

## Courses taught in foreign languages in academic year 2021/22

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Faculty/Institute:	Faculty of Environment
Course title:	<b>Sustainable Erasmus Mobility</b>
Course code:	KZP/OSEMO
ECTS:	8
Level of course:	bachelor / master
Teacher:	Mgr. Miloslav Kolenatý
Term:	winter / summer
Language of instruction:	English
Lectures/tutorials:	0/2 per week
Completion:	a written report, a presentation of sustainable activities and practices
Course goal:	Learning about and implementing sustainable activities and practices within an Erasmus stay
Abstract:	<p>A practical course which deals with activities and practices supporting the environmental and social sustainability of Erasmus mobilities and decreasing one's ecological/carbon footprint. The course encourages students to make conscious, informed and sustainable choices, mainly in the following areas:</p> <ul style="list-style-type: none"> <li>- travel</li> <li>- digitalization and technology</li> <li>- consumer habits</li> <li>- food</li> <li>- litter &amp; waste (recycling, composting etc.)</li> <li>- pollution</li> <li>- energy consumption</li> <li>- biodiversity conservation</li> <li>- physical and mental health, resilience</li> <li>- global citizenship</li> <li>- local economy development</li> <li>- social commitment</li> <li>- community strengthening</li> </ul> <p>The course includes instructional meetings, tutorials and students' presentations of how they managed to make their Erasmus stay as sustainable as possible.</p>

Faculty/Institute:	Faculty of Environment
Course title:	<b>Valuation and Pricing of Natural Resources</b>
Course code:	KZP / OHOPZ
ECTS:	8
Level of course:	bachelor
Teacher:	Doc. Ing. Seják Josef, CSc.
Term:	Winter, summer
Language of instruction:	English
Lectures/exercises:	2/0 per week
Completion:	written test + spoken exam
Course goal:	Introducing the history of natural resource pricing within the economic theory development.
Abstract:	<p>History of natural resource pricing within the economic theory development. Valuation of market and non-market natural resources (ecosystems). Neoclassical methods based on the concept of willingness to pay or willingness to accept. Expert methods based on valuing the ecological functions of ecosystems. Selected case studies.</p> <ol style="list-style-type: none"> <li>1. Introduction, Importance of natural resource and ecosystem valuations. The practice of environmental expert witnesses.</li> <li>2. History of natural resource valuations, Time factor, Cost-benefit analysis.</li> <li>3. Basic estimations of natural resource price. Formulas for basic natural resource types.</li> <li>4. Land valuations (admin. and market prices, price information system, price maps)</li> <li>5. Valuation methods of ecosystem functions and services. Preferential and expert methods.</li> <li>6. Case studies in contingent valuations in environmental quality change.</li> <li>7. Biotope valuation method (BVM) in the CR.</li> <li>8. Case studies in BVM.</li> <li>9. Ecosystem services and their valuations.</li> <li>10. Externalities and public goods.</li> <li>11. Property rights and nature protection.</li> <li>12. Valuations in integrated forest functions.</li> <li>13. Pricing of water and water flows in landscape.</li> <li>14. Seminar works and their assessment.</li> </ol>

Faculty/Institute:	Faculty of Environment
Course title:	<b>Ecological Economics</b>
Course code:	KZP / OEKEK
ECTS:	8
Level of course:	bachelor
Teacher:	Doc. Ing. Seják Josef, CSc.
Term:	Winter, summer
Language of instruction:	English
Lectures/exercises:	2/0 per week
Completion:	Exam/written test
Course goal:	This transdisciplinary course introduces students into the general interactions among economics, economy and natural environment, brings students to the interface of natural sciences and social sciences. Gives basic knowledge about the decision-making processes in frame of the environmental dimension with help of economic instruments and environmental values.
Abstract:	<ol style="list-style-type: none"> <li>1. Earth and Life history; Energy Flows, Thermodynamics and Life</li> <li>2. A Short History of Economic Thinking and Doing</li> <li>3. Ecological Economics as an Integration of Economic System into Ecological System of Biosphere</li> <li>4. Sustainable Development Principles and Philosophy</li> <li>5. Valuing Natural Resources and Ecosystem Services</li> <li>6. Market Failure and Internalization of Externalities</li> <li>7. Human Behaviour and Economics</li> <li>8. Macroeconomic Concepts: GNP, GDI, ISEW</li> <li>9. Economic Instruments and Environm. Adjusted Cost Benefit Analyses</li> <li>10. Green Taxes, Limits and Commands, Tradable Permits</li> <li>11. Sustainable Scale, Just Distribution, Efficient Allocation</li> <li>12. Environmental Dimension of Global Economy</li> <li>13. Short Essay and Its Discussion.</li> </ol>

