

GEO - COURSES IN ENGLISH
at Palacký University Olomouc, Faculty of Science,
Olomouc, Czech Republic
2021/2022

DEPARTMENT OF GEOGRAPHY

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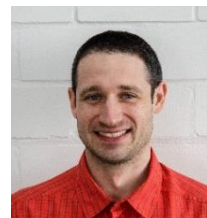
DEPARTMENT OF DEVELOPMENT AND ENVIRONMENTAL STUDIES

- **doc. Miroslav Syrovátka** (miroslav.syrovatka@upol.cz)
 - Office: 17. listopadu 12 (room 2.009)
 - Students from English speaking universities
- **dr. Simona Šafaříková** (simona.safarikova@upol.cz)
 - Office: 17. listopadu 12 (room 2.008)
 - Students from non-English speaking universities



DEPARTMENT OF GEOINFORMATICS

- **doc. Jaroslav Burian** (jaroslav.burian@gmail.com)
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DEPARTMENT OF GEOLOGY

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OFFER OF COURSES AT OTHER DEPARTMENTS

Students are obliged to take at least 50 % of the ECTS credits at the department, to which they have been assigned to (in our case Department of Geography – KGG).

Students are allowed to register in courses taught also at other departments, namely at the Department of Development and Environmental Studies (MRS), Department of Geoinformatics (KGI), Department of Geology (KGE) and also to register in one or two courses outside the Faculty of Science, e.g. Faculty of Arts (Department of Political Science). Participation at these courses is determined by the agreement between student and lecturer at the beginning of semester. Teachers are not obliged to accept all demands.

DEPARTMENT OF GEOGRAPHY

WINTER SEMESTER	SUMMER SEMESTER
Advanced Landscape Mapping Methods (5 ECTS, 3h)	Advanced Landscape Mapping Methods (5 ECTS, 3h)
Conflict Regions of the Contemporary World (5 ECTS, 3 h)	Conflict Regions of the Contemporary World (5 ECTS, 3 h)
Didactic Games in Geography (5 ECTS, 3h)	Didactic Games in Geography (5 ECTS, 3h)
Geographical Field Trip in the Czech Republic (5 ECTS, 5 days)	Geographical Field Trip in the Czech Republic (5 ECTS, 5 days)
-	Geographical Field Trip to a Foreign Country (6 ECTS, 6 days)
Geographically Oriented Research (5 ECTS, 3 h)	Geographically Oriented Research (5 ECTS, 3 h)
Geography of Climate Change (5 ECTS, 3 h)	Geography of Climate Change (5 ECTS, 3 h)
Geography of the Czech Republic (5 ECTS, 3 h)	Geography of the Czech Republic (5 ECTS, 3 h)
GIScience for Geographers (5 ECTS, 3 h)	GIScience for Geographers (5 ECTS, 3 h)
Landscape Mapping (5 ECTS, 3 h)	Landscape Mapping (5 ECTS, 3 h)
Regional Geography of the Balkans (5 ECTS, 3 h)	Regional Geography of the Balkans (5 ECTS, 3 h)
Regional Geography of Central Europe (5 ECTS, 3 h)	Regional Geography of Central Europe (5 ECTS, 3 h)
Regional Information Systems (5 ECTS, 3 h)	Regional Information Systems (5 ECTS, 3 h)
-	Remote Sensing Principles (3 ECTS, 3 h)

Number of hours includes lectures and seminars. One hour (1 h) is 45 minutes. **Some of the courses may not be opened.**

DEPARTMENT OF DEVELOPMENT AND ENVIRONMENTAL STUDIES

WINTER SEMESTER	SUMMER SEMESTER
Project Cycle Management (6 ECTS, 3 h)	Development Economics (6 ECTS, 3 h)
Politico-geographical Processes in the Developing World (6 ECTS, 3 h)	Environmental Geography (4 ECTS, 2 h)
Development Theories (6 ECTS, 2 h)	Development of Latin America (6 ECTS, 3 h)
Global Environmental Issues (4 ECTS, 2 h)	Evaluation of Development Projects (4 ECTS, 2 h)
Development of Africa (6 ECTS, 3 h)	Sustainable Development (4 ECTS, 2 h)
Quantitative Methods in Development (6 ECTS, 3 h)	Development of South and Southeast Asia (6 ECTS, 3 h)
Qualitative Methods in Development (6 ECTS, 3 h)	English Language (3 ECTS, 2 h)
Development Assistance (4 ECTS, 2 h)	Global Demographic Trends (4 ECTS, 2 h)
Develop. of Central Asia and Middle East (6 ECTS, 3 h)	Selected Prognostic Methods (4 ECTS, 2 h)
Development Geography and Globalization (4 ECTS, 2 h)	Migration in Today's World (4 ECTS, 2 h)
English Language (3 ECTS, 2 h)	Social and Technological Changes (4 ECTS, 2 h)
Introduction to Foresight (4 ECTS, 2 h)	Sport and Development (3 ECTS, 2 h)
Possible Futures Mapping (4 ECTS, 2 h)	
GIS in Environ. Research and Development (6 ECTS, 3 h)	
Environmental Economics (6 ECTS, 3 h)	
Economics of Development (6 ECTS, 4 h) ¹	
Possible Futures Shaping (4 ECTS, 2 h)	

Number of hours includes lectures and seminars. One hour (1 h) is 45 minutes. **Some of the courses may not be opened.**

¹ Overlapping topics between Economics of Development (winter semester) and Development Economics (summer semester), but the latter course is more technical.

DEPARTMENT OF GEOINFORMATICS

WINTER SEMESTER	SUMMER SEMESTER
Geoinformatics (8 ECTS, 4 h) - winter or summer semester	
New Issues of Geosciences (5 ECTS, 3 h) - winter or summer semester	
Cartographic Design and Prepress Processing (3 ECTS, 2 h)	Technologies in Geographic Information Science (3 ECTS, 2 h)
Socio-economic Geography 2 (5 ECTS, 4 h)	Geographical Information Systems (5 ECTS, 3 h)
Remote Sensing (10 ECTS, 7 h)	Web Cartography (6 ECTS, 5 h)
Cognitive Cartography (5 ECTS, 4 h)	Cartography 2 (10 ECTS, 7 h)
Digital Elevation Models (5 ECTS, 3 h)	Programming 2 (5 ECTS, 4 h)
Atlas Cartography (10 ECTS, 6 h)	Advanced Computational Methods in Cartography (ECTS 10, 7 h)
Geographical project (4 ECTS, 3 h)	Land Information Systems (5 ECTS, 3 h)
	Geoinformatics in Urban Applications (5 ECTS, 5 h)
	GIS-based human geography (6 ECTS, 5 h)

Number of hours includes lectures and seminars. One hour (1 h) is 45 minutes. **Some of the courses may not be opened.**

Courses Geoinformatics and New Issues of Geosciences are organised specially for foreign students. Other courses are based on individual tasks, consultations, seminar work and e-learning teaching methods.

DEPARTMENT OF GEOLOGY

WINTER SEMESTR	SUMMER SEMESTER
Quaternary Geology (3 ECTS, 2h)	Environmental Mineralogy (3 ECTS, 2h)
Methods in Stratigraphy (4 ECTS, 3h)	Introduction to Hydrogeochemical Modeling (2 ECTS, 1h)
Sedimentology (4 ECTS, 3h)	Medical Geology (3 ECTS, 2h)
Human Evolution (3 ECTS, 2h)	Evolution of Man and his Material Civilization (3 ECTS, 2h)
Geology in English (2 ECTS, 2h)	Introduction to Geology of the Czech Republic (2 ECTS, 1h)
Practicals in Environmental Monitoring for Foreigners (3 ECTS, 2h)	Field Trip in Geology (5 ECTS, 5 days)
Field Labs in Environmental Geology 1 for Foreigners (5 ECTS, 5 days)	Field Trip in Geology and Geomorphology (2 ECTS, 3 days)
Geological Factors of Environment (3 ECTS, 2h)	Foreign geological field trip (5 ECTS, 6 days)
Course of Shallow Geophysics (5 ECTS, 5 days)	
Modern Mehtods of Geophysical Data Processing (3 ECTS, 2h)	

Number of hours includes lectures and seminars. One hour (1 h) is 45 minutes. **Some of the courses may not be opened. Some of courses are based on individual tasks, consultations and seminar work.**

Department of Geography

COURSES IN ALPHABETICAL ORDER

Advanced Landscape Mapping Methods

Department / Abbreviation	KGG / QALM
ECTS	5
Time requirements	Lecture 1[Hours/Week] Seminar 2 [Hours/Week]
Lecturer	RNDr. Aleš Léta, Ph.D. (ales.letal@upol.cz)
Content: The course focuses on the practical teaching of physical geography advanced field data collection methods and their processing in GIS. The course deals with topics such as mastery of advanced methods of physical geographic research with a focus on modern methods of data collection in the field using GIS mapping applications, basics of geophysical prospecting, accurate field measurements and mapping using DGPS, use of RPAS (Remotely Piloted Aircraft System) technology and nearby photogrammetry, spatial data processing in GIS.	

