aspects and demonstrate the practical application of the most important measurements during the semester. An end-of-semester written exam.
Teaching period:	Fall semester

Recreation Theory, Sports in Alternative Environment

Language of instruction:	English
Form of teaching:	Practice
Class hours per week:	1 L + 2P
Credits (ECTS):	6
Course description:	The course provides a comprehensive picture of the connections and modern interpretation of health, lifestyle, quality of life and recreation. It explores the relationship and social embeddedness of leisure, lifestyle and recreation. Students should be able to integrate their acquired knowledge in accordance with diverse environmental factors. Be aware of the basic conditions for practicing leisure sports and sports recreation in an alternative environment. They should be able to think creatively by considering and respecting natural forces. The students should get to know easy-to-learn forms of movement that can be used for everyday recreational activities and sports activities in their free time. The knowledge to be acquired is based on exploiting the possibility of a high degree of diversity and on transferable knowledge.
Assessment methods:	Active participation, 1 written test during the semester (the satisfactory level is at least 50%). An oral or written presentation on a part of the subject must be prepared during the semester. The written tests are based on the lectures and the recommended readings. Drafting of 2 sessions based on the specified criteria.
Teaching period:	Fall semester

(ENAEDZN2501) Social Sciences I. (Philosophy)

Language of instruction:	English
Form of teaching:	Lecture
Class hours per week:	2
Credits (ECTS):	2
Course description:	The course gives an insight into the history of western philosophy and thinking, its key issues and characters and their works. The philosophical works discussed during the semester give an outlook on paradigm shifts concerning the connection between philosophical and scientific thinking. The definition and history of philosophy. Ancient Greek philosophy I.- Plato. Ancient Greek philosophy II.-Aristotle. Hellenistic philosophy. Stoicism and the Roman empire. Medieval divine philosophy – St. Anselm. Modern philosophy- rationalism and empiricism –Descartes. British empiricism, new social philosophies. Kant- Copernican shift in philosophy. The role of Hegel in European history. The basis of Marxism. Philosophy as a strict science-the phenomenology of Husserl. Phenomenology, ontology, existentialism in the works of Heidegger. Experiments in 20th century philosophy- Rawls and Habermas. New social philosophical theories as opposed to postmodern- Feinberg, Fukuyama, Sen.

Assessment methods:	Written exam is based on lectures, accessible electronic sources and lecture materials. An end-of-semester essay must be prepared.
Teaching period:	Full semester

(ENAEDZN2503) Social Sciences III. (Sport Pedagogy and Sociology of Sport)

Language of instruction:	English
Form of teaching:	Lecture
Class hours per week:	4
Credits (ECTS):	4
Course description:	Sport Pedagogy The course intends to prepare students for the application of the recent knowledge of theory and practice of sport pedagogy. They will receive knowledge about the definition and place of sport pedagogy in the system of social sciences. They will get to know the importance of sport and its role in the individual's and society's life: health promotion and personality development. They will analyze the basic didactical elements and methods in the process of movement teaching. They will get information about the influential factors of PE teacher/coach-student/player-parents interaction (personality, leadership style, communication style, teaching style, education style and conflict management). Sociology of Sport The aim of this subject is to give comprehensive and practical oriented knowledge about institutional physical education and sport. Students will become familiar with basic information on the sociology of sports, and the course will provide conceptual and theoretical tools to understand and analyze major social issues in relation to sports. The emphasized task of the course is to realize the importance of sport and physical education in improvement of student's personality values. Knowledge of society's expectations from physical education and sport is included.
Assessment methods:	Active participation in lessons, active participation in group work and presentation. An oral presentation on a part of the subject must be prepared during the semester period. A written exam is required in the field of Sociology of Sport.
Teaching period:	Fall semester

(ENAEDZN2901) Sportmanagement

Language of instruction:	English
Form of teaching:	Lecture
Class hours per week:	2
Credits (ECTS):	2
Course description:	Students gain information about and understand the various practices and procedures associated with sport management. The course aims to introduce the field of sport management, identify its major issues and provide students with the intellectual tools to analyze them.
Assessment methods:	Active participation in lessons, active participation in group work and presentation, two individual presentations, final essay
Teaching period:	Fall semester

