



# Course description for exchange students at the Department of Geography

Teaching language for all courses in German B 2 level

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## Basics of Physical Geography

### Related module parts

Course type	Course	Rotation	Contact hours	Self-study	ECTS
Lecture	Introduction to physical geography	winter term	30 h (2 semester hours per week)	60 h	(3)
Exercise	Introduction to physical geography	winter term	30 h (2 semester hours per week)	60 h	(3)

For a successful completion of the module, 6 ECTS points must be acquired. Class attendance averages about 4 contact hours per week. Including self-study, approximately 180 hours have to be invested.

<b>Participation requirements</b>	None
<b>Level</b>	Undergraduate
<b>Previous knowledge</b>	None necessary
<b>Duration</b>	One semester
<b>Content</b>	<p>One lecture and one exercise in introduction to the scientific foundations of physical geography:</p> <ul style="list-style-type: none"> <li>• Geography as a scientific discipline, scientific problems in physical geography</li> <li>• Philosophy of science, system theory</li> <li>• Introduction to the system earth</li> <li>• Revision and reinforcement of the fundamentals of physics, chemistry, biology and their application in physical geography</li> <li>• Material cycles in the earth system</li> <li>• Challenges of a changing environment and opportunities in the physical geography</li> </ul>
<b>Learning outcomes</b>	<p>After completing this module, students will have an overview of the necessary scientific principles for an understanding of the earth system and their application to examples of physical geography. The learning objective is to acquire an overview of the subject matter, methods and basic knowledge of the subject. Students will have an insight into the integrative character of the subject and can grasp and evaluate interrelationships.</p>
<b>Type of examination</b>	Exam
<b>Type of assessment</b>	The module is not graded.
<b>Requirements for the gain of ECTS credits</b>	ECTS credits will be granted when the module examination has been completed successfully.
<b>Teaching language(s)</b>	German B 2 level

## Basics of Anthropogeography

### Related module parts

Course type	Course	Rotation	Contact hours	Self-study	ECTS
Lecture	Introduction to Anthropogeography	winter term	30 h (2 semester hours per week)	60 h	(3)
Exercise	Introduction to Anthropogeography	winter term	30 h (2 semester hours per week)	60 h	(3)

For a successful completion of the module, 6 ECTS points must be acquired. Class attendance averages about 4 contact hours per week. Including self-study, approximately 180 hours have to be invested.

<b>Participation requirements</b>	None
<b>Level</b>	Undergraduate
<b>Previous knowledge</b>	None necessary
<b>Duration</b>	One semester
<b>Content</b>	<p>One lecture in the area of Anthropogeography and one exercise regarding scientific work. The lecture is organized as a lecture series and offers an overview of different subfields of anthropogeography such as:</p> <ul style="list-style-type: none"> <li>• Economic Geography</li> <li>• Geography of Tourism</li> <li>• Retail Geography</li> <li>• Social Geography</li> <li>• Transportation and Mobility Geography</li> <li>• Demographic Geography</li> <li>• Agricultural Geographie</li> <li>• Human-Environment Relations</li> <li>• Urban Geography</li> </ul>
<b>Learning outcomes</b>	<p>After completing this module, students have an overview of the anthropogeographic basics and scientific questions, approaches and methods in human geography. The learning objective is the acquisition of a basic overview of tasks, questions and contents of the subject and its sub-disciplines. Students also receive an overview of important textbooks and journals.</p>
<b>Type of examination</b>	Exam
<b>Type of assessment</b>	The module is not graded.
<b>Requirements for the gain of ECTS credits</b>	ECTS credits will be granted when the module examination has been completed successfully.
<b>Teaching language(s)</b>	German B 2 level

## Basics of geographic information systems

### Related module parts

Course type	Course	Rotation	Contact hours	Self-study	ECTS
Lecture	Introduction to geographic information systems and thematic cartography	winter term	30 h (2 semester hours per week)	60 h	(3)
Exercise	Introduction to geographic information systems and thematic cartography	winter term	30 h (2 semester hours per week)	60 h	(3)

For a successful completion of the module, 6 ECTS points must be acquired. Class attendance averages about 4 contact hours per week. Including self-study, approximately 180 hours have to be invested.

<b>Participation requirements</b>	None
<b>Level</b>	Undergraduate
<b>Previous knowledge</b>	None necessary
<b>Duration</b>	One semester
<b>Content</b>	Lecture and exercise in GIS and cartography: <ul style="list-style-type: none"> <li>• Map projections, map contents, cartographic design</li> <li>• Map network designs</li> <li>• Geodata (analog and digital) and geodata services</li> <li>• Geographic Information Systems</li> <li>• Data models (raster and vector storage, representation and processing)</li> <li>• Practical issues and examples (cartometry, online cartography, GIS projects)</li> </ul>
<b>Learning outcomes</b>	After completing this module, students possess the basic methodological knowledge required for scientific and practical geographic work in the field of geographic information systems. The emphasis of the qualifications lies in the mastery of computer-aided methods for independent data research (e.g. via geoportals but also analog map series), data acquisition, processing and evaluation as well as the digital creation of thematic maps.
<b>Type of examination</b>	Exam
<b>Type of assessment</b>	The module is graded.
<b>Requirements for the gain of ECTS credits</b>	ECTS credits will be granted when the module examination has been completed successfully.
<b>Teaching language(s)</b>	German B 2 level

## Advanced Physical Geography

### Related module parts

Course type	Course	Rotation	Contact hours	Self-study	ECTS
Lecture	Advanced Physical Geography - Geomorphology	summer term	30 h (2 semester hours per week)	60 h	(3)
Lecture	Advanced Physical Geography - Climatology	summer term	30 h (2 semester hours per week)	60 h	(3)

For a successful completion of the module, 6 ECTS points must be acquired. Class attendance averages about 4 contact hours per week. Including self-study, approximately 180 hours have to be invested.

<b>Participation requirements</b>	None
<b>Level</b>	Undergraduate
<b>Previous knowledge</b>	Basic knowledge in physical geography is recommended
<b>Duration</b>	One semester
<b>Content</b>	<p>Two lectures in physical geography:</p> <ul style="list-style-type: none"> <li>• Geomorphology (endogene-exogenous dynamics, relic formation, weathering and erosion),</li> <li>• Climatology (meteorological basics, climate elements, energy balance of the earth, flow systems, climate classifications, climate change).</li> </ul>
<b>Learning outcomes</b>	After completing this module, students have in-depth knowledge of sub-areas of physical geography. Within the framework of the lectures, the scientific methods and questions of geography as a spatial science of the earth system are deepened on the basis of these sub-areas. The learning objective is to gain a detailed insight into the subject matter, tasks and contents of the subject and its sub-disciplines.
<b>Type of examination</b>	Exam
<b>Type of assessment</b>	The module is graded.
<b>Requirements for the gain of ECTS credits</b>	ECTS credits will be granted when the module examination has been completed successfully.
<b>Teaching language(s)</b>	German B 2 level

## Advanced Anthropogeography

### Related module parts

Course type	Course	Rotation	Contact hours	Self-study	ECTS
Lecture	Advanced Anthropogeography - General Economic Geography	summer term	30 h (2 semester hours per week)	60 h	(3)
Lecture	Advanced Anthropogeography - General Urban Geography	summer term	30 h (2 semester hours per week)	60 h	(3)

For a successful completion of the module, 6 ECTS points must be acquired. Class attendance averages about 4 contact hours per week. Including self-study, approximately 180 hours have to be invested.

<b>Participation requirements</b>	None
<b>Level</b>	Undergraduate
<b>Previous knowledge</b>	Basic knowledge in anthropogeography is recommended
<b>Duration</b>	One semester
<b>Content</b>	<p>Two lectures in anthropogeography from the thematic areas:</p> <ul style="list-style-type: none"> <li>• Economic geography (approaches to economic geography, spatial analysis, behavioural geography, business organization, innovation, global production networks, business networks, global city networks, industrial clusters, cultural industries, agriculture, product chains),</li> <li>• Urban geography (approaches to urban geography, historical urban development, models of urban development and urban division, current urban development processes, applied issues in urban geography).</li> </ul>
<b>Learning outcomes</b>	After completing this module, students will have extended specialist knowledge of two important sub-areas of anthropogeography, especially their theoretical and conceptual foundations and fields of application. Within the lectures, central scientific methods and questions of anthropogeography are presented in detail and critically discussed on the basis of these sub-areas. The aim is to gain a deeper insight into the subject, tasks and contents of economic and urban geographic research.
<b>Type of examination</b>	Exam
<b>Type of assessment</b>	The module is graded.
<b>Requirements for the gain of ECTS credits</b>	ECTS credits will be granted when the module examination has been completed successfully.
<b>Teaching language(s)</b>	German B 2 level

## Remote environmental sensing

### Related module parts

Course type	Course	Rotation	Contact hours	Self-study	ECTS
Lecture	Introduction to remote environmental sensing	summer term	30 h (2 semester hours per week)	60 h	(3)
Exercise	Introduction to remote environmental sensing	summer term	30 h (2 semester hours per week)	60 h	(3)

For a successful completion of the module, 6 ECTS points must be acquired. Class attendance averages about 4 contact hours per week. Including self-study, approximately 180 hours have to be invested.