Conflict Regions of the Contemporary World

Department / Abbreviation	KGG / QCRCW
ECTS	5
Time requirements	Lecture 1[Hours/Week] Seminar 2 [Hours/Week]
Lecturer	Mgr. Miloslav Šerý, Ph.D. (serymilos@gmail.com)
Content: Lectures are aimed at question of causes of their origin and contemporary state (definition of global and regional problems, problem areas and their basic features, conflict resolution). In seminars students present seminar works aimed at concrete problem areas (characteristic of sides of conflict, attitudes of international community, outline of existing resolution strategies, circumstances hindering resolution, proposal of resolution strategy).	

Didactic Games in Geography

Department / Abbreviation	KGG / QGAM
ECTS	5
Time requirements	Lecture 1[Hours/Week] Seminar 2 [Hours/Week]
Lecturer	Mgr. Jan Hercik, Ph.D., Mgr. Petr Šimáček, Ph.D. (petr.simacek@upol.cz)
Content: Lectures are aimed at the theory of didactic games and competitions (definition, typology). Students will be acquainted with different types of didactic games (simple educational games, interactive and multimedia games, board games, simulation games, outdoor games etc.) as well as with advantages and pitfalls of using educational games in the classroom. Students will also learn how to create their own educational games. The course is recommended to students, who want to become teachers.	

Geographical Field Trip in the Czech Republic

Department / Abbreviation	KGG / QKGEX
ECTS	5
Time requirements	Excursion 5 [Days/Semester]
Lecturer	Mgr. Petr Šimáček, Ph.D. (petr.simacek@upol.cz)
Content: The course is conducted in a form of 3-5 stand alone oneday or twoday field trips. Such field trips are aimed at practical application of knowledge acquired in individual geographical disciplines. Students will visit important physical geographical and settlement localities in model areas. Natural and socio-economic potential of localities will be assessed as well as its possibilities for improvement. Students are expected to financially participate in paying their own travel costs, entrance fees or accommodation.	

Geographical Field Trip to a Foreign Country

Department / Abbreviation	KGG / QZGEX
ECTS	6
Time requirements	Excursion 6 [Days/Semester]
Lecturer	RNDr. Martin Jurek, Ph.D. (martin.jurek@upol.cz)
Content: During the field trip students are presented with complex geographical characteristic of visited countries, i. e. basic cultural historical, physical geographical, socio-economic and political geographical information. Visits to geographical institutions of these countries. Students are expected to financially participate in paying their own travel costs, entrance fees or accommodation.	

Geographically Oriented Research

Department / Abbreviation	KGG / QOR
ECTS	5
Time requirements	Lecture 1[Hours/Week] Tutorial 2 [Hours/Week]
Lecturer	Mgr. Petr Šimáček, Ph.D. (petr.simacek@upol.cz)
Content: The course is focused on presentation of contemporary geographically oriented research. Several different topics from the fields of physical, environmental and human geography or from geographically related fields (geoinformatics, geology, spatial aspects of sociology, etc.) will be introduced during whole semester.	

Geography of Climate Change

Department / Abbreviation	KGG / QCLIC
ECTS	5
Time requirements	Lecture 1[Hours/Week] Seminar 2 [Hours/Week]
Lecturer	RNDr. Martin Jurek, Ph.D., Mgr. Michal Lehnert, Ph.D. (m.lehnert@upol.cz)
Content: In the first part, the physical science basis of climate change is introduced, followed by the adaptation and mitigation strategies proposed by the reports of the Intergovernmental Panel on Climate Change. Political and public response as well as scientific critique will be discussed. In the final part of the course, regional impacts of climate change will be discussed in the context of environmental, social and economic consequences.	

Geography of the Czech Republic

Department / Abbreviation	KGG / QCZR
ECTS	5
Time requirements	Lecture 2 [Hours/Week] Seminar 1 [Hours/Week]
Lecturer	Mgr. Pavla Šimáčková, MSc. (pavla.simackova@upol.cz)
Content: Lectures are concerned with following themes: Geographical-political position of the Czech Republic; historical-geographical development of Czech lands; basic physical-geographical characteristics; basic human-geographical characteristics. The course includes also oneday field trip to touristically attractive locality.	

GIScience for Geographers

Department / Abbreviation	KGG / QGIG
ECTS	5
Time requirements	Lecture 1[Hours/Week] Exercise 2 [Hours/Week]
Lecturer	Mgr. Petr Šimáček, Ph.D. (petr.simacek@upol.cz)
Content: In theoretical part of the course the basics of Geographical Information Science will be presented. Practical part will be mostly held at computer laboratory and will be focused on work with free accessible GIS software and its application in thematic map creation. Outdoor playful form of GPS mapping is an integral part of the course.	

Landscape Mapping

Department / Abbreviation	KGG / QLMAP
ECTS	5
Time requirements	Lecture 1 [Hours/Week] Seminar 2 [Hours/Week]
Lecturer	RNDr. Aleš Létal, Ph.D. (ales.letal@upol.cz)
Content: The course is focused on practical exercises dealing with mapping of landscape elements or phenomena using both classical and modern technologies. Students will learn the principles and methods of landscape archeology for an emphasis on mapping the relics of human activity in the Czech landscape. An integral part of the subject is fieldwork.	

Regional Geography of the Balkans

Department / Abbreviation	KGG / QBAL
ECTS	5
Time requirements	Lecture 2 [Hours/Week] Seminar 1 [Hours/Week]
Lecturer	RNDr. Miloš Fňukal, Ph.D. (milos.fnukal@upol.cz)
Content: Course deals with following issues: geographical position, basic physical geographical characteristic (geological development, geomorphologic, climatic, hydrologic, pedogeographic and biogeographic conditions, nature and landscape conservation), basic socio-economic characteristics (position in the world, historic development and its influence on formation of European society, general population characteristic, agriculture, industry, transport, services and tourism), the most important political geographical, social, economic and safety problems, regional outline.	

Regional Information Systems

Department / Abbreviation	KGG / QRIS
ECTS	5
Time requirements	Lecture 1 [Hours/Week] Exercise 2 [Hours/Week]
Lecturer	RNDr. Aleš Létal, Ph.D. (ales.letal@upol.cz)
Content: In theoretical part students will be acquainted with fundamentals of creation of information systems, with data sources available in the Czech Republic and with advanced technologies. In practical part students will be acquainted with examples of regional information systems in practice and they will propose regional information system for selected purpose and region. Exercises are focused on collecting, processing and analyzing data for the needs of the regional information system, including the creation of advanced map outputs.	

Remote Sensing Principles

Department / Abbreviation	KGG / QRSP
ECTS	3
Time requirements	Lecture 1 [Hours/Week]
Lecturer	doc. RNDr. Miroslav Vysoudil, CSc. (miroslav.vysoudil@upol.cz)
Content: The subject deals with followed topics: remote sensing and geographical information systems, raster vs. vector data and their sources, conception of remote sensing and its principles (sources of radiation, interaction of solar radiation with atmosphere and earth surface, forms of data gathering and their interpretation, referential data), multispectral, thermal and hyperspectral data, optical environmental satellites (history, systems), microwave environmental satellites (history, systems), visualisation of remotely sensed digital data (rectification, image enhancement, spatial interpretation, classification, integration into GIS), remote sensing terminology, Earth observation system, application in geography and environmental research.	