(ENAEDZN2101) Sportpsychology

Language of instruction:	English
Form of teaching:	Lecture
Class hours per week:	2
Credits (ECTS):	2
Course description:	In this course students learn about the basic issues of sport psychology, its scientific research and the possibilities of their application, as well as its theoretical and practical interactions. The content of the course covers the scientific knowledge of the goals and tools of sports psychology, an overview of the main topics, research trends and theories of modern sports psychology. Another aim of the course is to introduce the work of sports psychologists and prepare them for working with them. Also, the course provides an overview of the principles of psychology as applied to sport, exercise, and recreational activity for enhanced interactions and performance. This course will examine elements of sport psychology such as anxiety, stress, self-confidence, motivation and goal setting, leadership, personality, and group dynamics with sport and recreational activities.
Assessment methods:	Active participation in classes, written examination at the end of the semester. An end-of-semester essay must be prepared. An oral or written presentation on a part of the subject must be prepared during the semester period.
Teaching period:	Fall semester

(ENAEDZN1002) Anatomy II.

Language of instruction:	English
Form of teaching:	Lecture
Class hours per week:	2
Credits (ECTS):	2
Course description:	Objectives: The lecture intends to introduce students to the world of human anatomy, particularly the structure of viscera and the nervous system. Besides acquiring the correct anatomical nomenclature, students will learn the logic of anatomy, particularly that of the nervous system. These elements will form the basis of the physiology and sports physiology. Learning outcomes: Students completing the course will have knowledge on basic human anatomy. They will be able to they will have a competence of understanding the anatomical basis of sport movements and will be able to apply it in analysing kinematographic chains. Their positive attitude towards innovative methods in movement analysis will increase significantly
Assessment methods:	Course papers: written tests in 5th and 10th weeks. An oral or written presentation on a part of the subject must be prepared during the semester. Oral or written exam is based on texts and lectures.
Teaching period:	Spring semester

(ENAEDZN0701/ ENAEDZNA0701) **Basics of Theory of Training I.**

Language of instruction:	English
Form of teaching:	Lecture
Class hours per week:	2
Credits (ECTS):	2/1
Course description:	The present course discusses the performance-oriented sports preparation possibilities in young and adult athletes. Knowing and using proper definitions and terminology, students will be able to interpret and integrate the scientific achievements in the field of exercise science. Topics such as general principals of exercise training, exercise load, training variables, acute and chronic adaptation mechanisms to exercise, long-term athletic preparation, and overtraining will be covered. The intention in students to acquire new training methods and to creatively integrate the theory and practice into sports preparation will be developed. The course provides understanding all important terminology and definitions necessary for establishing the Theory of training II course.
Assessment methods:	An end-of-semester written exam will be taken. An end-of-semester essay must be prepared. An oral presentation on a part of the subject must be prepared during the semester period.
Teaching period:	Spring semester

(ENAEDZN0102) Calisthenics II.

Language of instruction:	English
Form of teaching:	Practice
Class hours per week:	2
Credits (ECTS):	2
Course description:	The aim of the course is to familiarize students with the significance of warm-up and stretching and the possibilities of using its various methods in accordance with goals and requirements. Furthermore, they should be able to analyze and understand the effects of exercises on the body, and to build goal-oriented trainings.
Assessment methods:	During the term-time the student can present the practical requirements three times. During the semester, homework must be prepared and handed in. The average of the results of the practical requirements, the results of the final test and the homeworks account for 50-50% of the final grade.
Teaching period:	Spring semester

(ENAEDZN2601) Communication in Sport

Language of instruction:	English
Form of teaching:	Practice
Class hours per week:	2
Credits (ECTS):	2
Course description:	Effective sports communication is one of the most important abilities of the sports professionals since deriving from their speciality – and in order to be successful in the labour market – the high level theoretical and practical knowledge of the written, verbal and metacommunication knowledge is indispensable. The aim of the subject is that the students should acquire all those applied communicational knowledge whose application is indispensable during their later labour, since during the everyday tasks of sports we have to expect from a professional as a basic skill to be able to create and maintain the relations due to his/her activities. During the course the students will acquire and due to their tasks apply in a practice oriented way the (sports) communication methods and techniques of the 21st century and further on come to know the communication strategies of the market oriented sports of the present.
Assessment methods:	Active participation, an oral or written presentation on a part of the subject must be prepared during the semester, the end-term grade based on a complex assignment to be made using the knowledge acquired during the semester
Teaching period:	Spring semester

