

MA UP WP 1.4		LP (according to ECTS):
Remote Sensing of Environment (Fernerkundung)		6
Course Instructor:	Secr.:	Email:
Prof. Dr. Birgit Kleinschmit	EB 5	sekretariat@geoinformation.tu-berlin.de

Module Description
1. Qualification Objectives
<p>The goal of this module is to enable students to:</p> <ul style="list-style-type: none"> • apply a selection of methods of analogue and especially digital remote sensing in environmental planning • critically estimate potentials and limits of different sensors and analysis methods • identify and formulate new research approaches for environmental planning and analysis with remote sensing <p>The module offers predominantly Professional expertise 40% Methodological expertise 40% Systems thinking 10% Social competence 10%.</p>

2. Module Content
<p>Remote sensing data offers a wide range of information. Using this satellite or airborne-based images for environmental planning tasks requires expertise in processing and interpreting the data. Therefore, basic skills about geometrical and physical properties of remote sensing data as well as about methods and algorithms of deriving thematic information and maps will be communicated within this module. The techniques of analogue and digital image interpretation and classification are trained by practical examples from environmental planning.</p> <p>The first module component is focusing on the theoretical background and the image interpretation. It contains the following sub-topics:</p> <ul style="list-style-type: none"> • Physical Basics • Recording Systems • Georeferencing • Image Interpretation • Stereoscopic image interpretation <p>The second module component is focusing on the classification of satellite data. It contains the following sub-topics:</p> <ul style="list-style-type: none"> • Data import and data pre-processing • Image enhancement • Tools of digital image processing • Supervised classification • Knowledge-based classification • Map generation • Object-based image analysis

3. Module Components					
Course Title	LV-Type	Credit Hours (SWS)	Credit Points (LP)	Mandatory (P) / Elective (W) Mandatory-Elective(WP)	WiSe/ SoSe
Remote Sensing of Environment I	IV	2	3	WP	WiSe
Remote Sensing of Environment II	IV	2	3	WP	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, 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 or Bachelor's degree from appropriate fields of study
- b) desired: basic knowledge of statistics

6. Applicability

The module is a mandatory-elective subject within the Mandatory-Elective part 1 (core subjects) of the Master's Degree in Environmental Planning. This module is also suitable for students of the Master's degree programs a) Environmental Policy and Planning, b) Urban Ecosystem Sciences, c) Regional Planning and d) Geodesy and Geoinformation Science.

7. Workload and Overview of Credits

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

Contact time: \sum 60 h
IV: 2 * 2 SWS * 15 Wochen = 60 h

Self guided study (including preparation time for final exam): \sum 120 h
IV: 2 * 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

20

11. Registration Formalities

- a) Online Registration: <http://www.geoinformation.tu-berlin.de/>
- 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 via: <https://www.isis.tu-berlin.de/>.

Literature:

- LILLESAND, T.N., KIEFER, R.W. & CHIPMAN, J.W. (2008): Remote Sensing & Image Interpretation. 6th edition, Wiley, New York.
 - CAMBELL, J.B. & WYNNE, R.H. (2011): Introduction to Remote Sensing. 5th edition, Tylor & Francis, London, New York.
 - MATHER, P. M. & KOCH, M. (2010): Computer Processing of Remotely-Sensed Images. 4th edition, Chichester, Wiley.
 - RICHARDS, J. A. (2012): Remote Sensing Digital Image Analysis: An Introduction. 5th edition, Berlin, Springer.
 - SCHOWENGERDT, R. A., (2006): Remote Sensing: Models and Methods for Image Processing. 3rd edition, Academic Press, San Diego.
- Additional sources will be made available throughout the course.

13. Additional Information