Regional Geography of Central Europe

Department / Abbreviation	KGG / QRGCE
ECTS	5
Time requirements	Lecture 1[Hours/Week] Seminar 2 [Hours/Week]
Lecturer	RNDr. Martin Jurek, Ph.D. (martin.jurek@upol.cz)
Content: The course is based on application of geographical knowledge and methods in the region of Central Europe. In the first part of the semester students will revise and broaden their knowledge of both physical and namely social geography of Central Europe. In the second part of the semester the students will mutually introduce themselves to selected geographical features and current topics in the region by means of seminar presentations. The focus of the learning is working with relevant information sources and geographic data bases, including the ability to present the achieved results in a concise form and meaningfully discuss the researched topics.	

Department of Development and Environmental Studies

WINTER SEMESTER

Project Cycle Management

Department / Abbreviation	MRS / XPCCK
ECTS	6
Time requirements	Lecture 1 [Hours/Week] Tutorial 2 [Hours/Week]
Lecturer	Mgr. Eva Šerá Komlossyová (eva.komlossyova@upol.cz)
Content: The aim of the course is to introduce the students to the objectives and principles of project cycle management (PCM). During the course students will get familiar with each stage of project cycle such as programming, identification, formulation, implementation and evaluation as well as problem analysis, logical framework and project indicators which form an integral part of project cycle management. The course will emphasise a practical use of the PCM and during practical seminars students will be asked to complete a project proposal according to the principles of PCM.	

Politico-geographical Processes in the Developing World

Department / Abbreviation	MRS/XPGP
ECTS	6
Time requirements	Lecture 2 [Hours/Week] Exercise 1 [Hours/Week]
Lecturer	Mgr. Lenka Dušková, Ph.D. (lenka.duskova@upol.cz)
Content: The aim of this course is to provide the orientation in the selected issues related to the internal political processes in developing regions as well as the issues in the international politics and security that have impact on the developing regions. Grounded in the current theoretical debates, the critical analysis of the issues shall help the students to deepen their understanding of broader context of the international politics and the interconnection of the international issues with the specific politico-geographical situation in the developing regions and vice versa.	

Development Theories

Department / Abbreviation	MRS / XDVT
ECTS	6
Time requirements	Lecture 1 [Hours/Week] Tutorial 1 [Hours/Week]
Lecturer	Mgr. Radovan Dluhý-Smith (dluhy10@gmail.com)
Content: Development theories course offers social scientific insight into problems of 'development'. The emphasis is laid on the critical understanding and reading of development as economic, political and cultural practices of late modernity. The course offers overview of the basic approaches to development that have evolved during the last half a century but tackles also 'sector' problems such as health care access, education or poverty alleviation and inequality reduction. It traces basic economic concepts influential within the field of Development studies against the backdrop of development paradigms. Cultural critique of development is presented via post-structural discourse analysis that gave rise to post-development, post-colonial studies and sub-altern studies among others. The basic practice of development – development assistance and cooperation as implemented via the project cycle management is critically looked into within the broader framework of anti-managerism and new professionalism of the global civil society actors.	

Global Environmental Issues

Department / Abbreviation	MRS / XGEP
ECTS	4
Time requirements	Lecture 2 [Hours/Week]
Lecturer	doc. RNDr. Pavel Nováček, CSc. (pavel.novacek@upol.cz)
<p>Content: The aim of the course is to introduce students to global environmental problems. The topics are as follows: Global issues – definition; Evolution of the life on the Earth; Basic facts about biosphere; Changes and catastrophes in the history caused by natural factors; Definition of human's environment during 40 thousand years of cultural evolution; Impact and meaning of agriculture revolution and industrial revolution; Characteristic of chosen global issues: violence, population trends, nutrition problems, health status of inhabitants, poverty; Definitions of environmental crises: endanger of biodiversity, maintenance of forests, soil and water, spread of deserts, pollution of atmosphere and disturbance of climate; Other global issues: energy, resources, waste, human residence, using of oceans, seas and Antarctica, institutional system; International activities leading to change of the current state; Vision of global Marshall plan.</p>	

Development Assistance

Department / Abbreviation	MRS / XDVA
ECTS	6
Time requirements	Lecture 1 [Hours/Week] Tutorial 1 [Hours/Week]
Lecturer	Mgr. Eva Šerá Komlossyová (eva.komlossyova@upol.cz)
<p>Content: The course analyzes basic concepts in development cooperation with a major focus on current debates. Second part analyzes the development assistance of selected bilateral donors from the recipient perspective, and focuses on issues such as donor harmonization, coordination and complementarity. Furthermore, the course provides an in depth analysis of development assistance of the re-emerging donors of the Visegrad Group. The complexity of multilateral development assistance is illustrated on case of the European Union. The course also analyzes problems of aid effectiveness and discusses new approaches and institutions designed to improve aid. The last part critically assesses the role of NGOs and civil society in development cooperation.</p>	

Development of Africa

Department / Abbreviation	MRS / XGDAF
ECTS	6
Time requirements	Lecture 2 [Hours/Week] Tutorial 1 [Hours/Week]
Lecturer	Mgr. Martin Schlossarek (martin.schlossarek@upol.cz)
<p>Content: The aim of the course is to critically examine the Africa-specific development opportunities and limits for development mostly from economic, but also social, geographical and political perspectives. Attention is paid to regional division and geographical factors of African development (including the issue of natural resources); historical determinants of the region's development (slave trade, colonialism, ways of decolonization, post-colonialism conflicts); social aspects and factors (human capital, poverty and human development in Africa) and economic determinants of African development (factors of economic growth in Africa, region's position in international economic relations, prospects for economic integration).</p>	

Quantitative Methods in Development

Department / Abbreviation	MRS / XQNM
ECTS	6
Time requirements	Lecture 2 [Hours/Week] Tutorial 1 [Hours/Week]
Lecturer	Ing. Mgr. Jaromír Harmáček, Ph.D. (jaromir.harmacek@upol.cz)
Content: This course is focused on the use of quantitative tools for the analysis of development issues for graduate students from the field of development studies. The course supports students in developing technical skills for undertaking their own analytical and quantitative research. Students are taught to use statistical software in order to be able to work with various datasets to analyse key development issues.	

Qualitative Methods in Development

Department / Abbreviation	MRS / XQLM
ECTS	6
Time requirements	Lecture 2 [Hours/Week] Tutorial 1 [Hours/Week]
Lecturer	Mgr. Lenka Dušková, Ph.D.; Mgr. Simona Šafaříková, Ph.D. (lenka.duskova@upol.cz, simona.safarikova@upol.cz)
Content: The design of the course assumes that the students have already been exposed to the introductory teaching on research methods in social sciences. The course consists of lectures introducing the students to the basis of the qualitative research project on topics related to the study of the field of international development. The course will also include the substantial practical component with the aim to enhance the skills of the students in designing and carrying out the qualitative research (practical skills training in using the qualitative methods of data collection and analysis). The nature of knowledge and ethics related to the development research will also be explored.	

Development of Central Asia and Middle East

Department / Abbreviation	MRS / XGDCA
ECTS	6
Time requirements	Lecture 2 [Hours/Week] Tutorial 1 [Hours/Week]
Lecturer	Mgr. Simona Šafaříková, Ph.D. (simona.safarikova@upol.cz)
Content: This course provides broad overview of the economic, political and social development of the Central Asia and the Middle East. The course consists of two separated regional sections: the first one focuses on the Central Asian development, the second one on the Middle East. In the first section, the following development issues of central-Asian countries are covered: history, natural conditions, resources and its influence on development; environmental situation; economic situation; HIV/AIDS and other diseases; gender; MDGs; human rights; development assistance; analysis and evaluation of different projects that have been done in the region. In the second section of the course, selected development issues and specificities of the Middle East will be examined, for example the key development deficits of the Arab and Islam World or the economic, social and political features of the region.	

