Department: 08 Geoinformatics

Course title: Remote Sensing and Photogrammetry

Hours per week (SWS): 6 (3 Seminar + 3 Lab Work)

Number of ECTS credits: 6

Course objective: This course emphasizes the understanding of the remote sensing foundations and the use of remote sensor data and image interpretation and processing techniques for environmental and urban applications. Specifically, the course will cover concepts and foundations of remote sensing, aerial photography and photogrammetry, visual image interpretation, characteristics of various sensing systems (i.e. multispectral, thermal, hyperspectral, microwave and lidar), and digital image processing techniques. The primary objective of this course is to provide students with the conceptual foundations and the technical skills to apply remote sensing for problem solving in environmental and cultural domains. Through laboratory work, students will have opportunities to practice the concepts and techniques learnt in the seminar.

Prerequisites: Basic Statistics (Variance, Standard Deviation, Covariance, Histogram)
Math (Matrix Calculation, Linear Systems of Equations, Polynomial Transformation)
Basic Geodata Acquisition Methods
Basic Digital Image Processing

Additional readings will be posted on Moodle.

Teaching methods: Lectures; E-Learning-Materials; Lab Assignments; Projects, Team Work.

Assessment methods: Written Exam

Language of instruction: English

Name of lecturer: Prof. Dr. Sven Fuhrmann

Email: sven.fuhrmann@hm.edu

Link: https://www.geo.hm.edu/kontakt/prof/fuhrmann/index.de.html

Course content:
• Understanding the nature of electromagnetic radiation and the uses of this radiation in remote sensing systems
• Learning about the elements of image interpretation and photogrammetry
• Stereo-Photogrammetry
• Understanding the basic characteristics of different remote sensing system, particularly aerial photography (black and white, color, infrared, and color infrared), multispectral scanners, thermal, and other systems including Radar, and LiDAR systems
• Overview of aircraft and satellite-based and other sensor systems used in remote sensing
• Processing of sensor data: calibration, radiometric and geometric corrections, elimination of sensor errors
• Acquiring skills about image processing that include image enhancements and classification techniques

Remarks: Mandatory subject in the third semester.