<b>Participation requirements</b>	None
<b>Level</b>	Undergraduate
<b>Previous knowledge</b>	There is no previous knowledge necessary for the lecture, but basic knowledge in geographic information systems is recommended for the exercise.
<b>Duration</b>	One semester
<b>Content</b>	<p>Lecture on environmental remote sensing and exercise on digital image processing:</p> <ul style="list-style-type: none"> <li>• Physical background</li> <li>• Remote sensing systems and sensors</li> <li>• Spectral characteristics of surfaces</li> <li>• Measurements in remote sensing</li> <li>• Digital image processing methods (image enhancement, ratios, geometric reprocessing, land use classification)</li> <li>• Practical questions and examples</li> </ul>
<b>Learning outcomes</b>	<p>After completing this module, students have a basic scientific overview of how remote sensing works and of basic applications of remote sensing in the context of environmental monitoring. They have practical experience with the analysis of remote sensing data and are familiar with basic methods of digital image processing (e.g. display, ratios, geometry, classification). They will be able to apply this knowledge to given problems using standard image processing software and evaluate the results. The module thus contributes to the acquisition of the interdisciplinary qualification of scientific work (execution and documentation of experiments, data analysis, data presentation, rules of "good scientific practice").</p>
<b>Type of examination</b>	Exam
<b>Type of assessment</b>	The module is graded.
<b>Requirements for the gain of ECTS credits</b>	ECTS credits will be granted when the module examination has been completed successfully.
<b>Teaching language(s)</b>	German B 2 level

## Field and laboratory methods of Physical Geography

### Related module parts

Course type	Course	Rotation	Contact hours	Self-study	ECTS
Field exercise	Field exercise of physical geography	summer term	three day block exercise	60 h	(3)
Lecture	Laboratory methods of physical geography	winter term	30 h (2 semester hours per week)	60 h	(3)
Laboratory exercise	Laboratory methods of physical geography	winter term	three day block exercise	60 h	(3)

For a successful completion of the module, 9 ECTS points must be acquired. Class attendance averages about 2 contact hours per week. Including self-study, approximately 270 hours have to be invested.

<b>Participation requirements</b>	None
<b>Level</b>	Undergraduate
<b>Previous knowledge</b>	Basic knowledge in physical geography is recommended
<b>Duration</b>	Two semesters
<b>Content</b>	<p>Field exercise of physical geography:</p> <ul style="list-style-type: none"> <li>• Soil science determinations (e.g. chemical and physical soil characteristics, soil type)</li> <li>• Water analysis (quantitative and qualitative methods, e.g. various discharge methods, water chemistry)</li> <li>• Terrain surveying (different methods, e.g. GPS, theodolite etc.)</li> <li>• Rock identification exercises</li> <li>• Measurement of various meteorological quantities</li> </ul> <p>Lecture on physical-geographical analysis with emphasis on water and soil with an exercise in the laboratory:</p> <ul style="list-style-type: none"> <li>• Introduction to chemical analysis</li> <li>• Basic water chemistry analysis methods (pH, oxygen, hardness, nitrogen compounds, etc.)</li> <li>• Introduction to soil-physical and soil-chemical analysis (grain size, carbon, pH, lime, iron, etc.)</li> <li>• Practical implementation and application of the skills in the laboratory acquired in the lecture</li> </ul>
<b>Learning outcomes</b>	<p>After completing this module, students are familiar with the basic quantitative and qualitative empirical methods of physical geography and are able to prepare campaigns for the collection of empirical geographic data based on given questions, to carry them out in the field, to evaluate the collected data and facts and to present them in report form.</p>

In addition, the students have an overview of the methodology and functioning of environmental-chemical and soil-physical measurements and their geographical application. Furthermore, they are able to apply special methods of quantitative water and soil analysis, to evaluate, document and interpret the measurements. Graduates have knowledge of general work procedures, behaviour and safety standards in the laboratory area and in the field.

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<b>Type of examination</b>	Exam
<b>Type of assessment</b>	The module is graded.
<b>Requirements for the gain of ECTS credits</b>	ECTS credits will be granted when the module examination has been completed successfully.
<b>Teaching language(s)</b>	German B 2 level

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## Methods of Anthropogeography

### Related module parts

Course type	Course	Rotation	Contact hours	Self-study	ECTS
Field exercise	Field exercise anthropogeography	winter and summer term	three-day block exercise	60 h	(3)
Lecture	Methods of empirical social research	winter term	30 h (2 semester hours per week)	60 h	(3)

For a successful completion of the module, 6 ECTS points must be acquired. Class attendance averages about 2 contact hours per week and a three-day block exercise. Including self-study, approximately 180 hours have to be invested.

<b>Participation requirements</b>	None
<b>Level</b>	Undergraduate
<b>Previous knowledge</b>	Basic knowledge in anthropogeography is recommended
<b>Duration</b>	One or two semesters
<b>Content</b>	The lecture Methods of Empirical Social Research covers the range of quantitative and qualitative survey methods in anthropogeography. The corresponding field exercise practices different forms of surveys and observations.
<b>Learning outcomes</b>	After completing this module, students are familiar with the basic quantitative and qualitative methods of empirical anthropogeography and are able to plan the collection of primary data for current questions in a theoretically well-founded way, to carry it out in the field and to critically reflect on the field work. Furthermore, possibilities and potentials of a targeted interlocking of different methods in mixed methods designs will be discussed.
<b>Type of examination</b>	Exam
<b>Type of assessment</b>	The module is graded.
<b>Requirements for the gain of ECTS credits</b>	ECTS credits will be granted when the module examination has been completed successfully.
<b>Teaching language(s)</b>	German B 2 level

## Specific Physical Geography

### Related module parts

Course type	Course	Rotation	Contact hours	Self-study	ECTS
Lecture	Specific Physical Geography - Hydrology	winter term	30 h (2 semester hours per week)	60 h	(3)
Lecture	Specific Physical Geography - Soil science and landscape genesis	winter term	30 h (2 semester hours per week)	60 h	(3)

For a successful completion of the module, 6 ECTS points must be acquired. Class attendance averages about 4 contact hours per week. Including self-study, approximately 180 hours have to be invested.

<b>Participation requirements</b>	None
<b>Level</b>	Undergraduate
<b>Previous knowledge</b>	Basic knowledge in physical geography is recommended
<b>Duration</b>	One semester
<b>Content</b>	<p>Two lectures in physical geography from the thematic areas:</p> <ul style="list-style-type: none"> <li>• Soil geography and landscape ecology</li> <li>• Vegetational Geography</li> <li>• Hydrology</li> </ul>
<b>Learning outcomes</b>	<p>After completing this module, students have specific knowledge in sub-areas of physical geography (soil geography, landscape ecology, hydrology, climatology, vegetation geography, etc.). The in-depth teaching of the material enables the graduates to follow subject-related discussions on the topics of the lectures and to formulate their own contributions to the discussion.</p>
<b>Type of examination</b>	Exam
<b>Type of assessment</b>	The module is graded.
<b>Requirements for the gain of ECTS credits</b>	ECTS credits will be granted when the module examination has been completed successfully.
<b>Teaching language(s)</b>	German B 2 level

## Specific Anthropogeography

### Related module parts

Course type	Course	Rotation	Contact hours	Self-study	ECTS
Lecture	Specific Anthropogeography - Dynamics in economic spaces	winter term	30 h (2 semester hours per week)	60 h	(3)
Lecture	Specific Anthropogeography – Human-environment relations	winter term	30 h (2 semester hours per week)	60 h	(3)

For a successful completion of the module, 6 ECTS points must be acquired. Class attendance averages about 4 contact hours per week. Including self-study, approximately 180 hours have to be invested.