Faculty/Institute:	Faculty of Environment
Course title:	<b>Environmental Drainage Systems</b>
Course code:	KZP/OEDSY
ECTS:	8
Level of course:	Bachelor
Teacher:	Ing. Martin Neruda, Ph.D., Štibinger Jakub, doc., Ing., CSc.
Term:	Winter, summer
Language of instruction:	English
Lectures/exercises:	2/0 per week
Completion:	Exam
Course goal:	To introduce the basic principles of drainage processes and environmental drainage policy, with focusing on land, structures and water regime protection.
Abstract:	Subject "Environmental Drainage Systems" is focused to present to the students the basic principles and applications of drainage policy. Also environmental or sustainable drainage processes will be presented and explained. The students will be explained with modified hydraulics methods with Darcy's Law and equation of continuity, which are necessary for design, verifications and estimations drainage and environmental drainage systems, especially to determining of the basic design parameters of drainage. Rural Sustainable Drainage System (RSuDS) with Sustainable Urban Drainage System (SUDS) for mitigation of negative impact of climate dynamics (heavy rains, floods, long term droughts) in the landscape (RSuDS) and in urban areas (SUDS) will be introduced. The findings from the soil hydrology area will be fully used. Exemplary case studies from Czech Republic, Netherlands, Egypt and Taiwan will be discussed.

Faculty/Institute:	Faculty of Environment
Course title:	<b>Water in Landscape</b>
Course code:	KZP/OWATE
ECTS:	8
Level of course:	Bachelor (undergraduate), Master (graduate)
Teacher:	Ing. Martin Neruda, Ph.D.
Term:	Winter, summer
Language of instruction:	English
Lectures/exercises:	2/0 per week and terrain work
Completion:	exam
Course goal:	Introducing the basics of environmental hydrology and environmental water management.
Abstract:	Information about water management in the Czech Republic. Hydrology: catchments description, hydrological cycle, hydrological balance, flow measurements, groundwater, runoff prediction, water quality in rivers and lakes. Methods of streams restoration (principles, techniques, fish pass types) and flood management. Good practise examples. Hydrological measurements in stream or river.

Faculty/Institute:	Faculty of Environment
Course title:	<b>Environmental Geology</b>
Course code:	KZP/OENGE
ECTS:	8
Level of course:	bachelor
Teacher:	Ing. Richard Pokorný, DiS., Ph.D.
Term:	Winter, summer
Language of instruction:	English
Lectures/exercises:	2/0 per week
Completion:	terrain work 8 h (total), seminar work, exam
Course goal:	Relating Earth Science and Environmental science, introducing the basics of Environmental Geology.
Abstract:	<p>This course relates the science of Earth to activities of human beings. It's a survey of relationship between Earth science and environmental science. Environmental science is the study of total human environment on the present Earth. The course includes the following topics:</p> <p>Environmental geology (Geological Environment, Conditions and Preservation, The Anatomy of the Earth, The Dynamic of Earth – (endodynamic and exodynamic),</p> <p>Geological hazards (earthquakes, volcanoes, landslides, erosion, floods, subsidence, geomedical hazards),</p> <p>Geothermal energy (alternative source of energy)</p> <p>Human impacts on the Earth (resource extraction, ground subsidence, engineering and agriculture, solid and liquid waste, groundwater pollution etc.)</p> <p>Earth resources for society (land and soil, subsurface water, construction materials, industrial and metallic materials, coal and petroleum etc. Geological influence on society (control on landscape and human geomorphology)</p>

Faculty/Institute:	Faculty of Environment
Course title:	<b>Subterranean Habitats</b>
Course code:	KZP/OCAEC
ECTS:	6
Level of course:	bachelor
Teacher:	Pokorný Richard, Ing., DIS., Mgr. Michal Holec, Ph.D.
Term:	Winter, summer
Language of instruction:	English
Lectures/exercises:	0/2 per week
Completion:	Two field trips - Seminar work
Course goal:	Introducing the definition and classification of caves and organisms occupied this ecosystem.
Abstract:	Course covering definition and classification of caves and organisms occupying cave habitats. Caves as a unique ecosystem. Providing basic information about other important underground ecosystems (e.g. debris stones, artificial mining galleries). The course includes visits of caves, artificial mining galleries and debris stones and examples of cave investigation methods. The course is focused on the caves in Northern Bohemia.