Development Geography and Globalization

Department / Abbreviation	MRS / XDVG
ECTS	4
Time requirements	Lecture 1 [Hours/Week] Tutorial 1 [Hours/Week]
Lecturer	Mgr. Zdeněk Opršal, Ph.D. (zdenek.oprsal@upol.cz)
Content: Globalization can be defined as the intensification of economic, political, cultural and social relations at the global level. The course deals with the definition and discussion of different perspectives on globalization, the causes, nature and consequences of globalization in different areas of society. Structure: Globalization - the basic concept; History of globalization; Economic dimension of globalization; Political dimension of globalization, Cultural dimensions of globalization, Ecological dimension of globalization; Globalization and ideology.	

English Language

Department / Abbreviation	MRS/ AN1, ANX3
ECTS	3
Time requirements	Tutorial 2 [Hours/Week]
Lecturer	Lucie Macková, M.A. (lucie.mackova@upol.cz)
Content: We have different courses of the English language for the students of our department.	

Introduction to Foresight

Department / Abbreviation	MRS / YFORS
ECTS	4
Time requirements	Lecture 2 [Hours/Week]
Lecturer	doc. RNDr. Pavel Nováček, CSc. (pavel.novacek@upol.cz)
Content: Introduction to Foresight is an introductory course for students of Foresight for Environment and Development program. Students will learn about the history of possible futures and foresight, the most important persons of this field of study as well as internationally recognized institutions focusing on foresight. The opportunities and limits of foresight studies will be discussed in comparison with the study of history (while we can fully interpret the history without having an opportunity to influence it, we cannot fully learn about the future but we have options and opportunities to influence it). Basic concepts and terms will be introduced (framing, scanning, forecasting, visioning, planning and acting).	

Possible Futures Mapping

Department / Abbreviation	MRS/YMAP
ECTS	4
Time requirements	Lecture 1 [Hours/Week] Tutorial 1 [Hours/Week]
Lecturer	Mgr. Eva Šerá Komlossyová, Lucie Macková, M.A. (eva.komlossyova@upol.cz; lucie.mackova@upol.cz)
<p>Content: Mapping possible futures involves three areas: research that maps the past developments and the context of the topic being forecasted, scanning of the signs of change already happening and forecasting covering the creation of projections to describe the anticipated shape of change. For the research, various qualitative and quantitative research methods are applied, including typical forecasting methods, such as Delphi. Scanning uncovers signals of upcoming change which may be weak at this point. The outputs often involve so called wild cards. Forecasting then describes the upcoming changes and maps the options for influencing these changes, creating so called future forecasts or scenarios of future change.</p>	

GIS in Environmental Research and Development

Department / Abbreviation	MRS/YGISE
ECTS	6
Time requirements	Tutorial 3 [Hours/Week]
Lecturer	Mgr. Jiří Pánek, PhD. (jiri.panek@upol.cz)
<p>Content: The aim of the subject is to familiarise students with Geographic Information Systems (GIS) and its applications in environmental research and development studies. Students will tackle basic theory of GIS, but mainly they will acquire practical skills of working with GIS. The subject will focus on open-source software (QGIS) and open data available. At the end of the subject students will complete short project on their own. After completing the course students should be able to understand basics of GIS, to manage, analyse and visualise data in QGIS.</p>	

Economics of Development

Department / Abbreviation	MRS/G02; MRS/YDEVE
ECTS	6
Time requirements	Lecture 2 [Hours/Week] Exercise 2 [Hours/Week]
Lecturer	Mgr. Miroslav Syrovátka, Ph.D. (miroslav.syrovatka@upol.cz)
<p>The course provides an analysis of development issues from an economic perspective, including the role of national and international policies. The course covers five broad areas: concept and measurement of development; poverty, inequality, and growth; human resources; economic structure and trade; and development finance.</p> <p>Block 1: Concept of development and development measuring. Block 2: Poverty and inequality Block 3: Human resources Block 4: Structure of economy and trade Block 5: Financing of development</p>	

Possible Futures Shaping

Department / Abbreviation	MRS / YFORM
ECTS	4
Time requirements	Lecture 1 [Hours/Week] Exercise 1 [Hours/Week]
Lecturer	Prof. RNDr. Mikuláš Huba, CSc.
<p>Possible Futures Shaping focuses mainly on the three following areas: leadership, visioning, planning. It encompasses qualified influencing of future developments. The aim is to support the creation of better future (at the level of communities, organisations, enterprises, cities ...). The main instrument is visions formulation. Foresight is the first step of strategic planning.</p>	

SUMMER SEMESTER

Development Economics

Department / Abbreviation	MRS / XDVE
ECTS	6
Time requirements	Lecture 1 [Hours/Week] Tutorial 2 [Hours/Week]
Lecturer	Ing. Mgr. Jaromír Harmáček, Ph.D. (jaromir.harmacek@upol.cz)
<p>Content: The course analyses issues faced by developing countries, with a special focus on the microeconomic perspective at the graduate level. Following an introduction to the subject, the course focuses on the economic growth, new growth theories and contemporary models of development and underdevelopment. Other discussed topics include: poverty, inequality, population growth, the issues of human capital (education and health), urbanization and rural-urban interaction, land reform, labor markets, credits and insurance issues, roles of markets and states and strategies of economic development.</p>	

Environmental Geography

Department / Abbreviation	MRS / XENG
ECTS	4
Time requirements	Lecture 1 [Hours/Week] Tutorial 1 [Hours/Week]
Lecturer	Mgr. Zdeněk Opršal, Ph.D. (zdenek.oprsal@upol.cz)
<p>Content: The main aim of the course is to provide the understanding of the ways environment and society are related and interconnected in the less developed countries. The course Environmental geography is focused on the understanding of interactions between humans and the natural world in the less developed countries, combining parts of human geography and physical geography. The course will provide understandings of the ways environment and society are related and affect each other. The course address various topics, such environmentalism and sustainable development; drylands and desertification; tropical deforestation; biodiversity conservation, sustainability and development; sustainability and river control; industrial and human hazards; environmental conflicts; food and agriculture in the globalizing world.</p>	

Sport and Development

Department / Abbreviation	KSK/@SAD
ECTS	3
Time requirements	2 Hours/week
Lecturer	Mgr. Simona Šafaříková, Ph.D. (simona.safarikova@upol.cz)
Content: The main aim of the course is to provide students with basic overview of the concept of Sport and Development. This course should provide students with the basic overview in the field of Sport and Development. The development cooperation through sport activities are analysed and different approaches and theories are discussed. The seminars are elaborated based on readings Assessments. Different stakeholders are introduced. NGOs actively involved in the field of Sport and Development are described.	

Development of Latin America

Department / Abbreviation	MRS / XGDLA
ECTS	6
Time requirements	Lecture 2 [Hours/Week] Tutorial 1 [Hours/Week]
Lecturer	Mgr. Radovan Dluhý-Smith (dluhy10@gmail.com)
Content: This course provides broad overview of geography and historical, political, social and economic development of Latin America. The key issues, such as the legacy of history and colonialism for contemporary development, situation of indigenous people within the region, theories and strategies in the process of Latin America's development, cooperation and integration within Latin America and others will be explored throughout the course.	

Sustainable Development

Department / Abbreviation	MRS / XPUR
ECTS	4
Time requirements	Lecture 1 [Hours/Week] Tutorial 1 [Hours/Week]
Lecturer	doc. RNDr. Pavel Nováček, CSc. (pavel.novacek@upol.cz)
Content: The course analysis basic principles of sustainable development. Main topics included are the following: history, definition and principles of sustainable development, human values compatible with sustainable development, economic instruments of sustainable development, technologies for sustainable development, political and institutional aspects of sustainable development, sectoral aspects of sustainable development, indicators of sustainable development, strategies for sustainable development, and actors of sustainable development.	