<b>Participation requirements</b>	None
<b>Level</b>	Undergraduate
<b>Previous knowledge</b>	Basic knowledge in anthropogeography is recommended
<b>Duration</b>	One semester
<b>Content</b>	<p>Two lectures in anthropogeography:</p> <ul style="list-style-type: none"> <li>• Dynamics in economic areas: Fundamentals of economic theory for selected economic sectors, temporal and spatial development of economic systems and/or sectors, empirical economic research of selected economic sectors.</li> <li>• Human-environment relationships: Human-environment relationships in time and space, research approaches in geography, systems science considerations, human-environment systems framework, social ecological systems framework, empirical examples from research projects in the Areas of energy, waste, and municipal resources.</li> </ul>
<b>Learning outcomes</b>	After completing this module, students have special content-related knowledge in sub-areas of anthropogeography (tourism economy and human-environment relations). The in-depth presentation of the material enables the graduates to follow professional discussions on the topics of the lectures and to formulate their own contributions to the discussion.
<b>Type of examination</b>	Exam
<b>Type of assessment</b>	The module is graded.
<b>Requirements for the gain of ECTS credits</b>	ECTS credits will be granted when the module examination has been completed successfully.
<b>Teaching language(s)</b>	German B 2 level

## Applied Geography

### Related module parts

Course Type	Course	Rotation	Contact hours	Self-study	ECTS
Lecture	Applied geography	summer term	30 h (2 semester hours per week)	60 h	(3)
Exercise	Applied geography	summer term	30 h (2 semester hours per week)	60 h	(3)

For a successful completion of the module, 6 ECTS points must be acquired. Class attendance averages about 4 contact hours per week. Including self-study, approximately 180 hours have to be invested.

<b>Participation requirements</b>	None
<b>Level</b>	Undergraduate
<b>Previous knowledge</b>	Basic knowledge of geography is recommended
<b>Duration</b>	One semester
<b>Content</b>	<p>Lecture and exercise on selected issues in applied geography either from physical geography or anthropogeography e.g. from the topics:</p> <ul style="list-style-type: none"> <li>• Sustainable regional development</li> <li>• Regional aspects of global change</li> </ul>
<b>Learning outcomes</b>	<p>After completing this module, students have an overview of the fundamentals and methods of applied geography. They have in-depth theoretical knowledge of selected specialist topics. They are able to comprehend fields of application of geographic practice in terms of content and methodology and can apply standard methods and carry out geographic project work (e.g. spatio-temporal data analysis, modelling) on the basis of practical example questions.</p>
<b>Type of examination</b>	Exam
<b>Type of assessment</b>	The module is graded.
<b>Requirements for the gain of ECTS credits</b>	ECTS credits will be granted when the module examination has been completed successfully.
<b>Teaching language(s)</b>	German B 2 level

## Geoinformatics

### Related module parts

Course type	Course	Rotation	Contact hours	Self-study	ECTS
Lecture	Analysis of spatial and temporal data	summer term	30 h (2 semester hours per week)	60 h	(3)
Exercise	Analysis of spatial and temporal data	summer term	30 h (2 semester hours per week)	60 h	(3)

For a successful completion of the module, 6 ECTS points must be acquired. Class attendance averages about 4 contact hours per week. Including self-study, approximately 180 hours have to be invested.

<b>Participation requirements</b>	None
<b>Level</b>	Undergraduate
<b>Previous knowledge</b>	Previous knowledge in geographic information systems is recommended
<b>Duration</b>	One semester
<b>Content</b>	<p>Lecture and exercise on special aspects of the use of geographic information systems, including:</p> <ul style="list-style-type: none"> <li>• Cartographic projections,</li> <li>• Practical GIS issues,</li> <li>• Possibilities and limitations of GIS,</li> <li>• GIS programming,</li> <li>• Solving concrete GIS problems,</li> <li>• Automation of processes.</li> </ul>
<b>Learning outcomes</b>	<p>After completing this module, students have a theoretical overview of complex practical applications of GIS, have acquired an overview of possible solutions for practical problems and are able to automate GIS processes and to solve non-standard problems in the GIS area through supplementary programming. Furthermore, the students acquire interdisciplinary qualifications especially in the field of critical analysis and evaluation of different data sources.</p>
<b>Type of examination</b>	Exercise portfolio
<b>Type of assessment</b>	The module is graded.
<b>Requirements for the gain of ECTS credits</b>	ECTS credits will be granted when the module examination has been completed successfully.
<b>Teaching language(s)</b>	German B 2 level

## Fields of Geography

### Related module parts

Course type	Course	Rotation	Contact hours	Self-study	ECTS
Advanced Seminar	Scientific problems of geography	winter and summer term	30 h (2 semester hours per week)	60 h	(3)

For a successful completion of the module, 3 ECTS points must be acquired. Class attendance averages about 2 contact hours per week. Including self-study, approximately 90 hours have to be invested.

<b>Participation requirements</b>	None
<b>Level</b>	Undergraduate
<b>Previous knowledge</b>	Basic knowledge in geography is recommended
<b>Duration</b>	One semester
<b>Content</b>	In the advanced seminar, selected aspects of a topic from the field of geography are thematised. For this purpose, each individual participant will be required to develop scientific work in the form of a presentation, which will be held and discussed in the seminar, and a written term paper.
<b>Learning outcomes</b>	After completing this module, students know and understand a selected topic from the field of geography and are able to reflect on it critically. Furthermore, they have the ability to research on their own topic from the field of geography, compile and structure the main contents independently and in a goal-oriented manner, present it in the form of a presentation and a written paper and to defend it in a discussion.
<b>Type of examination</b>	Presentation and term paper
<b>Type of assessment</b>	The module is graded.
<b>Requirements for the gain of ECTS credits</b>	ECTS credits will be granted when the module examination has been completed successfully.
<b>Teaching language(s)</b>	German B 2 level

## Project management and project seminar

### Related module parts

Course type	Course	Rotation	Contact hours	Self-study	ECTS
Lecture	Project management	summer term	30 h (2 semester hours per week)	60 h	(3)
Seminar	Project seminar	Winter and summer term	30 h (2 semester hours per week)	60 h	(3)

For a successful completion of the module, 6 ECTS points must be acquired. Class attendance averages about 4 contact hours per week. Including self-study, approximately 180 hours have to be invested.

<b>Participation requirements</b>	None
<b>Level</b>	Undergraduate
<b>Previous knowledge</b>	Basic knowledge of geography is recommended
<b>Duration</b>	One or two semesters
<b>Content</b>	<p>Lecture on theoretical basics and methods of project management, including:</p> <ul style="list-style-type: none"> <li>• Project organisation,</li> <li>• Project phases,</li> <li>• Project monitoring,</li> <li>• Project controlling.</li> </ul> <p>Contents of the project seminar can be: Use of methods of project management and geographic methods of data collection, processing and presentation (e.g. remote sensing, modelling, GIS, questioning, observation).</p>
<b>Learning outcomes</b>	<p>After completing this module, students possess an overview of theoretical basics and methods of project management and are able to apply them when working on projects. Within the project seminar the graduates gain the ability to apply project management methods and further theoretical and methodological knowledge acquired during their studies in the processing of a concrete task (project). Graduates of this module are able to formulate a concrete scientific question, to solve this question with a combination of scientific methods and to present and document the results.</p>
<b>Type of examination</b>	Presentation and term paper
<b>Type of assessment</b>	The module is graded.
<b>Requirements for the gain of ECTS credits</b>	ECTS credits will be granted when the module examination has been completed successfully.
<b>Teaching language(s)</b>	German B 2 level

## Regional Geography I: Europe

### Related module parts

Course type	Course	Rotation	Contact hours	Self-study	ECTS
Lecture	Regional Geography (Europe)	winter term	30 h (2 semester hours per week)	60 h	(3)

For a successful completion of the module, 3 ECTS points must be acquired. Class attendance averages about 2 contact hours per week. Including self-study, approximately 90 hours have to be invested.

<b>Participation requirements</b>	None
<b>Level</b>	Undergraduate
<b>Previous knowledge</b>	None necessary
<b>Duration</b>	One semester
<b>Content</b>	<p>The lecture deals with the global differentiation and regional specificity of a selected European area. Here, the fields of:</p> <ul style="list-style-type: none"> <li>• Climate,</li> <li>• Rock, relief, soil</li> <li>• Vegetation, land use patterns,</li> <li>• Economy, use of resources,</li> <li>• Settlement, urban areas,</li> <li>• Population</li> </ul> <p>are synthesized into an overall picture of an European area.</p>
<b>Learning outcomes</b>	<p>After completing this module, students have exemplary knowledge of regional differentiation of the earth and of a selected area. By combining the acquired knowledge, cross-connections are created on a global and regional level, which enable graduates to connect regional and global contexts and thus to acquire greater power of judgement, e.g. on questions of the regional past and future development of areas, their adaptability to special challenges (e.g. climate change) or their region-specific characteristics.</p>
<b>Type of examination</b>	Exam
<b>Type of assessment</b>	The module is graded.
<b>Requirements for the gain of ECTS credits</b>	ECTS credits will be granted when the module examination has been completed successfully.
<b>Teaching language(s)</b>	German B 2 level

## Regional Geography II: Outside Europe

### Related module parts

Course type	Course	Rotation	Contact hours	Self-study	ECTS
Lecture	Regional Geography (Outside Europe)	winter and summer term	30 h (2 semester hours per week)	60 h	(3)

For a successful completion of the module, 3 ECTS points must be acquired. Class attendance averages about 2 contact hours per week. Including self-study, approximately 90 hours have to be invested.