(ENAEDZN1401) Dietetics

Language of instruction:	English
Form of teaching:	Lecture
Class hours per week:	2
Credits (ECTS):	2
Course description:	The lecture intends to introduce students to the characteristics of human energy metabolism and energy balance. An overview is provided in the characteristics of general rules of healthy diet and nutrition. The course gives an insight into the biological background of diet planning and strategies of supplementation in sports.
Assessment methods:	Mid-Semester work: The written exam is based on lectures, accessible electronic sources, Written exam in the exam period.
Teaching period:	Spring semester

(ENTESV08) Doping and Sports

Language of instruction:	English
Form of teaching:	Lecture
Class hours per week:	2
Credits (ECTS):	3
Course description:	The objective of this course is to encourage a critical understanding of doping. To achieve this goal, this course will rely on a multidisciplinary approach that allows you to see how different disciplines get into a single object, in different perspectives and often complementary ways. This approach will also allow us to appreciate the complexity of a subject like doping.
Assessment methods:	Attending lectures Present selected topics (20 mins) + a written test at the end of the semester An end-of-semester essay must be prepared.
Teaching period:	Spring semester

(ENAEDZN3001) Event management

Language of instruction:	English
Form of teaching:	Practice
Class hours per week:	2
Credits (ECTS):	2
Course description:	During the course, students are introduced to the theoretical and practical issues of organizing sports events. The aim of the subject is that, after completing it, they will be able to plan and conduct sports events independently, in such a way that they are sustainable and profitable, and specifically maximize their viewership, both in the field of competitive and recreational sports.
Assessment methods:	Active participation, participation in the complete organization of a competition and a recreational sports event, preparing an essay about each.
Teaching period:	Spring semester

(ENAEDZN2801) Introduction of Research Methods in Sport

Language of instruction:	English
Form of teaching:	Practice
Class hours per week:	2
Credits (ECTS):	4
Course description:	The main goal of the course is to introduce the most important types of research, the main primary and secondary research methods. Discussing the role and importance of the hypothesis, the conceptualization and operationalization of the main definitions, dimensions and variables. Going through the methods of sampling and selection criteria, choosing the primary research method in order to prove or deny the hypothesis – quantitative and qualitative methods – and the main rules of creating a survey or preparing an interview.
Assessment methods:	Active participation During the semester, weekly homework must be prepared and handed in. One written test during the term. Grading: a) Result of written test: 67% of the final grades b) Result of presentation and homework: 33% of the final grades
Teaching period:	Spring semester

(ENAEDZN3101) Leadership and Organization of Sport Camps

Language of instruction:	English
Form of teaching:	Practice
Class hours per week:	2P
Credits (ECTS):	3
Course description:	Part of the coach's work is managing the organization of children's, recreation and sports camps, as well as training camps. The subject covers the knowledge necessary to perform these tasks, which is presented to the students in theoretical and practical form. The student should get to know the sports organization and coaching tasks associated with camp organization and management. Get to know the peculiarities of the environment of recreation and sports camps, training camps, be able to perform independent organizational tasks and practical problem solving.
Assessment methods:	Active participation, 1 written test during the semester (the satisfactory level is at least 50%). An oral or written presentation on a part of the subject must be prepared during the semester. The written tests are based on the lectures and the recommended readings.
Teaching period:	Spring semester

(ENAEDZN0501/ ENTES1701) **Motor Development**

Language of instruction:	English
Form of teaching:	Lecture
Class hours per week:	2
Credits (ECTS):	2/4
Course description:	The lecture intends to introduce students to the characteristics of the human development, stages of the extrauterin life. An overview is provided in the development of the brain, body structures and changes of human movement The course gives an insight into the biological progression and regression of human life and movement.
Assessment methods:	Mid-Semester works: many homeworks (asignements) within the Semester describing motor abilities, developmental state of a given age group 2 written tests during the Semester based on lectures, accessible electronic sources and lecture materials. Homeworks will be given almost each week, they are expected uploaded into Teams in personal folders. Final score: 2/3 from the written test scores + 1/3 homeworks:
Teaching period:	Spring semester