Development Of South and SouthEast Asia

Department / Abbreviation	MRS / XGDSA
ECTS	6
Time requirements	Lecture 2 [Hours/Week] Tutorial 1 [Hours/Week]
Lecturer	Mgr. Simona Šafaříková, Ph.D. (simona.safarikova@upol.cz)
<p>Content: Lectures are focused on development opportunities in the countries of the studied region of South and Southeast Asia. The aim of the course is to provide a broad overview about this region, with a special focus on development problems in certain countries. In the frame of the course, the following topics are covered: history, natural conditions, sources and its influence on development; environmental situation; economical situation; HIV/AIDS and other diseases; gender; MDG; human rights; development assistance; analysis and evaluation of different projects that have been done in the region.</p> <p>The course is composed of lectures and seminars. The actual situation and selected projects are discussed during the seminars. In the frame of the subject, special guests are invited to share their experience from the region. Actual documentaries and other movies are used to enrich both - seminars and lectures.</p>	

Evaluation of Development Projects

Department / Abbreviation	MRS / XEVO
ECTS	4
Time requirements	Exercise 2 [Hours/Week]
Lecturer	Mgr. Eva Šerá Komlossyová (eva.komlossyova@upol.cz)
<p>Content: The course provides students with theoretical knowledge for designing, conducting and managing development evaluations. Throughout the course the following topics are covered: evaluation approaches, results-based monitoring and evaluation, evaluation questions, evaluation design, data collection methods, presentation of results, ethical questions, and evaluation standards. Besides the essential theory students will be also equipped with skills necessary for conducting development evaluations. Prerequisite is successful completion of Project Cycle Management course.</p>	

English Language

Department / Abbreviation	MRS/ANEN2
ECTS	3
Time requirements	Tutorial 2 [Hours/Week]
Lecturer	Lucie Macková, M.A. (lucie.mackova@upol.cz)
<p>Content: We have different courses of the English language for the students of our department.</p>	

Global Demographic Trends

Department / Abbreviation	MRS/YGDT
ECTS	4
Time requirements	Lecture 1 [Hours/Week] Tutorial 1 [Hours/Week]
Lecturer	Mgr. Miloslav Šerý, PhD. (miloslav.sery@upol.cz)
Content: The aim of the course is to understand demographic context of geographic phenomena and processes and to get an overview of the state and population development in the Czech Republic and abroad. Students will learn the methods of obtaining, processing and evaluating demographic data. Attention will also be given to population development forecasts in the world, with a special focus on developing countries.	

Selected Prognostic Methods

Department / Abbreviation	MRS/YPROG
ECTS	4
Time requirements	Lecture 1 [Hours/Week] Tutorial 1 [Hours/Week]
Lecturer	Doc. RNDr. Pavel Nováček, CSc. (pavel.novacek@upol.cz)
Content: Students will get to know selected prognostic methods and the options how to use them in practice. The selected methods are Environmental Scanning, The Delphi Method, Real-Time Delphi, Trend Impact Analysis, The Futures Wheel, Wild Cards, Morphological Analysis, Relevance Trees, Scenarios, Participatory Methods, Simulation and Games, Genius Forecasting, Intuition, Vision, and State of the Future Index.	

Migration in Today's World

Department / Abbreviation	MRS/XMIG
ECTS	4
Time requirements	Lecture 1 [Hours/Week] Tutorial 1 [Hours/Week]
Lecturer	Lucie Macková, M.A. (lucie.mackova@upol.cz)
Content: This course is aimed at students who are interested in international migration and who would like to engage with this topic on a deeper level and learn about the trends in migration research. The following issues will be analysed during the course: history of migration; migration theories, including transnationalism and networks theory; migration and development; erasing borders between voluntary and forced migration (with an emphasis on environmental migration); migration from the perspective of the receiving states; human trafficking and many others. The theoretical reflections will be followed by numerous case studies.	

Department of Geoinformatics

WINTER SEMESTER/SUMMER SEMESTER

Geoinformatics

Department / Abbreviation	KGI / GI
ECTS	8
Time requirements	Lecture 3 [Hours/Week] Seminar 1 [Hours/Week]
Lecturer	doc. RNDr. Jaroslav Burian, Ph.D. (jaroslav.burian@upol.cz)
Content: The course is taught in English and is especially designed for foreign students. The main part is devoted to the representation of the reality in digital environment, description of the GIT, building GIS and their application in different scientific discipline. Students will have the knowledge about the basic rules of GI work during the course, about the basic sources of geoinformatics, GIT and GIS, basic English terminology and rules of presentation. Subject is a foundation of the whole geoinformatics. Lectures include the next topics: basic of geoinformatics, GIT, data, digital geoinformatics data in the Czech Republic, conception of GIS, technical equipment in the GIS, software equipment in the GIS, organization structure of the GIS, data models, GIS operation, DEM.	

New Issues of Geosciences

Department / Abbreviation	KGI / GINEW
ECTS	5
Time requirements	Lecture 2 [Hours/Week] Seminar 1 [Hours/Week]
Lecturer	doc. RNDr. Jaroslav Burian, Ph.D. (jaroslav.burian@upol.cz)
Content: The course is taught in English and is designed for foreign students, but also for all other students interested in the issue. The course includes lectures of an important foreign guests and of Czech experts. The following topics are presented: <ol style="list-style-type: none">1. Cellular Automata2. Multi-agent Systems3. Location Based Services4. Very High Resolution Satellite Images, Multispectral, Hyperspectral5. Time GIS6. Geoweb 2.0, Mashups, Online GIS, Web based GIS7. Computer and Digital Cartography8. Modeling in GIS9. Web Map Services10. Geo-Databases, Metadata, Standardization11. 3D12. Open Source, Open GIS, Free GIS13. GIS Customization14. Laser-scanning15. Programming in/for GIS16. GIS Business	

WINTER SEMESTER

Cartographic Design and Prepress Processing

Department / Abbreviation	KGI / KADES
ECTS	3
Time requirements	Seminar 2 [Hours/Week]
Lecturer	RNDr. Alena Vondráková, Ph.D. (alena.vondrakova@upol.cz)
Content: One-semester course focuses on the issues of computer graphics and graphics software (eg. Adobe Creative Suite) and prepress map processes. In the exercise lessons, the emphasis is focused on basic graphic skills and especially on the ability to apply these skills in map creation.	

Socio-economic Geography 2

Department / Abbreviation	KGI / SEGE2
ECTS	5
Time requirements	Lecture 2 [Hours/Week] Exercise 2 [Hours/Week]
Lecturer	Mgr. Vít Pászto, Ph.D. (vit.paszto@upol.cz)
Content: The course provides a basic overview of the field of socio-economic geography of services in the fields of geography, tourism, industry, agriculture and the political geography, regional geography and election geography. Recited the basic themes of these disciplines with an emphasis on understanding the links between the various disciplines. In the practical part of the subject individual topics are practiced by commonly used methods of socio-economic geography using GIS tools.	

Remote Sensing

Department / Abbreviation	KGI / DAPRZ
ECTS	10
Time requirements	Lecture 3 [Hours/Week] Exercise 4 [Hours/Week]
Lecturer	RNDr. Jakub Miřijovský, Ph.D. (jakub.mirijovsky@upol.cz)
Content: The course includes the basic topics of the study Geoinformatics about Remote sensing. Lectures start from basic definitions, classification methods, rules of physics, the spectral responses of different types of surfaces to the characteristics of each part of the electromagnetic radiation and other satellite systems. The second half of the course is practical specification of theoretical knowledge. Course Remote sensing is also focused on both theoretical and practical tasks of the whole process of image processing from basic import, preprocessing of images, image enhancement, image classification, modeling with image data to final presentation. <ol style="list-style-type: none">1) Introduction to remote sensing, background of physics in Remote sensing.2) Spectral response of selected types of active surface.3) Aerial imaging.4) Unmanned aerial vehicles in remote sensing.5) Aerial laser scanning - introduction, principles, applications.6) Satellite imaging.7) Geometric, radiometric and atmospheric corrections.8) Enhancements of satellite images.9) Image classification.10) Vegetation indices.	