<b>Participation requirements</b>	None
<b>Level</b>	Undergraduate
<b>Previous knowledge</b>	None necessary
<b>Duration</b>	One semester
<b>Content</b>	<p>The lecture deals with the global differentiation and regional specificity of a selected area outside of Europe. Here, the fields of:</p> <ul style="list-style-type: none"> <li>• Climate,</li> <li>• Rock, relief, soil</li> <li>• Vegetation, land use patterns,</li> <li>• Economy, use of resources,</li> <li>• Settlement, urban areas,</li> <li>• Population</li> </ul> <p>are synthesized into an overall picture of an area.</p>
<b>Learning outcomes</b>	<p>After completing this module, students have exemplary basic knowledge of regional differentiation of the earth and of a selected area. By combining the acquired knowledge, cross-connections are created on a global and regional level, which enable graduates to connect regional and global contexts and thus to acquire greater power of judgement, e.g. on questions of the regional past and future development of areas, their adaptability to special challenges (e.g. climate change) or their region-specific characteristics.</p>
<b>Type of examination</b>	Exam
<b>Type of assessment</b>	The module is graded.
<b>Requirements for the gain of ECTS credits</b>	ECTS credits will be granted when the module examination has been completed successfully.
<b>Teaching language(s)</b>	German B 2 level

## Regional Geography III: Germany

### Related module parts

Course type	Course	Rotation	Contact hours	Self-study	ECTS
Lecture	Regional Geography (Germany)	summer term	30 h (2 semester hours per week)	60 h	(3)

For a successful completion of the module, 3 ECTS points must be acquired. Class attendance averages about 2 contact hours per week. Including self-study, approximately 90 hours have to be invested.

<b>Participation requirements</b>	None
<b>Level</b>	Undergraduate
<b>Previous knowledge</b>	None necessary
<b>Duration</b>	One semester
<b>Content</b>	<p>Selected regional geography lecture, which deals with differentiation and regional characteristics in Germany. Here the areas:</p> <ul style="list-style-type: none"> <li>• Geological-tectonic evolution and relief</li> <li>• Climate and hydrography</li> <li>• Soil and vegetation</li> </ul> <p>are synthesized into an overall picture of an area.</p> <p>Examples of selected areas in Germany shed a light on regional characteristics (e.g. land use patterns, economy, resource use, settlement/urban areas and population).</p>
<b>Learning outcomes</b>	<p>After completing this module, students have exemplary basic knowledge of the regional differentiation of the earth and of a selected area. By combining the acquired knowledge, cross-connections are created on a global and regional level, which enable graduates to connect the regional and global contexts and thus to acquire a confident power of judgment, e.g. on questions of global and regional resource use, adaptation to climate change and sustainable development.</p>
<b>Type of examination</b>	Exam
<b>Type of assessment</b>	The module is graded.
<b>Requirements for the gain of ECTS credits</b>	ECTS credits will be granted when the module examination has been completed successfully.
<b>Teaching language(s)</b>	German B 2 level

## Regional Geography IV: Bavaria

### Related module parts

Course type	Course	Rotation	Contact hours	Self-study	ECTS
Lecture	Regional Geography (Bavaria)	summer term	30 h (2 semester hours per week)	60 h	(3)

For a successful completion of the module, 3 ECTS points must be acquired. Class attendance averages about 2 contact hours per week. Including self-study, approximately 90 hours have to be invested.

<b>Participation requirements</b>	None
<b>Level</b>	Undergraduate
<b>Previous knowledge</b>	None necessary
<b>Duration</b>	One semester
<b>Content</b>	<p>Selected regional geography lecture, which deals with differentiation and regional characteristics in Bavaria. Here the areas:</p> <ul style="list-style-type: none"> <li>• Climate,</li> <li>• Rock, relief, soil</li> <li>• Vegetation, land use patterns,</li> <li>• Economy, use of resources,</li> <li>• Settlement, urban areas,</li> <li>• Population</li> </ul> <p>are synthesized into an overall picture of an area.</p>
<b>Learning outcomes</b>	<p>After completing this module, students have exemplary basic knowledge of regional differentiation of the earth and of a selected area. By combining the acquired knowledge, cross-connections are created on a global and regional level, enabling graduates to connect regional and global contexts and thus to acquire a confident power of judgment, e.g. on issues of global and regional resource use, adaptation to climate change and sustainable development.</p>
<b>Type of examination</b>	Exam
<b>Type of assessment</b>	The module is graded.
<b>Requirements for the gain of ECTS credits</b>	ECTS credits will be granted when the module examination has been completed successfully.
<b>Teaching language(s)</b>	German B 2 level

## Field trip

### Related module parts

Course type	Course	Rotation	Contact hours	Self-study	ECTS
Field trip	Field trip	winter and summer term	30 h (2 semester hours per week)	60 h	(3)

For a successful completion of the module, 3 ECTS points must be acquired. Class attendance averages about 2 contact hours per week. Including self-study, approximately 90 hours have to be invested.

<b>Participation requirements</b>	None
<b>Level</b>	Undergraduate
<b>Previous knowledge</b>	Basic knowledge in geography is recommended
<b>Duration</b>	One semester
<b>Content</b>	Field trip (1-3 days) on physical geographical or anthropogeographical subjects.
<b>Learning outcomes</b>	On field trips, a geographical area is explored and knowledge from previous studies is discussed and evaluated.
<b>Type of examination</b>	Field trip report
<b>Type of assessment</b>	The module is not graded.
<b>Requirements for the gain of ECTS credits</b>	ECTS credits will be granted when the module examination has been completed successfully.
<b>Teaching language(s)</b>	German B 2 level

## Career Training

### Related module parts

Course type	Course	Rotation	Contact hours	Self-study	ECTS
Exercise	Career training	winter and summer term	30 h (2 semester hours per week)	60 h	(3)

For a successful completion of the module, 3 ECTS points must be acquired. Class attendance averages about 2 contact hours per week. Including self-study, approximately 90 hours have to be invested.

<b>Participation requirements</b>	None
<b>Level</b>	Undergraduate
<b>Previous knowledge</b>	None necessary
<b>Duration</b>	One semester
<b>Content</b>	In this exercise, the basics of job-related "soft skills" and/or methodical skills (e.g. project planning, project-, time- and management, negotiation, advanced presentation skills, programming) are taught. The results are presented through posters or presentations.
<b>Learning outcomes</b>	After completing this module, students have exemplary experience in the application and implementation of the theoretical and practical knowledge. They are able to implement their learned skills in a practical environment of a company or public institution outside the the university, which may represent a potential future employee.
<b>Type of examination</b>	Presentation
<b>Type of assessment</b>	The module is not graded.
<b>Requirements for the gain of ECTS credits</b>	ECTS credits will be granted when the module examination has been completed successfully.
<b>Teaching language(s)</b>	German B 2 level

## Environmental management

### Related module parts

Course type	Course	Rotation	Contact hours	Self-study	ECTS
Lecture	Environmental management	summer term	30 h (2 semester hours per week)	60 h	(3)
Exercise	Environmental management	summer term	30 h (2 semester hours per week)	60 h	(3)

For a successful completion of the module, 6 ECTS points must be acquired. Class attendance averages about 4 contact hours per week. Including self-study, approximately 180 hours have to be invested.

<b>Participation requirements</b>	None
<b>Level</b>	Undergraduate
<b>Previous knowledge</b>	Basic knowledge in physical geography recommended
<b>Duration</b>	One semester
<b>Content</b>	<p>Lecture on environmental management with:</p> <ul style="list-style-type: none"> <li>• Local, regional and global problems of environmental management</li> <li>• Introduction to the ethical, economic and political foundations of environmental management,</li> <li>• Objectives of environmental management,</li> <li>• Available management tools (regulations, limits, taxes, levies, certificates, etc.) at local, regional and global scale</li> </ul> <p>Exercise: Practical treatment of environmental management based on selected case studies.</p>
<b>Learning outcomes</b>	After completing this module, students have a basic knowledge of the goals, principles and mechanisms of sustainable environmental management on a local, regional and global scale, knowledge of environmental indicators and instruments such as certificates and taxes. They are able to work through simple environmental management tasks on a local and regional level and have in-depth knowledge of theoretical and practical issues of sustainability as well as the sustainable and problem-oriented management of natural resources on a regional and global scale.
<b>Type of examination</b>	Exam
<b>Type of assessment</b>	The module is graded.
<b>Requirements for the gain of ECTS credits</b>	ECTS credits will be granted when the module examination has been completed successfully.
<b>Teaching language(s)</b>	German B 2 level

# Introduction to geography didactics I

## Related module parts

Course type	Course	Rotation	Contact hours	Self-study	ECTS
Lecture	Basics of geography didactics 1	winter term	30 h (2 semester hours per week)	60 h	(3)

For a successful completion of the module, 3 ECTS points must be acquired. Class attendance averages about 2 contact hours per week. Including self-study, approximately 90 hours have to be invested.