Faculty/Institute:	Faculty of Environment
Course title:	<b>Advanced Separation Methods in Environmental Analysis: a practical course</b>
Course code:	KECHT/OEPME
ECTS:	10
Level of course:	bachelor
Teacher:	Prof. Ing. Pavel Janoš, CSc., Doc. Dr. Ing. Pavel Kuráň, Ing. Sylvie Kříženecká, Ph.D.
Term:	Winter, summer
Language of instruction:	English
Lectures/exercises:	0/2 per week, limit 10 students – first come, first served
Completion:	Laboratory work - Seminar paper
Course goal:	Managing the practical application of chromatographic techniques (GC, HPLC) for the determination of pollutants in the environment.
Abstract:	Practical training in application of chromatographic techniques (GC, HPLC) for the determination of selected organic pollutants in environmental samples, including methods of preconcentration and sample pretreatment (extraction, etc.). Special requirements: basic knowledge of principles of analytical chemistry and laboratory skill are presupposed.

Faculty/Institute:	Faculty of Environment
Course title:	<b>Advanced Separation Methods in Environmental Analysis: Theoretical part</b>
Course code:	KECHT/OEPMT
ECTS:	8
Level of course:	bachelor
Teacher:	Prof. Ing. Pavel Janoš, CSc., Doc. Dr. Ing. Pavel Kuráň
Term:	Winter, summer
Language of instruction:	English
Lectures/exercises:	2/0 per week , limit 10 students – first come, first served
Completion:	exam
Course goal:	Introducing theoretical principles and instrumentation of separation methods (GC,
Abstract:	Principles and theory of separation methods. Classification of separation methods frequently used in environmental analysis. Chromatographic methods – principles and classification. Liquid chromatography – instrumentation and environmental application. Gas Chromatography – instrumentation and environmental application.

Faculty/Institute:	Faculty of Environment
Course title:	<b>Management of Protected Areas</b>
Course code:	KZP/ONPO1
ECTS:	8
Level of course:	bachelor
Teacher:	Ing. Jiří Moravec, Ph.D.
Term:	Winter, summer
Language of instruction:	English
Lectures/exercises:	1/1 per week and/or terrain work
Completion:	exam and/or term paper submission
Course goal:	Gaining knowledge of basic issues of protected area management
Abstract:	<p>The aim of the course is to introduce students to the basic issues of management of protected natural areas (such as national parks, nature reserves, etc). System of protected areas is a cornerstone of a healthy landscape in modern societies. Formal declaration of protected areas is not sufficient, since protected areas need to be properly managed and organized, usually by governmental institutions.</p> <p>Protected areas (PA) contribute to water and soil protection. Protected areas preserve biodiversity and ecosystem functions, which has important economic and ecological implications. Ecosystem functions, such as natural water purification, natural water regulation, pollination, carbon recycling, photosynthesis, etc., have a major significance for human economy and society. Comparison of ecosystem services with technological solutions and fixes is a part of the subject.</p> <p>University graduates will need knowledge of management of PA when working as public administration employees, or as public policy makers. Also private sector employees should understand the purpose and limitations of PA. Tourism in protected areas requires educated visitors for its sustainability. Therefore, sound knowledge of significance and operation of protected areas will improve the educational profile of any student.</p> <p>The course offers to round-up the academic curriculum. It takes an integrated approach, applying both social and natural sciences, and explaining the role of technology. The course is offered to foreign students, as well as to Czech students with sufficient knowledge of English. The course is open to students of all study programs and levels of study. There is an English textbook for the course, written by the lecturer, both in printed version and in PDF format.</p>

Faculty/Institute	Faculty of the Environment
Course title:	<b>Politics of the Environment</b>
Course code:	KZP/OPOE
ECTS:	8
Level of course:	Bachelor / master
Teacher:	Jiri Moravec, Ph.D.
Term:	Winter, summer
Language of instruction:	English
Lectures/exercises:	0/2 per week
Completion:	exam, grade or pass/no pass
Course goal:	Understanding the political process that influences the development of environmental problems in a particular country and globally. Students will acquire background knowledge on the most pressing global environmental issues, environmental history and international environmental relations. Students will develop skills and competences to analyze a particular environmental problem, stake-holder interests, and the associated political cycle, and offer solutions related to the issue.
Abstract:	The course will inquire into environmental political thought, policy and action. Students will explore the relationship between the „green thought“ and other worldviews. The course will survey the development of green parties and the development of mainstream and radical environmental movements. We will observe the response of established political parties and systems to the current environmental challenges. Students will get introduced to public policy-making at international, EU, national and local levels. We will consider examples from Europe, U.S.A, as well as from authoritarian countries. The class should inspire interest and an active involvement in environmental conservation.