Cognitive Cartography

Department / Abbreviation	KGI / KOVIZ
ECTS	5
Time requirements	Lecture 2 [Hours/Week] Exercise 2 [Hours/Week]
Lecturer	RNDr. Stanislav Popelka, Ph.D. (stanislav.popelka@upol.cz)
Content: The course will consist of following topics: Methods of cognitive cartography Methodological aspects of empirical research in cognitive cartography History and the present of eye-tracking research Preparing of eye-tracking experiment and testing Fixations and saccades identification algorithms Analyses of eye-tracking data The use of GIS tools for visual analysis of eye-tracking data Statistical evaluation of eye-tracking data The combination of eye-tracking with other methods (Think aloud, questionnaire, interview, EEG and others)	

Digital Elevation Models

Department / Abbreviation	KGI /DIMOR
ECTS	5
Time requirements	Lecture 1 [Hours/Week] Tutorial 2 [Hours/Week]
Lecturer	RNDr. Jan Brus, Ph.D. (jan.brus@upol.cz)
Content: 1 Introduction (history, definitions, concepts) 2 Data models for DEM (TIN, grid, lattice) 3 Source data for DEM 4 interpolation and triangulation of DEM (IDW, spline, kriging) 5 Evaluation of the quality and accuracy of DEM 6 Assessment of the quality and accuracy of DEM 7 Analysis of DEM (primary and secondary morphometric parameters) 8 Classification of surface 9 Visualization of DEM 10 Application (visibility analysis, modeling volumes, cuts) 11 DEM Software	

Atlas Cartography

Department / Abbreviation	KGI / ATKAR
ECTS	10
Time requirements	Lecture 2 [Hours/Week] Seminar 4 [Hours/Week]
Lecturer	prof. RNDr. Vít Voženílek, CSc. (vit.vozenilek@upol.cz)

Content: The course aims to introduce students to the atlas cartography - the atlas concepts, structures, relationships and use.

Syllabus:

1. Concepts of atlas
2. History of atlases
3. Contents of atlases
4. School atlases
5. Relationships in atlases
6. Assessment of atlases
7. Atlas project

SUMMER SEMESTER

Technologies in Geographic Information Science

Department / Abbreviation	KGI / TRID
ECTS	3
Time requirements	Exercise 2 [Hours/Week]
Lecturer	RNDr. Jan Brus, Ph.D. (jan.brus@upol.cz)
Content: Syllabus: <ol style="list-style-type: none">1. Theoretical basics2. 3D modeling3. 3D scanning4. Preparation of 3D models5. 3D printers6. Materials for 3D printing7. Prepress8. Technology and 3D printing problems9. Project RepRap10. Copyrights in 3D printing11. Practical applications of 3D printing12. Optimisation models, materials, testing of models13. Further utilization of 3D models in geosciences	

Geographical Information Systems

Department / Abbreviation	KGI / GIS
ECTS	5
Time requirements	Lecture 1 [Hours/Week] Exercise 2 [Hours/Week]
Lecturer	Mgr. Vít Pászto, Ph.D. (vit.paszto@upol.cz)
Content: The course focuses on a detailed presentation of geographic information systems in different spatial and network analysis. Emphasis is placed on practical exercises in which students are introduced to the several program ArcGIS extensions, especially with Network Analyst and options how to create custom calculations using automated tools in the Model Builder. Each exercise is solved with other data, so that the students were introduced to the most widely used data sets in the Czech Republic and the world. The exercises are supplemented by a theoretical introduction and practical demonstrations led by the teacher.	

Web Cartography

Department / Abbreviation	KGI / WEKAR
ECTS	6
Time requirements	Lecture 2 [Hours/Week] Tutorial 3 [Hours/Week]
Lecturer	Mgr. Rostislav Nėtek, Ph.D. (rostislav.netek@upol.cz)
Content: The course is focused on the occurrence of cartographic problems on the Internet. All tasks are based on basic cartographic principles. Selected cartographic themes are preset to connect geographic and computer cartography with the Internet environment. Students will learn how to create a map output using an open source JavaScript library (Leaflet, OpenLayers etc). The course also includes seminars, where students can present their own work as a leader on the independent compilation of the concept of web maps or map portal. The course is focused on mastering basic tasks with web map libraries. The completion of the course is demonstrated by practical verification of skills with acquired systems.	

Cartography 2

Department / Abbreviation	KGI / KART2
ECTS	10
Time requirements	Lecture 2 [Hours/Week] Exercise 3 [Hours/Week] Seminar 2 [Hours/Week]
Lecturer	RNDr. Alena Vondráková, Ph.D. (alena.vondrakova@upol.cz)
Content: The course focuses on the thematic cartography and map design. Students have to learn general cartographic principles and apply them to the particular tasks of map design (making maps). Most of the map design is held in ArcGIS software, but also desktop publishing software is used with an emphasis on the graphic design of produced maps. The course is also aimed at acquiring basic knowledge about data processing and choosing proper methods of cartographic visualization. Course completion is done by verifying the practical skills via thematic poster map, which is made by each student and focuses selected topics.	

Programming 2

Department / Abbreviation	KGI / PRG2
ECTS	5
Time requirements	Lecture 2 [Hours/Week] Tutorial 2 [Hours/Week]
Lecturer	Ing. Zdena Dobešová, Ph.D. (zdena.dobesova@upol.cz)
Content: The course is aimed at acquiring knowledge creation scripts for processing data in ArcGIS. The basic is practical using of visual programming in ModelBuilder. Students will learn Python scripting for processing spatial data. Students integrate scripts into ArcToolbox environment. Will be dealt with scripts for automation of repetitive tasks and the creation of complex scripts for data analysis. <ol style="list-style-type: none">1. VPL - Visual Programming Languages2. ModelBuilder - models with iterators, parametric models3. ModelBuilder - nested models, exports models to Python scripts4. PythonWin for ArcGIS scripts5. Access tools and environment settings,6. Schema of geoprocessor, methods and properties7. Geoprocessor static methods and call8. Descriptive and Enumeration methods9. Cursor method, working with attributes10. Stepping script debugging and error11. Parametric scripts12. Running scripts from ArcToolbox, input parameters, creation of help	

Advanced Computational Methods in Cartography

Department / Abbreviation	KGI / VYPOK
ECTS	10
Time requirements	Lecture 2 [Hours/Week] Exercise 3 [Hours/Week] Seminar 2 [Hours/Week]
Lecturer	RNDr. Alena Vondráková, Ph.D. (alena.vondrakova@upol.cz)
<p>Content: The course is aimed at acquiring knowledge of advanced methods in cartography, focusing mathematics and computation. Students will learn principles of cartographic generalization, algorithms, map projections etc. Basic principles of morphometry on maps, measurements on maps, specifics of methods of cartographic visualization and graphic design will be introduced. Practical exercises include cartometric tasks and individual practical tasks.</p>	

Land Information Systems

Department / Abbreviation	KGI / ISUZ
ECTS	5
Time requirements	Lecture 2 [Hours/Week] Tutorial 1 [Hours/Week]
Lecturer	doc. RNDr. Jaroslav Burian, Ph.D. (jaroslav.burian@upol.cz)
<p>Content: The content of the course is to acquaint students with the entire issue of individual information systems on the territory of the Czech public administration. Emphasis is placed on geoinformation aspects of cadastre and specific tasks solved in public practice.</p> <p>Syllabus of lectures: Information about the system, Definition and classification of municipality information systems, Passports Digital map of public administration, Digital city map, purpose map, utility map, block map Facility management, Cadastre State Information Policy, Public Administration</p>	

Geoinformatics in Urban Applications

Department / Abbreviation	KGI / GURBA
ECTS	5
Time requirements	Lecture 2 [Hours/Week] Exercise 3 [Hours/Week]
Lecturer	doc. RNDr. Jaroslav Burian, Ph.D. (jaroslav.burian@upol.cz)
<p>Content: The course deals with applications of geospatial technologies in various areas of socio-economic geography. Emphasis is placed on spatial analysis, digital socioeconomic data and their use in the geography of population, settlement, transport and geomarketing. The exercises are solved by means of teamwork, which for various topics addressed include the collection, analysis, visualization and interpretation of results.</p> <p>Course syllabus : Creating projects in GIS, data sources for socio-economic analysis The main application areas of social and economic geography - industry, transport, agriculture, tourism, population, settlements, facility management, etc. Optimization of transport accessibility and serviceability using GIT - principles, solutions, examples Dynamic segmentation and linear referencing a road network - data models, products, principles, solutions Logistics, integrated transport system Geomarketing and analysis of business activities - principles, algorithms, design, location socio-economic activities SWOT analysis in SE geography - principles, characteristics, applications, solutions Models and modeling in SEG - What if?, Urban Planner, UrbanSIM ,DUEM ,LADSS ,etc.</p>	