<b>Participation requirements</b>	None
<b>Level</b>	Undergraduate
<b>Previous knowledge</b>	None necessary
<b>Duration</b>	One semester
<b>Content</b>	<p>This course is designed for students studying geography in the <b>teaching profession</b>.</p> <ul style="list-style-type: none"> <li>• Term definition and delimitation</li> <li>• Comparison of university and school geography</li> <li>• Application of educational theories and general didactic models to the didactics of geography.</li> <li>• Aims and contents of geography lessons.</li> <li>• Basics of educational psychology and its relevance in the didactics of geography.</li> </ul>
<b>Learning outcomes</b>	<p>After completing this module, students have an overview and knowledge of the theoretical foundations of geography didactics (in particular the target-content complex) including its reference sciences. They have basic knowledge of the repertoire of methods and media for teaching geography and the ability to critically reflect on the advantages and disadvantages of individual methods and media.</p>
<b>Type of examination</b>	Exam
<b>Type of assessment</b>	The module is graded.
<b>Requirements for the gain of ECTS credits</b>	ECTS credits will be granted when the module examination has been completed successfully.
<b>Teaching language(s)</b>	German B 2 level

## Introduction to geography didactics II

### Related module parts

Course type	Course	Rotation	Contact hours	Self-study	ECTS
Lecture	Basics of geography didactics 2	summer term	30 h (2 semester hours per week)	60 h	(3)

For a successful completion of the module, 3 ECTS points must be acquired. Class attendance averages about 2 contact hours per week. Including self-study, approximately 90 hours have to be invested.

<b>Participation requirements</b>	None
<b>Level</b>	Undergraduate
<b>Previous knowledge</b>	None necessary
<b>Duration</b>	One semester
<b>Content</b>	<p>This course is designed for students studying geography in the <b>teaching profession</b>.</p> <ul style="list-style-type: none"> <li>• Teaching methods in geography</li> <li>• Media for geography lessons</li> <li>• Teaching principles for school geography</li> <li>• Planning of geography lessons</li> </ul>
<b>Learning outcomes</b>	<p>After completing this module, students have an overview and knowledge of the theoretical foundations of geography didactics (in particular the target-content complex) including its reference sciences. They have basic knowledge of the repertoire of methods and media for teaching geography and the ability to critically reflect on the advantages and disadvantages of individual methods and media.</p>
<b>Type of examination</b>	Exam
<b>Type of assessment</b>	The module is graded.
<b>Requirements for the gain of ECTS credits</b>	ECTS credits will be granted when the module examination has been completed successfully.
<b>Teaching language(s)</b>	German B 2 level

# Applied geography didactics I

## Related module parts

Course type	Course	Rotation	Contact hours	Self-study	ECTS
Seminar	Applied geography didactics I	winter term	30 h (2 semester hours per week)	60 h	(3)

For a successful completion of the module, 3 ECTS points must be acquired. Class attendance averages about 2 contact hours per week. Including self-study, approximately 90 hours have to be invested.

<b>Participation requirements</b>	None
<b>Level</b>	Undergraduate
<b>Previous knowledge</b>	Basic knowledge in geography didactics is recommended
<b>Duration</b>	One semester
<b>Content</b>	<p>This course is designed for students studying geography in the <b>teaching profession</b>.</p> <p>Planning of a geographical teaching unit by means of subject analysis, didactic and detailed methodological analysis. Content-related justifications for the use of individual teaching methods and media. Simulated teacher-student interaction for a section of the lesson.</p>
<b>Learning outcomes</b>	After completing this module, students will be able to apply their knowledge of the theoretical foundations of geography didactics (target-content complex and method-median complex) to the reflected planning of a concrete lesson unit. They are able to present and explain the designed lesson plan in a clear way and to discuss it in a convincing and reflective way.
<b>Type of examination</b>	Seminar paper (15,000-20,000 characters) and presentation (30-45 minutes)
<b>Type of assessment</b>	The module is not graded.
<b>Requirements for the gain of ECTS credits</b>	ECTS credits will be granted when the module examination has been completed successfully.
<b>Teaching language(s)</b>	German B 2 level

## Applied geography didactics II

### Related module parts

Course type	Course	Rotation	Contact hours	Self-study	ECTS
Seminar	Applied geography didactics II	summer term	30 h (2 semester hours per week)	60 h	(3)

For a successful completion of the module, 3 ECTS points must be acquired. Class attendance averages about 2 contact hours per week. Including self-study, approximately 90 hours have to be invested.

<b>Participation requirements</b>	None
<b>Level</b>	Undergraduate
<b>Previous knowledge</b>	Basic knowledge in geography didactics is recommended
<b>Duration</b>	One semester
<b>Content</b>	<p>This course is designed for students studying geography in the <b>teaching profession</b>.</p> <p>Planning of a geographical teaching unit by means of detailed factual analysis, didactic and methodological analysis. Didactic reduction or reconstruction of the lesson content. Content-related justifications for the use of individual teaching methods and media. Simulated teacher-student interaction for a section of the lesson.</p>
<b>Learning outcomes</b>	After completing this module, students will be able to apply their knowledge of the theoretical foundations of geography didactics (goal-content complex and method-median complex) to the reflective planning of a concrete teaching unit. They will be able to present and explain the lesson planning in a clear manner and to discuss it in a convincing and reflective way.
<b>Type of examination</b>	Seminar paper (15,000-20,000 characters) and presentation (30-45 minutes)
<b>Type of assessment</b>	The module is not graded.
<b>Requirements for the gain of ECTS credits</b>	ECTS credits will be granted when the module examination has been completed successfully.
<b>Teaching language(s)</b>	German B 2 level

## Concepts of Sustainability

### Related module parts

Course type	Course	Rotation	Contact hours	Self-study	ECTS
Lecture	Geography and Sustainability	winter term	30 h (2 semester hours per week)	60 h	(3)
Exercise	Geography and Sustainability	winter term	30 h (2 semester hours per week)	60 h	(3)

For a successful completion of the module, 6 ECTS points must be acquired. Class attendance averages about 4 contact hours per week. Including self-study, approximately 180 hours have to be invested.

<b>Participation requirements</b>	None
<b>Level</b>	Postgraduate
<b>Previous knowledge</b>	In-depth knowledge in anthropogeography and physical geography is recommended
<b>Duration</b>	One semester
<b>Content</b>	This course explores current issues in sustainability and the role of human and physical geography in sustainability studies. The course addresses what 'sustainable development' means and how and why it is a contested field. Various approaches to sustainability in economic geography, tourism geography, urban geography, environmental policy, climatology, hydrology, and resource and environmental management are introduced and discussed through a series of lectures and seminars. The exercise aims at applying the theories on concrete issues, e.g. by visiting firms and organisations.
<b>Learning outcomes</b>	<p>After completing the module, students are able</p> <ul style="list-style-type: none"> <li>• To understand the role of Geography in Sustainability studies</li> <li>• To understand the role of sustainable development in geographic research</li> <li>• To understand and analyse human constructions of the environment as sustainability problems</li> <li>• To understand key approaches to environmental management</li> <li>• To apply basic concepts which link local and global issues</li> <li>• To critically question ideas, approaches and models</li> <li>• To know the state of the art in geographic research into sustainable development</li> </ul>
<b>Type of examination</b>	Exam
<b>Type of assessment</b>	This module is not graded.
<b>Requirements for the gain of ECTS credits</b>	ECTS credits will be granted when the module examination has been completed successfully.
<b>Teaching language(s)</b>	German B 2 level / English possibly, depending on the participants

## Special Aspects of Geography and Sustainability Concepts and Definitions

### Related module parts

Course type	Course	Rotation	Contact hours	Self-study	ECTS
Seminar	Conceptual Approaches of Sustainable Development	winter term	30 h (2 semester hours per week)	60 h	(3)

For a successful completion of the module, 3 ECTS points must be acquired. Class attendance averages about 2 contact hours per week. Including self-study, approximately 90 hours have to be invested.