Faculty/Institute:	Faculty of Environment
Course title:	<b>Transportation and Environment</b>
Course code:	KZP/OTRE1
ECTS:	8
Level of course:	bachelor
Teacher:	Ing. Jiří Moravec, Ph.D.
Term:	Winter, summer
Language of instruction:	English
Lectures/exercises:	1/1 per week and/or terrain work
Completion:	exam and/or term paper submission
Course goal:	Gaining knowledge of basic environmental issues of transport
Abstract:	<p>The aim of the course is to introduce students to basic environmental issues of transport (air and water pollution, soil sealing, landscape and biodiversity impact). Proper transport planning and management is essential for well-organized cities, regions and countries. Governments, private businesses and individuals have to look for solutions, both organizational and technological, in order to counter negative environmental impacts, including traffic congestion.</p> <p>The students will inquire into measures attempting to eliminate or reduce the negative environmental effects of transport. Topics covered will include land-use planning, reduction of traffic flows, technical anti-noise measures, technological adjustments of road pavements, cars and fuels, and construction of eco-ducts. The issue of transport-disadvantaged groups (handicapped) will be addressed, both organizational and technological measures. Public policies supporting environmentally sustainable modes of transport, and energy issues will be explained and discussed.</p> <p>The course is offered to foreign students, as well as to Czech students with sufficient knowledge of English. The course is open to students of all study programs and levels of study. There is an English textbook for the course, written by the lecturer, both in printed version and in PDF format.</p>

Faculty/Institute:	Faculty of Environment
Course title:	<b>Transportation and Environment II – Selected Topics (in German) / Verkehr und Umwelt – ausgewählte Themen (in deutscher Sprache)</b>
Course code:	KZP/OTRE2
ECTS:	8
Level of course:	bachelor
Teacher:	Ing. Jiří Moravec, Ph.D.
Term:	Winter, summer
Language of instruction:	German (Deutsch)
Lectures/exercises:	1/1 per week and/or terrain work (1/1 pro Woche und/oder Exkursion)
Completion:	exam and/or term paper submission ( Prüfung und/oder schriftlich Semesterarbeit)
Course goal:	Gaining knowledge of basic environmental issues of transport. ( Die Umweltwirkungen des Verkehrs und die Maßnahmen zur Reduktion der verkehrlichen Umweltbelastungen kennenlernen. )
Abstract:	<p>The aim of the course is to introduce students to basic environmental issues of transport (air and water pollution, soil sealing, landscape and biodiversity impact). Proper transport planning and management is essential for well-organized cities, regions and countries. Governments, private businesses and individuals have to look for solutions, both organizational and technological, in order to counter negative environmental impacts, including traffic congestion.</p> <p>The students will inquire into measures attempting to eliminate or reduce the negative environmental effects of transport. Topics covered will include land-use planning, reduction of traffic flows, technical anti-noise measures, technological adjustments of road pavements, cars and fuels, and construction of eco-ducts. The issue of transport-disadvantaged groups (handicapped) will be addressed, both organizational and technological measures. Public policies supporting environmentally sustainable modes of transport, and energy issues will be explained and discussed.</p> <ul style="list-style-type: none"> <li>• Mobilität und Verkehr</li> <li>• Verkehrspolitik und nachhaltige Entwicklung</li> <li>• Externe Effekte u. Barrierefreie Mobilität</li> <li>• Fläche, Boden, Wasser</li> <li>• Energieverbrauch, Kraftstoffe</li> <li>• Lärm</li> <li>• Klassische Abgasemissionen: CO, HC, NOx</li> <li>• Kohlendioxid, Klimaänderung u. Klimaschutz</li> <li>• Induzierter Verkehr</li> <li>• Alternative Antriebe</li> <li>• Verkehr u. Biodiversität, Biotopfragmentierung</li> <li>• Nachhaltigkeitsindikatoren im Verkehr</li> </ul>