Urban Network Analyst tool - connectivity, proximity, attractiveness, etc.
Geometric network

Geographical project

Department / Abbreviation	KGI / GEPRO
ECTS	4
Time requirements	Lecture 0 [Hours/Week] Exercise 3 [Hours/Week]
Lecturer	Mgr. Vít Pászto, Ph.D. (vit.paszto(at)upol.cz)
Content: This course guides students throughout all the phases of geographical project. Firstly, necessary geographical theory is introduced (geography as a discipline, geographical thinking, geographical tasks). Secondly, an overview of geographical methods and approaches are introduced for both physical and human geography. Lastly, the majority of this course aims to project design in geographical context. Moreover, the course also aims to introduce non-traditional geographical methods and concepts (e.g. Dérive, sensory mapping) and to explore various means of gamification of geography in higher education, based on which educational tools and techniques can be employed in the process of geographical or GIS teaching. The practices are organised mainly as teamwork, with emphasis on individual active participation on given tasks, providing skills to design a geographical project.	
Course syllabus: Introduction to geography Geographical thinking Types of geographical tasks Research methods in geography Design of a geographical project Non-traditional concepts in geography Gamification of geography in higher education Projects evaluation	

GIS-based human geography

Department / Abbreviation	KGI / GEHUG
ECTS	6
Time requirements	Lecture 2 [Hours/Week] Exercise 3 [Hours/Week]
Lecturer	Mgr. Vít Pászto, Ph.D. (vit.paszto(at)upol.cz)
Content: The subject refers to teaching about human geography with the use and support of geospatial technologies. Most important concepts in human geography are contextualised within the GIScience environment, with emphasis on digital socioeconomic data and respective sub-disciplines. Economic geography and related disciplines are thoroughly explored, including classical location theories and their implications for contemporary spatial analyses. The practices are organised as teamwork and follow the geospatial framework from data collection, acquisition, management, analysis, visualisation and interpretation of results.	
Course syllabus: 1. GIScience in human geography <ul style="list-style-type: none">- spatial analysis of geo-demographical data, spatial analysis in urban geographies- GIS and network analysis	
2. GIScience in economic geography <ul style="list-style-type: none">- GIScience for industry sector assessment, GIScience and spatial analysis of services- GIScience and tourism and free time	
3. GIScience in regional geography <ul style="list-style-type: none">- geographical classifications, regionalisation, and typologies- cross-border cooperation	
4. GIScience and global (spatial) data sets	

Department of Geology

WINTER SEMESTR

Quaternary Geology

Department/Abbreviation	KGE/GK
ECTS	3
Time requirements	Lecture 2 [Hours/Week]
Lecturer	Mgr. Daniel Šimíček, Ph.D. (daniel.simicek@upol.cz)
Content: Quaternary and its position in the stratigraphy of Cainozoic, general characteristics and definition and detailed division. The meaning of climatic changes and oscillations, their causes. The influence of abiotic processes on the development of inanimate nature (geology, geomorphology, sedimentation, tectonics). The evolution of plants and animals, their changes (botany, zoology). Evolution of man and its influence on nature.	

Methods in Stratigraphy

Department/Abbreviation	KGE/MS
ECTS	4
Time requirements	Lecture 2 [Hours/Week] Exercise 1 [Hours/Week]
Lecturer	prof. Mgr. Ondřej Bábek, Dr. (ondrej.babek@upol.cz)
Content The aim of the course is to master the basic principles of stratigraphy (Stensen's laws, Hutton's principles, Walther's law, principle of facies change, stratigraphic correlation) and provide an overview of the most important methods of stratigraphy: lithostratigraphy and well-log correlation; biostratigraphy; depositional-, non-depositional events and event stratigraphy; astronomical cycles, basic principles of Milankovitch theory and cyclostratigraphy; sequence stratigraphy on seismic-, outcrop-, and well-log scale; stable isotope fractionation ($\delta^{18}\text{O}$, $\delta^{13}\text{C}$), strontium isotopes and chemostratigraphy; magnetostratigraphy; overview of numerical age determination methods (focus on radiogenic isotope systems); integrated global (= chrono-) stratigraphy and global stratotype section and points (GSSPs).	

Sedimentology

Department/Abbreviation	KGE/SEDG
ECTS	4
Time requirements	Lecture 2 [Hours/Week] Exercise 1 [Hours/Week]
Lecturer	prof. Mgr. Ondřej Bábek, Dr. (ondrej.babek@upol.cz), Mgr. Daniel Šimíček, Ph.D. (daniel.simicek@upol.cz)
Content Introduction to sedimentology (extension, philosophy and practical importance of the discipline, instrumental methods in sedimentary geology) and basic terminology. Formation (weathering and erosion), mechanics of transport and deposition of solid-matter grains. Basic principles of fluid flow and hydrodynamics: density and viscosity, shear stress and basic types of fluids (Newtonian, Bingham, pseudoplastic), boundary layers, Reynolds number, Froude number, Stokes law, density flows, wave dynamics. Mechanics of formation, classification and environmental interpretation of sedimentary textures. Sedimentary petrography – sedimentary structures (grain size and shape, sorting, porosity, permeability) and components of sedimentary rocks. Classification of clastic, allochemic and chemogenic sediments and sedimentary rocks. Facies, facies analysis and depositional environments. Clastic sediments and their facies models. Carbonate sediments and their facies models.	

Human Evolution

Department/Abbreviation	KGE/VYCL
ECTS	3
Time requirements	Lecture 2 [Hours/Week]
Lecturer	Mgr. Martin Moník, Ph.D. (martin.monik@upol.cz)
Content The aim of this course is to introduce the basic problems of palaeoanthropology. The lessons are focused on description of the phylogenetic evolution of hominids and hominins (<i>Ardipithecus ramidus</i> to <i>Homo sapiens sapiens</i>) with emphasis on their palaeoecological adaptations. The course is aimed at studying and evaluating the origin and evolution of primates and humans with emphasis on palaeobiology. Current knowledge about the life of ancestors of modern humans their anatomy, ontogeny, ecology and basic palaeoanthropological research methods will be presented.	

Geology in English

Department/Abbreviation	KGE/ANG
ECTS	2
Time requirements	Lecture 2 [Hours/Week]
Lecturer	Mgr. Martin Moník, Ph.D. (martin.monik@upol.cz)
Content The course is focused on geological English and encompassment of English geological terminology. The course has the form of conversation, with emphasis given on correctness of translation and explanation of English scientific texts, translation of Czech texts into English and presentations on special themes. The course involves repetition and/or explanation of specific problems in English grammar which the students meet during their work with English texts.	

Practicals in Environmental Monitoring for Foreigners

Department/Abbreviation	KGE/FPPEMF
ECTS	3
Time requirements	Lecture 2 [Hours/Week]
Lecturer	Mgr. Jan Sedláček, Ph.D. (jan.sedlacek@upol.cz)
Content The students will learn to work with instruments and utensils for direct monitoring of the environment (gamma-spectrometer, hand-held X-ray fluorescence analyzer), proper techniques of sampling of waters, soils and sediments, and basic laboratory procedures of sample treatment (drying, quartering, sieving, crushing, leaching) and basic laboratory analyses of these materials (measurement of pH, conductivity of water, measurement of soil pH, analysis using ion-selective electrodes, analysis by X-ray fluorescence, measurement of magnetic susceptibility, photometry, measurement with laboratory gamma-spectrometer).	

Field Labs in Environmental Geology 1 for Foreigners

Department/Abbreviation	KGE/TCEGF
ECTS	5
Time requirements	Lecture 5 [Days]
Lecturer	Ing. Lada Hýlová, Ph.D. (lada.hylova@upol.cz)
Content The field training will be focused on regional environmental geology in the area of the Bohemian Massif. During	

the excursion, the trainees will be acquainted with the rock content, structure and stratigraphic position of visited principal geological units. Typical outcrops and rock defiles will be studied in the country, on the territory of natural reserves, natural monuments and in places of mining activities, with the accent on the importance of rock environment as an integral component of the landscape.