<b>Participation requirements</b>	None
<b>Level</b>	Postgraduate
<b>Previous knowledge</b>	In-depth knowledge in anthropogeography is recommended
<b>Duration</b>	One semester
<b>Content</b>	This module explores general questions of sustainability in an interdisciplinary context. The students get to know sustainability as a multidimensional concept and a multifarious challenge for the global community. They discuss the main political texts and issues of ethics and sustainability. The examples chosen are embedded in different regional contexts. The seminar also introduces policies and programs related to problems in sustainability at different regional scales.
<b>Learning outcomes</b>	<p>After completing the module, students</p> <ul style="list-style-type: none"> <li>• Understand the concept of sustainability in its three dimensions and their interrelation</li> <li>• Can apply the concept of sustainability in different regional contexts</li> <li>• Know possibilities, incentives and difficulties to integrate practices of sustainability in organizations and everyday life</li> <li>• To know the state of the art in general research about sustainability</li> <li>• To participate in the interdisciplinary discussion about sustainability</li> <li>• To develop and critically question policies and programs relating to sustainability</li> </ul>
<b>Type of examination</b>	Presentation and term paper
<b>Type of assessment</b>	This module is graded.
<b>Requirements for the gain of ECTS credits</b>	ECTS credits will be granted when the module examination has been completed successfully.
<b>Teaching Language(s)</b>	German B 2 level / English possibly, depending on the participants

## Special Aspects of Geography and Sustainability Transition and Resilience

### Related module parts

Course type	Course	Rotation	Contact hours	Self-study	ECTS
Seminar	Transition Paths towards Sustainability	winter term	30 h (2 semester hours per week)	60 h	(3)

For a successful completion of the module, 3 ECTS points must be acquired. Class attendance averages about 2 contact hours per week. Including self-study, approximately 90 hours have to be invested.

<b>Participation requirements</b>	None
<b>Level</b>	Postgraduate
<b>Previous knowledge</b>	In-depth knowledge in anthropogeography is recommended
<b>Duration</b>	One semester
<b>Content</b>	This module explores general questions of sustainability in an interdisciplinary context. This module considers pathways towards a more sustainable society in different regional contexts. The students get to know the concept of transition, resilience, path dependency in relation to sustainability and apply them into a specific case study.
<b>Learning outcomes</b>	<p>After completing the module, students</p> <ul style="list-style-type: none"> <li>• Understand the concept of transition and resilience in its relation to sustainability</li> <li>• Can apply the concept of transition and resilience in different regional contexts</li> <li>• Know concepts of social change and their relation to sustainability</li> <li>• Know possibilities, incentives and difficulties to in transitions towards sustainability in their different practical applications.</li> <li>• Are able to participate in the interdisciplinary discussion about transitions towards sustainability</li> <li>• Are able to develop and critically question policies and programs relating to transitions towards sustainability</li> </ul>
<b>Type of examination</b>	Presentation and term paper
<b>Type of assessment</b>	This module is graded.
<b>Requirements for the gain of ECTS credits</b>	ECTS credits will be granted when the module examination has been completed successfully.
<b>Teaching Language(s)</b>	German B 2 level / English possibly, depending on the participants

## Quantitative Methods

### Related module parts

Course type	Course	Rotation	Contact hours	Self-study	ECTS
Lecture	Quantitative Methods and Statistics	winter term	30 h (2 semester hours per week)	60 h	(3)
Exercise	Quantitative Methods and Statistics	winter term	30 h (2 semester hours per week)	60 h	(3)

For a successful completion of the module, 6 ECTS points must be acquired. Class attendance averages about 4 contact hours per week. Including self-study, approximately 180 hours have to be invested.

<b>Participation requirements</b>	None
<b>Level</b>	Postgraduate
<b>Previous knowledge</b>	In-depth knowledge in anthropogeographic methods is recommended
<b>Duration</b>	One semester
<b>Content</b>	This module provides an opportunity to identify common sources and types of quantitative data and critically reflect on the statistical methods applied to these. The module revises basic topics in statistics, including types of data variables, probability theory, sampling theory, and descriptive, inferential and goodness-of-fit statistical analyses. Additional topics include multivariate methods, logistic regression, Bayesian statistics, and methodological concerns. Participants are also made aware of more advanced topics and how to obtain more information about them when used in later work. Included here are cluster analysis, non-parametric methods, Monte Carlo simulation, Q-Methodology, multi-level modelling, structural equation modelling, and network analysis.
<b>Learning outcomes</b>	After completing the module students are able <ul style="list-style-type: none"> <li>• To understand the major sources of quantitative data</li> <li>• To apply suitable statistical analysis methods to these data</li> <li>• To critically reflect on analyses found in science literature</li> <li>• To perform several common types of statistical analyses with the aid of computer software</li> <li>• To discuss more advanced statistical techniques and how to learn more about their use</li> </ul>
<b>Type of examination</b>	Exam
<b>Type of assessment</b>	This module is graded.
<b>Requirements for the gain of ECTS credits</b>	ECTS credits will be granted when the module examination has been completed successfully.
<b>Teaching Language(s)</b>	German B 2 level / English possibly, depending on the participants

## Qualitative Methods

### Related module parts

Course type	Course	Rotation	Contact hours	Self-study	ECTS
Lecture	Empirical Social Science Methods	winter term	30 h (2 semester hours per week)	60 h	(3)
Exercise	Empirical Social Science Methods	winter term	30 h (2 semester hours per week)	60 h	(3)

For a successful completion of the module, 6 ECTS points must be acquired. Class attendance averages about 4 contact hours per week. Including self-study, approximately 180 hours have to be invested.

<b>Participation requirements</b>	None
<b>Level</b>	Postgraduate
<b>Previous knowledge</b>	In-depth knowledge in anthropogeographic methods is recommended
<b>Duration</b>	One semester
<b>Content</b>	<p>The module introduces a range of qualitative methods. Besides discourse analysis of environmental texts such as policy documents and journalistic coverage, landscape representations in photographs, paintings, travel writing, and film, as well as cartographic and statistical representations are addressed. Interview practices, ethnographic fieldwork, and issues of positionality raised in feminist and postcolonial studies as well as mental mapping are a further component.</p> <p>The module then considers a range of assessment methods in terms of their effectiveness, including new environmental indicators, monitoring practices, assessment procedures, as well as 'gap to target' frameworks and state of the environment reporting, and qualitative network analysis.</p>
<b>Learning outcomes</b>	<p>After completing the module, students are able</p> <ul style="list-style-type: none"> <li>• To understand the postcolonial and feminist critiques of positivist knowledge construction</li> <li>• To analyze various representations of environments</li> <li>• To conduct qualitative interviews and participant observation, as well as life-world analysis.</li> <li>• To conduct gap to target framework analysis</li> <li>• To conduct qualitative network analysis</li> <li>• To understand state of the environment reports and environmental monitoring practices</li> <li>• To develop and apply monitoring and assessment schemes</li> <li>• To advise on best practice in sustainability assessment</li> </ul>
<b>Type of examination</b>	Exam
<b>Type of assessment</b>	This module is graded.

**Requirements for the gain of ECTS credits** ECTS credits will be granted when the module examination has been completed successfully.

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**Teaching Language(s)** German B 2 level / English possibly, depending on the participants

## Scientific Tools I

### Related module parts

Course type	Course	Rotation	Contact hours	Self-study	ECTS
Lecture	Scientific Methods	winter term	30 h (2 semester hours per week)	60 h	(3)
Seminar	Sustainability Assessment	summer term	30 h (2 semester hours per week)	60 h	(3)

For a successful completion of the module, 6 ECTS points must be acquired. Class attendance averages about 4 contact hours per week. Including self-study, approximately 180 hours have to be invested.

<b>Participation requirements</b>	None
<b>Level</b>	Postgraduate
<b>Previous knowledge</b>	In-depth knowledge in anthropogeographic methods is recommended
<b>Duration</b>	Two semesters
<b>Content</b>	Scientific Tools is based on two pillars: Reading and Thinking. Students learn about fundamental streams of scientific thinking, including positivist, realist and constructivist perspectives. Based on this theoretical knowledge, applicable tools of "thinking" like mind-mapping, methods of creativity, logics and ways of structuring scientific thoughts are introduced.
<b>Learning outcomes</b>	<p>After completing this module, students are able to</p> <ul style="list-style-type: none"> <li>• Recognize different streams of scientific thinking and develop basic strategies to accommodate them within the same research project</li> <li>• Critically reflect on different scientific perspectives and methods</li> <li>• Identify appropriate methodology and data for a research project</li> <li>• Appreciate the benefits and challenges of research conducted across disciplinary boundaries</li> <li>• Understand and critically reflect on the theoretical, conceptual and methodological dimensions of sustainability assessment</li> <li>• Identify the advantages and drawbacks of key sustainability assessment tools and defend their perspective through the effective use of quality criteria and evidence</li> </ul>
<b>Type of examination</b>	Presentation or exercise portfolio
<b>Type of assessment</b>	This module is not graded.
<b>Requirements for the gain of ECTS credits</b>	ECTS credits will be granted when the module examination has been completed successfully.
<b>Teaching Language(s)</b>	German B 2 level / English possibly, depending on the participants

## Special Aspects of Geography and Sustainability Trade-offs

### Related module parts

Course type	Course	Rotation	Contact hours	Self-study	ECTS
Seminar	Trade-offs in Sustainability	summer term	30 h (2 semester hours per week)	60 h	(3)

For a successful completion of the module, 3 ECTS points must be acquired. Class attendance averages about 2 contact hours per week. Including self-study, approximately 90 hours have to be invested.