Faculty/Institute:	Faculty of Environment
Course title:	<b>Environmental Issues of Turkey and Middle East</b>
Course code:	KZP/OETMD
ECTS:	8
Level of course:	bachelor
Teacher:	Ing. Jiří Moravec, Ph.D.
Term:	Winter, summer
Language of instruction:	English
Lectures/exercises:	1/1 per week
Completion:	exam and/or term paper submission
Course goal:	Developing knowledge of environmental issues of Turkey and Middle East
Abstract:	<p>The aim of the course is to analyze selected environmental issues of Turkey and countries of the Middle East. The topics include air pollution, water pollution, water scarcity and management, soil degradation, erosion and desertification, forestry and biodiversity maintenance. The emphasis of the course may change from semester to semester, according to actual environmental events and developments.</p> <p>The students will inquire into measures and policies attempting to reduce selected environmental problems. Various approaches will be inspected (technologies, legislation, economic incentives, education and information). A participation in the course presumes basic general knowledge of environmental issues. Independent study and desk research will be encouraged.</p> <p>Topics covered will include land-use planning, reduction of traffic flows, technical anti-noise measures, technological adjustments of road pavements, cars and fuels, and construction of eco-ducts. The issue of transport-disadvantaged groups (handicapped) will be addressed, both organisational and technological measures. Public policies supporting environmentally sustainable modes of transport, and energy issues will be explained and discussed.</p>

Faculty/Institute:	Faculty of Environment
Course title:	<b>General Economics</b>
Course code:	KZP/OECNE
ECTS:	8
Level of course:	bachelor
Teacher:	Ing. Jakub Vosátka, Ph.D.
Term:	Winter, summer
Language of instruction:	English
Lectures/exercises:	2 per week
Completion:	exam
Course goal:	Introducing the basics of economic science.
Abstract:	The General economics course is a first-level introduction to the economic science. Students learn to understand causes and impacts of basic economic phenomena on economic reality. The course consists of the two parts. The first part is focused at microeconomics, where students get acquainted with the behaviour of basic market agents, i.e. households and firms. The second part of the course is focused on the macroeconomic issues, considering the economic role of the state from viewpoints of different economic schools when facing such economic phenomena as inflation, unemployment, international trade, and so on.



Faculty/Institute:	Faculty of Environment
Course title:	<b>Environmental Microbiology</b>
Course code:	KECHT/OENMI
ECTS:	8
Level of course:	bachelor
Teacher:	doc. Ing. Josef Trögl, Ph.D.
Term:	Winter, summer
Language of instruction:	English
Lectures/exercises:	2/0 per week
Completion:	written credit test
Course goal:	Introduction to microbiology with focus on the roles of microorganisms in the environment and their application
Abstract:	<p>The first part of the course presents introduction into general microbiology (evolution and taxonomy, cell structure, proliferation, metabolism, genetics, physiology). The second part is focused on microorganisms in the environment, their relation to other organisms (competition, important symbioses), ecological factors affecting their distribution and their main roles in the environmental processes. The third part is focused on environmental applications of microorganisms (waste-water treatment, bioremediation, waste decomposition, biosensing...).</p> <ol style="list-style-type: none"> <li>1. Introduction to general microbiology, evolution and taxonomy</li> <li>2. Cytology and morphology of microorganisms</li> <li>3. Proliferation of microorganism, growth curve</li> <li>4. Introduction to microbial metabolism</li> <li>5. Introduction to microbial genetics</li> <li>6. Introduction to microbial physiology</li> <li>7. Environmental microbiology 1 – ecology, strategies, roles, competition</li> <li>8. Environmental microbiology 2 – microorganisms in soil and air</li> <li>9. Environmental microbiology 3 – microorganisms in water</li> <li>10. Environmental biotechnology 1 – biodegradation and bioremediation of pollutants, biosensing</li> <li>11. Environmental biotechnology 2 – waste-water treatment, waste decomposition</li> <li>12. Environmental biotechnology 3 – alternatives to chemical technologies (biofuels, bioplastics)</li> <li>13. Research and development in the field, future perspectives</li> </ol>