(ENAEDZN0601/ ENTES1601) Motor Learning Motor Control

Language of instruction:	English
Form of teaching:	Lecture
Class hours per week:	2
Credits (ECTS):	2/4
Course description:	Students will learn the theoretical background, of motor control and motor learning as well as the neurological bases and instructional practices related to the learning and performance of motor skills. At the completion of the course, students will be able to apply this knowledge to design effective instructions in physical education and sports.
Assessment methods:	Exam Assignments Final exam
Teaching period:	Spring semester

Pedagogy II.

Language of instruction:	English
Form of teaching:	Lecture
Class hours per week:	2
Credits (ECTS):	6
Course description:	The subject is aimed at learning the basics of school activity. Students understand the structure, context, content, basic documents and rules of the public education system. They acquire the roles related to the work of

	school educators. They are enabled to engage in the production of documents, planning, organization, administration. Innovation is enriched.
Assessment methods:	On the basis of small performances and the quality of the presentations- on the basis of the grade of the oral exam (colloquium) or on the basis of a written examination
Teaching period:	Spring semester

Physical activity exercise and aging

Language of instruction:	English
Form of teaching:	Lecture
Class hours per week:	2
Credits (ECTS):	6
Course description:	Upon the completion of the course, students will understand the physiological and psycho-social aspects of human aging as well as the effect of physical activity on the aging process. Students will also acquire knowledge and experience to distinguish usual from successful aging and to evaluate and apply fitness assessment and implement physical activity interventions for older adults.
Assessment methods:	Assigned readings Quizzes Final exam
Teaching period:	Spring

Physical Education Games

Language of instruction:	English
Form of teaching:	Practice
Class hours per week:	2
Credits (ECTS):	6
Course description:	The aim of the course is to describe the theoretical background of physical education and Folk Games which can be useful for sports programs, training conditions as well. Students learn practical knowledge that they can use in training. They should be able to apply the acquired forms of movement by age groups and using the appropriate methodology indirectly. Describe the personal development effects of games, their tools and the versatility of their potential. Students should be able to organize and run games and competitions.
Assessment methods:	Visiting the class (max. 3 absences are allowed). Plan of Mini Sport Festival (written, MS Word document). Practical (teaching PE Games). Written exam. An end-of-semester essay must be prepared.
Teaching period:	Spring semester

Physiology, Sport Physiology II.

Language of instruction:	English
Form of teaching:	Lecture
Class hours per week:	2L+2P
Credits (ECTS):	6
Course description:	Physiology II is the second part of a two-semester subject. This course introduces the student to the major physiological organ systems (cardiovascular, respiratory, renal, gas, and endocrine). This course will examine the integrated physiological response to exercise and the adaptation to particular environments.
Assessment methods:	Lecture: An oral or written presentation on a part of the subject must be prepared during the semester. An end-of-semester essay must be prepared. A written exam is based on lectures, accessible electronic sources, and lecture materials. Practice: Active participation and written test at the end of the course
Teaching period:	Spring semester

Prevention, Physical Therapy, Rehabilitation

Language of instruction:	English
Form of teaching:	Practice
Class hours per week:	2 L+2 P
Credits (ECTS):	6
Course description:	Subject objective and/or learning outcomes: 1. Students will be familiar with the theoretical and practical material of physiotherapy, with its specific tools, with particular emphasis on the training aspects of disease prevention and health restoration. 2. acquire an understanding of prevention and rehabilitation. Be able to use adaptive exercises in their work, avoiding the use of contra-indicated exercises. 3. be able to use the exercise material of physiotherapy in a way that promotes rehabilitation and health promotion. They should be able to recognise and correct various postural problems and be familiar with the movement material and the theoretical background of some specific methods. 4. Have an adaptive approach.
Assessment methods:	Active participation, written examination
Teaching period:	Spring semester

Social Sciences II.
(Communication, Introduction to Sociology, Basic of Sport Law)