<b>Participation requirements</b>	None
<b>Level</b>	Postgraduate
<b>Previous knowledge</b>	In-depth knowledge in anthropogeography is recommended
<b>Duration</b>	One semester
<b>Content</b>	This module explores general questions of sustainability in an interdisciplinary context by considering how trade-offs are made in assessments and in policies for sustainability. The students get to know sustainability as a multidimensional concept and a multifarious challenge for the global community. They discuss the main political texts and issues of ethics and sustainability. This module considers pathways towards a more sustainable society in different regional contexts. It imparts knowledge about the problem of trade-offs within and between the three dimensions of sustainability at different spatial scales.
<b>Learning outcomes</b>	<p>After completing the module, students</p> <ul style="list-style-type: none"> <li>• Have knowledge about ethics and sustainability</li> <li>• Know concepts of social change and their relation to sustainability</li> <li>• Know possibilities, incentives and difficulties to integrate practices of sustainability</li> <li>• Understand the problem of trade-offs in sustainable development and can apply it in case studies</li> <li>• Are able to participate in the interdisciplinary discussion about sustainability</li> <li>• Are able to develop and critically question policies and programs relating to sustainability</li> </ul>
<b>Type of examination</b>	Presentation and term paper
<b>Type of assessment</b>	This module is graded.
<b>Requirements for the gain of ECTS credits</b>	ECTS credits will be granted when the module examination has been completed successfully.
<b>Teaching Language(s)</b>	German B 2 level / English possibly, depending on the participants

## Scientific Tools II

### Related module parts

Course type	Course	Rotation	Contact hours	Self-study	ECTS
Project Seminar	Project Seminar in Sustainability	summer term	60 h (4 semester hours per week)	120 h	(6)
Seminar	Proposal Writing	summer term	30 h (2 semester hours per week)	60 h	(3)

For a successful completion of the module, 9 ECTS points must be acquired. Class attendance averages about 6 contact hours per week. Including self-study, approximately 270 hours have to be invested.

<b>Participation requirements</b>	None
<b>Level</b>	Postgraduate
<b>Previous knowledge</b>	In-depth knowledge in anthropogeography is recommended
<b>Duration</b>	One semester
<b>Content</b>	<p>In this module students are planning and carrying out a research project with the following project phases:</p> <ul style="list-style-type: none"> <li>• Conceptualizing the research project (Identifying the research gap, developing research questions, selecting the methods and setting the time schedule)</li> <li>• Carrying out a research project (Collecting data in the field, analysing and interpreting the data)</li> <li>• Presenting and report writing (Training of clear reasoning, rhetorical skills and knowledge of visualization tools).</li> </ul> <p>Furthermore, the students get an overview of research funding opportunities, academic journals and strategies in conference and CfP (call for papers) tracking.</p>
<b>Learning outcomes</b>	<p>After completing the module, students are able to</p> <ul style="list-style-type: none"> <li>• Demonstrate their ability to work both independently and in teams and to adhere to deadlines</li> <li>• Communicate the significance of a research project and its results to diverse audiences</li> <li>• Track the research funding landscape</li> <li>• Write a proposal for a research project/an abstract for a conference presentation/a paper review</li> </ul>
<b>Type of examination</b>	Presentation and term paper
<b>Type of assessment</b>	This module is graded.
<b>Requirements for the gain of ECTS credits</b>	ECTS credits will be granted when the module examination has been completed successfully.
<b>Teaching Language(s)</b>	German B 2 level / English possibly, depending on the participants

## Sustainability and Resources

### Related module parts

Course type	Course	Rotation	Contact hours	Self-study	ECTS
Lecture	Sustainable Management of Resources	summer term	30 h (2 semester hours per week)	60 h	(3)
Exercise	Sustainable Management of Resources	summer term	30 h (2 semester hours per week)	60 h	(3)

For a successful completion of the module, 6 ECTS points must be acquired. Class attendance averages about 4 contact hours per week. Including self-study, approximately 180 hours have to be invested.

<b>Participation requirements</b>	None
<b>Level</b>	Postgraduate
<b>Previous knowledge</b>	In-depth knowledge in anthropogeography is recommended
<b>Duration</b>	One semester
<b>Content</b>	This module is intended to look into key themes related to Geography and Sustainability. In particular, issues related to resources, such as resource scarcity of water, energy, phosphorous will be studied in relation to land use. A multi- and interdisciplinary perspective is taken to look in these themes. A special focus will be set on the analysis of socio-economic aspects of sustainability in the themes studied.
<b>Learning outcomes</b>	<p>After completing the module, students are able</p> <ul style="list-style-type: none"> <li>• To analyse the human influence in different problem contexts</li> <li>• To understand the interaction between the resources water, energy and land use and their management</li> <li>• To understand the potential and drawbacks of different management options regarding the three sustainability dimensions</li> <li>• To apply basic concepts which link local and global issues</li> <li>• To understand the role of spatially explicit analyses</li> <li>• To critically question ideas and models, to assess those and to develop new ones</li> </ul>
<b>Type of examination</b>	Exam
<b>Type of assessment</b>	This module is not graded.
<b>Requirements for the gain of ECTS credits</b>	ECTS credits will be granted when the module examination has been completed successfully.
<b>Teaching Language(s)</b>	German B 2 level / English possibly, depending on the participants

## Trends Assessment, Scenario and Modeling

### Related module parts

Course type	Course	Rotation	Contact hours	Self-study	ECTS
Lecture	Trends Assessment, Scenario and Modeling	summer term	30 h (2 semester hours per week)	60 h	(3)
Exercise	Trends Assessment, Scenario and Modeling	summer term	30 h (2 semester hours per week)	60 h	(3)

For a successful completion of the module, 6 ECTS points must be acquired. Class attendance averages about 4 contact hours per week. Including self-study, approximately 180 hours have to be invested.

<b>Participation requirements</b>	None
<b>Level</b>	Postgraduate
<b>Previous knowledge</b>	In-depth knowledge in anthropogeography is recommended
<b>Duration</b>	One semester
<b>Content</b>	<p>Computer simulation models are being increasingly used for understanding social-ecological systems. They can give us knowledge about real-world systems that, for practical, ethical or economic reasons, we cannot always obtain from direct intervention and observation of the system itself. This course focuses on individual-based or agent-based simulation, which represents diverse individuals and their interactions in an environment, and reveals through visualization and statistics the emergence of patterns of organization among these individuals. Example applications come from the areas of Human-Environment Relations and human geography among others. We will explain how agent-based simulation differs from system dynamics, statistical modeling and mathematical analysis. Key concepts and issues in the field of social simulation are discussed, including emergence and complexity, bottom-up explanation, pattern-oriented modeling and generative mechanisms, visual interaction, how to write up a modeling project, and the differences from familiar quantitative and qualitative research methods. Students are also made aware of more advanced simulation topics, including experiment design, validation and verification, output analysis, spatial and social networks, and agent cognition. Students learn the basic features of an easy agent-based simulation software package, <i>NetLogo</i>, and about sources of help with programming and how to use them legitimately.</p>

**Learning outcomes**

After completing the module students are able

- To develop easy to communicate causal loop diagrams
- To relate social simulation to quantitative and qualitative research methods
- To understand the differences in technique and applications between major types of computer simulation and other types of modelling
- To design a simulation modeling project, including model purpose, conceptual modeling, data requirements, theoretical assumptions, verification and validation, stakeholder participation, experimentation and writing up
- To implement a small agent-based model relevant to the areas of Human-Environment Relations and Human Geography, using NetLogo

<b>Type of examination</b>	Exercise portfolio
<b>Type of assessment</b>	This module is graded.
<b>Requirements for the gain of ECTS credits</b>	ECTS credits will be granted when the module examination has been completed successfully.
<b>Teaching Language(s)</b>	German B 2 level / English possibly, depending on the participants

## Land Use Systems and Land Use Conflicts

### Related module parts

Course type	Course	Rotation	Contact hours	Self-study	ECTS
Lecture	Land Use	winter term	30 h (2 semester hours per week)	60 h	(3)
Seminar	Land Use	winter term	30 h (2 semester hours per week)	60 h	(3)

For a successful completion of the module, 6 ECTS points must be acquired. Class attendance averages about 4 contact hours per week. Including self-study, approximately 180 hours have to be invested.