Faculty/Institute:	Faculty of Environment
Course title:	<b>Laboratories in Environmental Microbiology</b>
Course code:	KECHT/OLENM
ECTS:	8
Level of course:	bachelor
Teacher:	doc. Ing. Josef Trögl, Ph.D., Mgr. Diana Holcová, Ph.D.
Term:	Winter, summer
Language of instruction:	English
Lectures/exercises:	3 blocks of 4 hours
Completion:	written credit test
Course goal:	Introduction to laboratory techniques in environmental microbiology
Abstract:	<p>The course introduces into basic laboratory techniques in general and environmental microbiology. No previous laboratory experience is required. Students shall bring their own sample of natural water (1 L) and soil (~50 g).</p> <p>Block 1 – Introduction to safety in laboratory, introduction to sterile work, preparation of used media, and sterilization of used material.</p> <p>Block 2 – Basic cultivation techniques, culture determination of bacteria in water sample, effect of UV on bacteria, bacterial growth-inhibition assay.</p> <p>Block 3 – Introduction to microscopy, Gram staining of bacteria, microscopy of water microorganisms, determination of phosphatase activity in soil, evaluation of data</p>

Faculty/Institute:	Faculty of Environment
Course title:	<b>Geographic Information Systems and 3D modeling</b>
Course code:	KGI/OGIMD
ECTS:	8
Level of course:	Bachelor/master
Teacher:	Ing. Jan Pacina, Ph.D.
Term:	Winter, summer
Language of instruction:	English
Lectures/exercises:	0/2 per week
Completion:	practical exam / written credit test
Course goal:	Introducing GIS and image-based 3D modeling
Abstract:	<p>GIS has a leading role in analyzing the environment based on spatial data, maps and aerial images. This course will introduce basics of GIS (data collection, visualization and analysis), web-mapping applications, aerial image processing and 3D models creation.</p> <ol style="list-style-type: none"> <li>1. Basics of GIS – data visualization</li> <li>2. Map compositions</li> <li>3. Data going online – web mapping applications</li> <li>4. How to collect data with your smart-phone?</li> <li>5. Data collection using precise GPS</li> <li>6. Image based 3D modeling – create your house, car or head in 3D</li> <li>7. Aerial image processing (images from aircrafts and drones)</li> <li>8. Let's fly it up – data collection with UAVs (drones)</li> </ol>

Faculty/Institute	Faculty of the Environment
Course title:	<b>Climate Change: adaptation and mitigation measures</b>
Course code:	KZP/OCLCH or KECHT/OCLCH
ECTS:	8
Level of course:	bachelor / master
Teacher:	Professor Valentina Pidlisnyuk, Dr.Sc.
Term:	Winter / summer
Language of instruction:	English
Lectures/exercises:	2/0 per week
Completion:	7 lectures, 3 exercises, home reading, project, test
Course goal:	This multidisciplinary course will introduce broad diverse perspectives on global climate change. It will train students how do we adapt to the negative impacts of climate change, how we can mitigate it, how climate actions may be planned and financed, and how the climate negotiation work. The course will make students prepared to address effectively and adequately to the current climate change challenges arise.
Abstract:	<p>The course will provide a survey of key aspects of the problem. Topics include main reasons of the climate change and impacts, current prognosis for climate modeling, ecological impacts and feedbacks, international climate policies, and social and environmental justice. Main background document- Kyoto protocol, Paris Agreement, A European Green Deal will be deeply analyzed. Other topics include response of EU countries toward implementation of 2030 climate&amp;energy framework with stress on the carbon market, cutting the greenhouse gas emission, increasing energy efficiency and renewable energy share, greening of industry, implementation of circular economy and value chain policy, contributing to the achievement of the Sustainable Development Goals.</p> <p>The course includes lecturing by primary instructor and guest lecturers, providing an overview of the complex and inter-related nature of global climate change. During the course students will be obligated to review the web-page on Climate Change impact, to write a position paper based on the article on Climate Change issue and to participate in Conflict resolution game related to mitigation action of Climate Change. A home reading is included into the course. The course will culminate in a project based on finding solutions to the real problem of climate change selected by students based on own concern and background. Students will be required to take a leadership role in bridging the multiple disciplines knowledge to accomplish the course.</p> <p><b>Literature</b></p> <p>Barber L., Israel R., 2017. A Checkup of country efforts to implement the Paris Agreement. In the Leading greenhouse gas emitting countries, 33 pages.</p> <p>Brawn L.R., 2011. World on the Edge, Earth Policy Institute, WWNorton Company, New York- London, 174 pages.</p> <p>Erickson L. and Brase G., 2020. Reducing greenhouse gas emissions and improving air quality. CRC Press, Taylor &amp;Francis Group, 157 pages.</p> <p>Erickson L. and Pidlisnyuk V. ,2021. Phytotechnology with Biomass Production: Sustainable management of contaminated sites. CRC Press, Taylor &amp;Francis Group (in press: issued on June, 2021).</p> <p>Guides to support implementation of the Paris Agreement, 2017. Part One: Supporting access to finance for Climate Action. Part Two: Towards Green Climate Fund Accreditation and Support. Part Three: Integrating Climate Action into national development planning- Coherent implementation of the Paris Agreement and Agenda 2030. SIDA. Available at : <a href="http://www.sida.se">www.sida.se</a></p> <p>Pidlisnyuk V., 2021. Strategy of Climate Change and Sustainable Development. Class-Book. Third Edition, Printeko, 221 pages (in press, issued in August, 2021).</p> <p>Sustainable Development in the European Union. Monitoring report on progress towards the SDGs in an EU context, 2020. -366 pages.</p>