Geological Factors of Environment

Department/Abbreviation	KGE/GEZP
ECTS	3
Time requirements	Lecture 2 [Hours/Week]
Lecturer	prof. Ing. Ondřej Šrámek, Ph.D. (ondrej.sracek@upol.cz)
<p>Content 1. Rock environment, its evolution and importance. The term geofactor. Short overview of the regional geology of the Czech Republic with emphasis on the hazard geofactors in individual regions and units. Geological maps and maps derived from them.</p> <p>2 Geological factors of the environment. Natural and anthropogenic geofactors. Propitious, unpropitious, and hazard geofactors.</p> <p>3. Hazard geofactors I. The impact of open-pit mining, underground mining, and building works. Transposition of large rock volumes. Methods of underground mining. The situation in Ostrava-Karviná coal mining district and in sub-Erzgebirge basins. Natural subsidence.</p> <p>4. Hazard geofactors II. Accelerated erosion. Weathering. Erosion by wind and water. Soil protection from erosion.</p> <p>5. Hazard geofactors III. Accelerated sedimentation. Transport and sedimentation. Water- and aeolic sedimentation. Sludge sedimentation.</p> <p>6. Hazard geofactors IV. Gravitational mass movements, their causes, course, documentation and registration. Protection against gravitational movements.</p> <p>7. Hazard geofactors V. Disturbance of the underground water regime by natural processes and human activities.</p> <p>8. Hazard geofactors VI. Fast seismotectonic movements. Genesis and course of earthquakes. Direct and indirect damages. Examples.</p> <p>9. Hazard geofactors VII. Impacts of volcanism. World- and domestic examples.</p> <p>10. Hazard geofactors VIII. Toxic inorganic substances in soils, rocks and underground waters. Possibilities and pathways of contamination. Concentrations of heavy metals in the Earth's crust.</p> <p>11. Hazard geofactors IX. Toxic organic substances in the rock environment. Petrolic substances, exploitation, processing, transport. The influence of transportation and industry.</p> <p>12. Hazard geofactors X. Radioactivity of the rock environment. Radioactive elements, their behaviour and concentration, regional occurrence. Mining and processing of uranium in the Czech Republic.</p> <p>13. Hazard geofactors XI. Radon in the rock environment. Genesis of radon, its behaviour, occurrence in the Bohemian Massif. Protection against radon.</p> <p>14. Summary of methods and procedures of sanitation, revitalisation, renaturalisation and recultivation of the rock environment.</p>	

Course of Shallow Geophysics

Department/Abbreviation	KGE/KMG
ECTS	5
Time requirements	Lecture 5 [Days]
Lecturer	Mgr. Jan Sedláček, Ph.D. (jan.sedlacek@upol.cz), Mgr. Zuzana Lendáková (zuzana.lendakova@upol.cz)
<p>Content The course is focused on practical use of near surface geophysical methods. Students will be familiarized with the theoretical basis of individual methods, including their implementation in geological survey. The field stage will follow subsequently. Obtained data will be processed on a PC. The main aim will be data interpretation in respect of geological structures.</p>	

Modern Methods of Geophysical Data Processing

Department/Abbreviation	KGE/MMZG
ECTS	3
Time requirements	Lecture 2 [Hours/Week]
Lecturer	Mgr. Zuzana Lendáková (zuzana.lendakova@upol.cz)
Content The tutorial is focused on software processing of geophysical data. Students will be introduced to the principles of computer visualization of the raw package of geophysical data. For processing students may use data from their own research or the data will be assigned by lecturer. Data from electric resistivity tomography, seismic and ground penetrating radar will be processed within software such as ReflexW, Surfer, Res2Dinv.	

SUMMER SEMESTER

Environmental Mineralogy

Department/Abbreviation	KGE/EMI
ECTS	3
Time requirements	Lecture 2 [Hours/Week]
Lecturer	RNDr. Petr Sulovský, Ph.D. (petr.sulovsky@upol.cz)
Content The course provides the students with knowledge of the position of minerals in the environment, their formation and transformations in supergenesis and technogenesis, their impact on activities of man and microorganisms. Stress is put on positive aspects of exploitation of minerals in industry, agriculture and households, the utilisation of their sorption and ion-exchange properties for the preservation of the environment, but also on the negative aspects of mining and processing of minerals. The role of mineralogy in processing and liquidation of wastes (with special emphasis on radioactive waste and its natural analogues) and in preservation of cultural heritage.	

Introduction to Hydrogeochemical Modeling

Department/Abbreviation	KGE/UHM
ECTS	2
Time requirements	Lecture 1 [Hours/Week]
Lecturer	prof. Ing. Ondřej Šráček, Ph.D. (ondrej.sracek@upol.cz)
Content Students should learn to define simple geochemical problems and then to model them. Principal transport and geochemical processes are outlined and then concepts of speciation, inverse geochemical modeling, direct geochemical modeling and reactive transport modeling are introduced. Several case studies of each type of modeling are presented and discussed with emphasis on the formulation of conceptual model and interpretation of results.	

Medical Geology

Department/Abbreviation	KGE/LEGO
ECTS	3
Time requirements	Lecture 2 [Hours/Week]

Lecturer	RNDr. Petr Sulovský, Ph.D. (petr.sulovsky@upol.cz)
Content Environmental biology: natural background, anthropogenic sources of environment contamination, uptake of elements from chemical and biological point of view. Biological functions of elements, their deficiencies and toxicities. Pathways and exposures of element uptake. Volcanic emissions and health; influence of raw materials mining on human health, the asbestos problem. The influence of selected elements on health. Geophagy. Natural and anthropogenic dusts in aerial aerosol and health effects. Speciation of elements - methods of determination and impact on public health on the example of mercury and lead. Minerals in human body - concrements, composition of teeth and bones, influence of air and potable water quality. Biominerals for health - implants, dental plates, bone implants, nanomedicals.	

Evolution of Man and his Material Civilization

Department/Abbreviation	KGE/VCMKU
ECTS	3
Time requirements	Lecture 1 [Hours/Week] Exercise 1 [Hours/Week]
Lecturer	Mgr. Martin Moník, Ph.D. (martin.monik@upol.com)
Content Ontogeny and phylogeny of man. Fundamentals of osteology, sexual and age differences observable on human skeleton. Rudiments and atavisms. Races and racism. The development of human material culture in the Palaeolithic, Mesolithic, Eneolithic, Neolithic. Bronze Age, Iron Age.	

Introduction to Geology of the Czech Republic

Department/Abbreviation	KGE/PRGCR
ECTS	2
Time requirements	Seminar 1 [Hours/Week]
Lecturer	Ing. Lada Hýlová, Ph.D. (lada.hylova@upol.cz)
Content: Position of the territory of the Czech Republic in the geological structure of Europe. Basic units - the Bohemian Massif and Western Carpathians. Overview of the main geological units in both main geological complexes and their characteristics. Main geotectonic stages of their development.	

Field Trip in Geology

Department/Abbreviation	KGE/TCGE
ECTS	5
Time requirements	Lecture 5 [Days]
Lecturer	Mgr. Daniel Šimíček, Ph.D. (daniel.simicek@upol.cz)
Content Field tutorials in general geology, aimed at the presentation of basic phenomena of exogenic and endogenic dynamics. Primary documentation of a profile or outcrop, including measurement of structural elements.	

Field Trip in Geology and Geomorphology (2 ECTS, 3 days)

Department/Abbreviation	KGE/GEGE
ECTS	2
Time requirements	Lecture 5 [Days]

Lecturer	Ing. Lada Hýlová, Ph.D. (lada.hylova@upol.cz)
Content: Geological and geomorphological excursion. Practical field training in geology and geomorphology on the territory of Moravia and Silesia. Documentation of outcrops, description, presentation of essential geological and geomorphological phenomena.	

Foreign geological field trip

Department/Abbreviation	KGE/ZGEX
ECTS	5
Time requirements	Lecture 6 [Days]
Lecturer	prof. Mgr. Ondřej Bábek, Dr. (ondrej.babek@upol.cz)
Content Practical field training focused on historical and regional geology of the Alps. Study of geological formations in the Eastern, Western and Southern Alps. Visit of important stratigraphic and structural localities, specific crystalline complexes (ophiolites), mineralogical and palaeontological localities and demonstration of the relationships between geomorphology and structure of a young orogene.	