Language of instruction:	English
Form of teaching:	Lecture
Class hours per week:	6
Credits (ECTS):	8
Course description:	Communication: Communication and its professional application became an elementary expectation in the 21st century labour market so as in sports. The actors of the sports activities apply communication frameworks and channels during their work, so it is of great importance for them to understand the theories of this discipline. During the course the students acquire the most important theories and processes of modern communication in such relations which they can apply after their studies in the everyday job situations. Introduction to sociology: Sociology studies the laws of society with an objective methodology in order to find answers for its internal processes. Sport is a social phenomenon so its professionals need to understand the features and tendencies of the society. During the course through theories of sociology and practical examples the students acquire all those social knowledge which develops their social, cognitive and problem recognizing and solving abilities which are necessary for their later work in sports. Introduction to sports law: Within the "Social Studies II" subject area, this subject provides basic knowledge in order to make orientation of legal topics related to sport activities and to get to know the regulated topics of the international organisations. It makes students, knowing the adequate information on creating and functioning different sports organisations, appropriately use their knowledge during their sports organizer activities and further on to acquire and apply the legal concepts and knowledge related to sports on a basic level.
Assessment methods:	Active participation, An end-of-semester essay must be prepared. Written and oral examination at the end of the semester, a project prepared and presented on a given topic during the semester
Teaching period:	Spring semester

Sport Injuries

Language of instruction:	English
Form of teaching:	Lecture
Class hours per week:	2
Credits (ECTS):	6
Course description:	This course provides a comprehensive overview of sports injuries. Students will learn about acute and chronic injuries, including mechanisms, prevention, and rehabilitation. The course will also explore the management of common sports injuries, and the principles and techniques of injury prevention and rehabilitation.
Assessment methods:	The semester grade can be given only if the student has fulfilled the attendance requirements. Students will conduct an oral, PowerPoint presentation on a specific sport injury topic. During the semester, weekly homework must be prepared and handed in. The final grade will be calculated as an average of exams
Teaching period:	Spring semester

Sup Yoga

Language of instruction:	English
Form of teaching:	Practice
Class hours per week:	2P
Credits (ECTS):	6
Course description:	The basic aim of the course is to provide a theoretical/practical background to sup-yoga, which can be valuable for sports programs and various recreational activities. This movement material and the theoretical system of yoga can also be very useful for students in a training environment. In a water environment, they can acquire knowledge that they can use for recreational purposes (yoga, meditation, relaxation), and water as a space for reducing anxiety. Based on their knowledge, they should be able to apply the acquired movement forms and methods independently, according to age groups and indirectly, using the appropriate methodology. They should be familiar with the specific effects, tools and versatility of sup-yoga, asanas and breathing exercises. Students should be able to interpret and demonstrate yoga/sup-yoga in a complex way, to transfer their knowledge individually by presenting different methods. Attendance of the course (max. 3 absences allowed). Detailed presentation of an international article, analysis, opinion (in writing). Practical exercise. Demonstration and performance of a series of 10 yoga asanas (postures) by the students. Guided relaxation between students on the Sup board (Swimming knowledge is compulsory to complete the course).

Assessment methods:	Active participation, written examination
Teaching period:	Spring semester

Yoga (Hatha Yoga)

Language of instruction:	English
Form of teaching:	Practice
Class hours per week:	2P
Credits (ECTS):	6
Course description:	The basic aim of the course is to provide a theoretical/practical background of yoga, which can be valuable for sports programs and various recreational activities. This movement material and also the theoretical system of yoga can be very useful for students in a training environment. They will acquire knowledge that can be used for recreational purposes (yoga breathing, meditation, relaxation). Based on their knowledge, they should be able to apply the acquired movement forms and stress reduction methods independently and indirectly, according to age groups and with the appropriate methodology. They should know the social and personal development effects of yoga and balance exercises in pairs, their tools and their versatility. Students should be able to interpret and demonstrate yoga in a complex way, and to transfer their knowledge individually and in groups by presenting different methods. Attendance of the course (max. 3 absences allowed). Detailed presentation, analysis and opinion (in writing) of an international article. Practical exercise. Demonstrate and conduct 10 related practice sequences of yoga asanas(postures) among the students. Written exam.
Assessment methods:	Active participation, written examination
Teaching period:	Spring semester