Faculty/Institute	Faculty of the Environment
Course title:	<b>Fundamentals of Sustainability</b>
Course code:	KECHT/OFUST
ECTS:	8
Level of course:	bachelor / master
Teacher:	Professor Valentina Pidlisnyuk, Dr.Sc.
Term:	Winter / summer
Language of instruction:	English
Lectures/exercises:	2/0 per week
Completion:	7 lectures and one skype lecture from K-State,USA ; Home reading, conflict resolution exercise, final presentation and test
Course goal:	The course focuses on environmental issues in a globalize contest within the framework of sustainability. Through an interdisciplinary perspective, the course will provide students with key competences and instruments for the analysis of natural and environmental resources in a sustainable perspective and development of policies oriented towards the promotion and implementing sustainability at the local, national and international levels.
Abstract:	The course covers the following themes: sustainable development concept, global events, 2030 sustainable development goals. The ecological, economic and social threats such as water, air and soil contamination, biodiversity loss, ozone layer depletion, waste accumulation, poverty and population growth are deeply overviewed. The course studies policies in climate change, energy implications with the focus at alternative energy - biomass. Through ecological, economic, social and institutional indicators it is shown how to address sustainability at the regional and local levels. The practical aspects of sustainable water use, sustainable agriculture, and greening of economy, education for sustainable development, and approaches for selection and monitoring of sustainability indicators are discussed. The case studies from Central and Eastern European countries and USA are considered as examples of interconnection between economic development, environmental and social aspects, and institutional transformation. Students are supposed to select environmentally coloured problem raised the conflict locally or globally, to discussed it from the prospective of different stakeholders involved and to find an appropriated solution. Lecture from K-State,USA is on Sustainability of Waste Management and provided by faculty member of that university Dr. Larry Erickson.

Faculty/Institute	Faculty of the Environment
Course title:	<b>Global Environmental Change</b>
Course code:	KECHT/OGECH
ECTS:	8
Level of course:	bachelor / master
Teacher:	Professor Valentina Pidlisnyuk, Dr.Sc.
Term:	Winter / summer
Language of instruction:	English
Lectures/exercises:	2/0 per week
Completion:	6 Lectures and one skype-lecture, home-reading, essay, final presentation, test
Course goal:	Course is highly interdisciplinary, seamlessly crossing disciplinary boundaries and offer a “front-loaded” approach. It is introducing students to the science of the Earth and its living and non-living systems as well as how humans interact with Earth and its natural systems and how humans can use powerful tools, such as policy and communication to harm or help those systems. It provides a broad understanding of complex issues involved in global change and global sustainability and enables students to use quantitative tools in approaching global change issues. The main expectations are to advance awareness of the magnitude and consequences of global changes and to train the next generation of problem-solvers who will adequately address the phenomena.
Abstract:	<p>Course consists of two main parts:</p> <p>Part 1. Issues and Driving Forces  Growth and nature of environmental awareness, values and perceptions. Critical issues in current and future environmental change in terrestrial, atmospheric, aquatic and marine systems. Climate change and its impact. The forces driving change including population growth and consumption, resource scarcity, climate, patterns of energy use, ecosystem changes, thresholds and sustainability.</p> <p>Part 2: Managing the Global Environmental Changes  The nature of environmental changes at various levels, the business perspective, special interest groups, national and international action and co-operation. The formal legal framework. How the above are mediated by crosscutting dimensions of a legal, economic, cultural and ecological nature.</p> <p>Case-studies on mitigation and adaptation measures in CC are presented.</p> <p>Students have to be prepared for a stimulating and challenging journey filled with new concepts, theories, problems, and experiences.</p> <p>Skype-lecture is provided by K-State, USA faculty member Dr. Blasé Level, Centre for Hazardous Substances Research, Environmental Engineering and is about service to communities in environmental matters and adaptation/mitigation measures.</p>

