DOCTORAL SCHOOL OF INFORMATICS
COMPLEX EXAM SUBJECT

Remote sensing (main subject)

The exam covers the principles, methods, and techniques of remote sensing. Students are expected to demonstrate knowledge of imaging and non-imaging optical data acquisition workflows, with particular emphasis on multi- and hyperspectral measurements.The use of different active and passive platforms, including handheld, UAV, airborne, and underwater systems, will be addressed along with their respective application areas. The current state of science and technology will be presented from both domestic and international perspectives, including emerging trends and future developments. The PhD students are also required to understand recent scientific results, their cross-industrial applications, and perform comparative analyses where appropriate. Upon successful completion of the course, students should be able to select and apply appropriate remote sensing techniques and methods to support their own scientific research.

- Fundamental concepts, systems, and methodological foundations of remote sensing
- Overview of imaging and non-imaging data acquisition techniques
- Theoretical and practical foundations of multispectral and hyperspectral measurement methods
- Application possibilities of remote sensing platforms
- Active and passive remote sensing procedures and instruments
- The multidisciplinary role of remote sensing and other scientific fields
- Current state, directions, and development trends in the field of remote sensing
- Presentation of scientific results and cross-industrial applications
- Critical evaluation of remote sensing data and methods
- Selection and application of remote sensing technologies in research

Literature:

- Lillesand, T., Kiefer, R. W., & Chipman, J. (2015) Remote sensing and image interpretation. John Wiley & Sons. ISBN 978-1-118-34328-9
- Thenkabail, Prasad S., and John G. Lyon, eds. (2016) Hyperspectral remote sensing of vegetation. CRC press. ISBN 9781138066250
- Richards, John A., and John A. Richards. (2022) Remote sensing digital image analysis. Vol. 5. New York: Springer, ISBN-10. 3030823261