

<b>MA UP P 4</b>		<b>LP (according to ECTS):</b>
<b>Geoinformation Systems</b> <b>(Geoinformationssysteme)</b>		<b>6</b>
<b>Course Instructor:</b>	<b>Secr.:</b>	<b>Email:</b>
<b>Prof. Dr. Birgit Kleinschmit</b>	<b>EB 5</b>	secretariat@geoinformation.tu-berlin.de

### Module Description

#### 1. Qualification Objectives

The goal of this module is to enable students:

- to independently solve complex issues of environmental planning and analysis using geographic information systems (GIS),
- to utilize GIS as an instrument of landscape assessment, forecasting and visualization,
- to appreciate and critically assess the potentials and limitations of GIS based techniques and methodological approaches,
- to apply methods of different planning instruments in practical situations,
- to identify and formulate new research approaches to environmental planning and analysis with the help of GIS.

This module offers predominantly:

Professional expertise **40%** Methodological expertise **40%** Systems thinking **10%** Social competence **10%**.

#### 2. Module Content

The module component **GIS-Applications for Environmental Planning** deepens fundamental GIS knowledge on data analysis and presentation of spatial data. One focus of the course is the mobile GPS-based primary data collection and updating, which will be introduced, among other things in practical field exercises. Interactively created function models will be used for an operable handling of complex spatial issues. Finally, 3D visualization, such as the visual axis analysis, will be presented as a new form of data presentation and analysis.

The module component **GIS-Supported Landscape Analysis and Assessment** focuses on modelling spatial geodata. Specific tasks on the subject of environmental analysis and assessment will be assigned. These could include the evaluation of favourable and unfavourable sites, terrain modelling and the analysis of landscape structures. Various raster- and vector-based methods will be used.

#### 3. Module Components

Course Title	LV-Type	Credit Hours SWS	Credit Points LP	Mandatory(P)/ Elective(W) Mandatory-Elective(WP)	WiSe/ SoSe
GIS-Applications for Environmental Planning	IV	2	3	P	WiSe
GIS-Supported Landscape Analysis and Assessment	IV	2	3	P	WiSe

#### 4. Teaching Methods and Modes of Instruction

Both components are carried out as an integrated course. After theoretical input in the form of lecture blocks and short student presentations, students will individually work on complex research and practice problems in the computer lab. Additional tasks will be assigned outside of the classroom to deepen knowledge gained in the course.  
The course will take place in English.

#### 5. Prerequisites for Module Participation

a) mandatory: Diploma (Dipl.) or Bachelor's Degree from appropriate fields of study, fundamental knowledge of GIS; for students with no former experience or knowledge of GIS, registration in a parallel fundamentals of GIS course is strongly recommended as a mandatory-elective.  
b) desired: fundamental knowledge of statistics

#### 6. Applicability

This module is mandatory for the Master's Degree in Environmental Planning (Umweltplanung). The module is also suitable for students of Master's Degree programs in a) Urban Ecosystem Sciences, b) Environmental Policy and Planning, and c) Regional and Urban Planning.

#### 7. Workload and Overview of Credits

The workload for 6 LP Credit Points is equivalent to a total of 180 hours (ca. 1 LP for 30 h working time), which includes:

Contact time:  $\Sigma$  60 h  
IV: 2 x 2 SWS x 15 Weeks = 60 h

Self guided study (including preparation time for final exam):  $\Sigma$  120 h  
IV: 2 x 60 h = 120 h

#### 8. Examination and Grading Format

Testing Equivalent for Credit Points

#### 9. Module Duration

The module can be completed in one semester.

#### 10. Estimated Number of Module Participants

30

#### 11. Registration Formalities

a) Online Registration: [http://www.tu-berlin.de/fb7/ile/fg\\_geoinf/](http://www.tu-berlin.de/fb7/ile/fg_geoinf/).  
b) Registration protocol for final examination: see examination regulations for Master's Degree.

#### 12. Lecture Notes and Required Literature

Lecture notes will be made available online: [http://www.tu-berlin.de/fb7/ile/fg\\_geoinf/](http://www.tu-berlin.de/fb7/ile/fg_geoinf/).  
The password will be announced in class.

##### Literature:

LANGE, N. /DE (2002): Geoinformatik in Theorie und Praxis. Springer, Berlin.  
BILL, R. (1999): Grundlagen der Geo-Informationssysteme. Bd. 1: Hardware, Software und Daten. Bd. 2: Analysen, Anwendungen und neue Entwicklungen. Wichmann, Heidelberg.  
CHILES, J.-P. & DELINER, P. (1999): Geostatistics: Modeling Spatial Uncertainty. John Wiley & Sons. Inc., New York.  
DABBERT, S., HERRMANN, S. KAULE, G. & SOMMER, M. (Hrsg) (1999): Landschaftsmodellierung für die Umweltplanung - Methodik, Anwendung und Übertragbarkeit am Beispiel von Agrarlandschaften. Springer, Berlin.  
GOODCHILD, M.F., STEYAERT, L.T. & PARKS, B.O. (1996): GIS and Environmental Modeling: Progress and Research Issues. John Wiley & Sons. Inc., London.  
BUHMANN, E., PAAR, P., BISHOP, I.D. & LANGE, E. (eds.): 2005: Trends in Real-time Visualization and Participation. Proc. at Anhalt University of Applied Sciences, Wichmann, Heidelberg.  
Additional sources will be made available throughout the course.

<b>13. Additional Information</b>