Faculty/Institute	Faculty of the Environment
Course title:	<b>Sustainable Management of Contaminated Sites</b>
Course code:	KECHT/OSMCS
ECTS:	8
Level of course:	bachelor / master
Teacher:	Professor Valentina Pidlisnyuk, Dr.Sc.& Associate Professor Josef Trögl
Term:	Winter / summer
Language of instruction:	English
Lectures/exercises:	2/0 per week
Completion:	3 lectures and 1 skype-lecture, internet search, informal discussions, participation at the Design project presentations at K-State, USA, final presentation and test
Course goal:	Course introduces an integrative project-oriented capstone “bringing” opportunity and is based on international experiences in sustainable management of diverse contaminated land: military, mining and abandoned. Graduates of the course will be well poised to successfully lead in developing and implementation multifaceted solutions to environmental, societal and other cross-sectors problems connected with sustainable approaches in land management.
Abstract:	<p>Sustainable management takes the concepts from sustainability and synthesizes them with the concepts of management having 3 branches: the environment, the needs of present and future generations, and the economy. Sustainable management of contaminated land implies application of sustainable practices to the contaminated lands by operation them in a way that well build current and future generation needs.</p> <p>Course consists of lectures on targeted topics and case-studies from around the Europe and USA. Lectures cover the following topics: “Principles of environmental sustainability”, “Biotechnology for contaminated land treatment”; “Phytoremediation of nonorganic pollutants”.</p> <p>Practical exercises imply: a) observation of internet resources related to the topics b) group informal discussion.</p> <p>Additional course includes introduction of scientific &amp; outreach projects in the region of Central and Eastern Europe and USA: NATO project “New phytotechnology with biomass production for military contaminated sites”, REMKO project “ Remediation of comprehensively polluted soils”, Interreg project “Remediation of military past pollution in Baltic region, EPA USA Superfund site project in Arizona, USA.</p> <p>1 skype lecture on management of USA tribes’ contaminated lands is delivered by professor Octaviana Trujillo, University of Arizona, USA.</p> <p>Students actively participate in the final presentations of Design projects of Chemical Engineering students at K-State, USA being connected by skype. The K-State Design class is led by Dr.Erickson and prof. Schlup, faculty members at K-State, USA.</p>

Faculty/Institute	Faculty of the Environment
Course title:	<b>Project Lesson</b>
Course code:	KZP/OPROJ
ECTS:	6
Level of course:	bachelor / master
Teacher:	Ing. Martin Neruda, Ph.D.
Term:	Winter / summer
Language of instruction:	English
Lectures/exercises:	2/0 per week
Completion:	students' presentation and report
Course goal:	Cooperation between international students and local academics within students' bachelor or diploma thesis, projects.
Abstract:	Students work on their project or bachelor/master thesis and have regular meetings with supervisor. Supervisor is an expert in the field of a project. Students will write a report about a project, which can be part of bachelor/master thesis and have a detailed presentation.



Faculty/Institute	Faculty of the Environment
Course title:	<b>Environmental Humanities</b>
Course code:	KZP/ OENHU
ECTS:	8
Level of course:	bachelor
Teacher:	Mgr. at Mgr. Kateřina Marková, Ph.D.
Term:	Winter, summer
Language of instruction:	English
Lectures/exercises:	0/2 per week
Completion:	essay/oral exam
Course goal:	Introducing basic English environmental humanities terms and skills, focusing on general aspects and specific environmental problems.
Abstract:	<p>The course is terminated with a short essay followed by an oral examination. Dealing with scientific texts in English (spoken and written). English terminology connected to the studied subject. Language items used in scientific texts. Dealing with topics covering the professional orientation. Improving communicative skills (writing and speaking, above all) focusing on the topics connected to the professional orientation in environmental humanities.</p> <ol style="list-style-type: none"> <li>1. Welcome to the Czech Republic</li> <li>2. Environment and Ecology - Sustainable development</li> <li>3. Earth Sciences and Humanities (sciences) – (philosophy, psychology, cultural anthropology...).</li> <li>4. Wildlife (Natura) X Culture</li> <li>5. Using the land – culture (using the land)</li> <li>6. Philosophy of environmental education</li> </ol>