<b>Participation requirements</b>	None
<b>Level</b>	Postgraduate
<b>Previous knowledge</b>	In-depth knowledge in geography is recommended
<b>Duration</b>	One semester
<b>Content</b>	The module explores questions of land use systems at different spatial levels and in different regional contexts. Besides the analysis of the market driven forces in land use systems, protected areas and their implementation and management are a further subject of this module. The module also deals with concepts and methods that can be used to analyze and to manage land use conflicts and to foster the development of more sustainable land use systems at different spatial levels.
<b>Learning outcomes</b>	<p>After completing the module, students</p> <ul style="list-style-type: none"> <li>• Have knowledge of different forms of land use systems and their driving forces</li> <li>• Know the most important social, economical and political factors influencing land use systems in different regions of the world</li> <li>• Have knowledge of strategies and methods for transitions towards more sustainable land use systems</li> <li>• Know methods to analyze and to deal with land use conflicts</li> <li>• Can critically question policies in their impact on land use systems</li> </ul>
<b>Type of examination</b>	Presentation or poster
<b>Type of assessment</b>	This module is graded.
<b>Requirements for the gain of ECTS credits</b>	ECTS credits will be granted when the module examination has been completed successfully.
<b>Teaching Language(s)</b>	German B 2 level / English possibly, depending on the participants

## Applied Quantitative Methods

### Related module parts

Course type	Course	Rotation	Contact hours	Self-study	ECTS
Seminar	Applied Quantitative Methods	winter term	30 h (2 semester hours per week)	60 h	(3)

For a successful completion of the module, 3 ECTS points must be acquired. Class attendance averages about 2 contact hours per week. Including self-study, approximately 90 hours have to be invested.

<b>Participation requirements</b>	None
<b>Level</b>	Postgraduate
<b>Previous knowledge</b>	In-depth knowledge in anthropogeographic methods is recommended
<b>Duration</b>	One semester
<b>Content</b>	In this module, the students specialize themselves in the statistics they were taught in the semester before. Not only application of descriptive and analytical statistical methods to answer particular research questions, but also the use of Geographical Information Systems (GIS) will be taught in the modul. They should be able to master these methods in order to apply them in their internship and/or in their master thesis.
<b>Learning outcomes</b>	<p>After completing the module, students are able</p> <ul style="list-style-type: none"> <li>• To apply a method relevant for sustainability analysis to a specific problem</li> <li>• Be able to design a study in which the method can be applied in a meaningful way</li> <li>• To assess a series of options from a sustainability perspective</li> <li>• To research and elaborate scientific literature</li> <li>• To present findings both in oral and written form</li> <li>• To critically question ideas and models, to assess those and to develop new ones</li> <li>• To analyse databases and interpret the statistical findings</li> </ul>
<b>Type of examination</b>	Exercise
<b>Type of assessment</b>	This module is graded.
<b>Requirements for the gain of ECTS credits</b>	ECTS credits will be granted when the module examination has been completed successfully.
<b>Teaching Language(s)</b>	German B 2 level / English possibly, depending on the participants

## Applied Qualitative Methods

### Related module parts

Course type	Course	Rotation	Contact hours	Self-study	ECTS
Seminar	Applied Qualitative Methods	winter term	30 h (2 semester hours per week)	60 h	(3)

For a successful completion of the module, 3 ECTS points must be acquired. Class attendance averages about 2 contact hours per week. Including self-study, approximately 90 hours have to be invested.

<b>Participation requirements</b>	None
<b>Level</b>	Postgraduate
<b>Previous knowledge</b>	In-depth knowledge in anthropogeographic methods is recommended
<b>Duration</b>	One semester
<b>Content</b>	In this module the students specialize themselves in qualitative methods they were taught in the semester before and apply these to a specific issue. They should be able to master these methods in order to apply them in their internship and/or in their master thesis.
<b>Learning outcomes</b>	<p>After completing the module, students are able</p> <ul style="list-style-type: none"> <li>• To apply methods relevant for sustainability analysis to a specific problem</li> <li>• Be able to design a study in which the methods can be applied in a meaningful way</li> <li>• To assess a series of options from a sustainability perspective</li> <li>• To be able to interact with natural scientists and be able to contribute to an integrative model</li> <li>• To present findings both in oral and written form</li> <li>• To work in an interdisciplinary manner</li> <li>• To critically question ideas and models, to assess those and to develop new ones</li> </ul>
<b>Type of examination</b>	Term paper or exercise
<b>Type of assessment</b>	This module is graded.
<b>Requirements for the gain of ECTS credits</b>	ECTS credits will be granted when the module examination has been completed successfully.
<b>Teaching Language(s)</b>	German B 2 level / English possibly, depending on the participants

## Hydrology and integrated water management

### Related module parts

Course type	Course	Rotation	Contact hours	Self-study	ECTS
Lecture	Theoretical and applied hydrology	winter term	30 h (2 semester hours per week)	60 h	(3)
Seminar	Hydrology and water management	winter term	30 h (2 semester hours per week)	60 h	(3)

For a successful completion of the module, 6 ECTS points must be acquired. Class attendance averages about 4 contact hours per week. Including self-study, approximately 180 hours have to be invested.

<b>Participation requirements</b>	None
<b>Level</b>	Postgraduate
<b>Previous knowledge</b>	In-depth knowledge in physical geography is recommended
<b>Duration</b>	One semester
<b>Content</b>	<ul style="list-style-type: none"> <li>• Systems theory, systems analysis, systems synthesis</li> <li>• Definitions of systems</li> <li>• Linear and non-linear systems</li> <li>• Basics of model building (conservation laws, energy, mass, mathematics, differential equations)</li> <li>• Modeling in hydrology (analog, conceptual, physical)</li> <li>• Physics of natural transport processes (diffusion, turbulence)</li> <li>• Steady state flow, Darcy's law, Manning's equation</li> <li>• Elements of water management (rivers, reservoirs, turbines)</li> <li>• Water quantity and water quality management, water management planning</li> <li>• Water Framework Directive</li> <li>• Integrated and sustainable water resource management (IWRM, SWRM)</li> </ul>
<b>Learning outcomes</b>	At the end of the module, students should have in-depth knowledge of the theoretical principles and practical implementation of hydrological scientific findings. This includes system theory, the physical principles of hydrological processes, the fundamentals and the assessment of the reliability and informative value of hydrological models, the central issues of water management and their model-based implementation in practice.
<b>Type of examination</b>	Exam and presentation
<b>Type of assessment</b>	This module is graded.
<b>Requirements for the gain of ECTS credits</b>	ECTS credits will be granted when the module examination has been completed successfully.
<b>Teaching Language(s)</b>	German B 2 level

## Environmental modelling

### Related module parts

Course type	Course	Rotation	Contact hours	Self-study	ECTS
Lecture	Geographic environmental modelling	winter term	30 h (2 semester hours per week)	60 h	(3)
Exercise	Spatial environmental modelling	winter term	30 h (2 semester hours per week)	60 h	(3)
Seminar	Selected questions of environmental modeling	winter term	30 h (2 semester hours per week)	60 h	(3)

For a successful completion of the module, 9 ECTS points must be acquired. Class attendance averages about 6 contact hours per week. Including self-study, approximately 270 hours have to be invested.

<b>Participation requirements</b>	None
<b>Level</b>	Postgraduate
<b>Previous knowledge</b>	In-depth knowledge in physical geography is recommended
<b>Duration</b>	One semester
<b>Content</b>	<ul style="list-style-type: none"> <li>• Measurement data acquisition and preparation of point and area data sets for use in GIS</li> <li>• Database models for GIS: Hierarchical, relational, object-oriented, and object-relational databases.</li> <li>• Conceptual design of GIS applications, use of map functions, map calculator, computing with raster and vector data</li> <li>• Introductory GIS programming with Visual Basic</li> <li>• Model design with graphical metamodeling languages, interface definition for integrated or coupled modeling</li> <li>• Introduction to algorithm development; introduction to the basic elements of procedural (FORTRAN) and object-oriented (JAVA) programming for the representation of the essential process equations</li> <li>• Possibilities of parameterization of environmental models, evaluation of complexity and model quality, error considerations, estimation of uncertainties</li> <li>• Methods of model calibration (e.g. automated parameter estimation, shuffled complex evolution (-UA), GLUE)</li> <li>• Methods of model validation, terrestrial measurements, also mainly use of satellite remote sensing for model parameterization, data assimilation, area-differentiated validation of environmental process models</li> </ul>
<b>Learning outcomes</b>	Graduates of this module will have in-depth theoretical knowledge and practical skills in the use of area-distributed environmental models with a focus on hydrological modeling. They will be able to conceptualize model approaches, create area-distributed parameter sets and manage and use them with modern IT methods, calibrate and validate models, conceptualize

scenarios and translate them into use cases, and critically embed and evaluate model results in a broader research context.

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<b>Type of examination</b>	Exam and presentation
<b>Type of assessment</b>	This module is graded.
<b>Requirements for the gain of ECTS credits</b>	ECTS credits will be granted when the module examination has been completed successfully.
<b>Teaching Language(s)</b>	German B 2 level

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