| **1. Course title:** Introduction to Remote Sensing | | | | |
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| **2. Code:** | | **3. Type (lecture, seminar, laboratory):** laboratory | | |
| **4. Total of contact hours:** 26 hours | | **5. Number of credits (ECTS):** 3 | | |
| **6. Pre-requisites (max. 3):** none | | | | |
| **7. Announced:** ☐ autumn semester, ☒ spring semester, ☐ both semesters | | | | |
| **8. Limit for participants:** 10 | | | | |
| **10. Instructor-in-charge (faculty, institute and department):**  Levente RONCZYK, PhD (FS, Institute of Geography, Department of Cartography and Geoinformatics) | | | | |
| **11. Instructor(s) and percentage:** | | Levente RONCZYK | | 100% |
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| **12. Language:** English | | | | |
| **13. Course objectives and learning outcomes:**  *Scope of the course is to present an overlook about the wide spectrum of the concept of remote sensing with a sort of practical exercises to deepen the knowledge. The students will get knowledge about the basic concepts of remote sensing, are able to use the specific terminology required, find and download optical and radar-based satellite images individually. They are also able to pre-process images and visualise them in certain software environment, to create composite maps and to interpret images visually.*  *Basic concepts in remote sensing, it objectives and historical evolution. Physical features of electromagnetic radiation, interactions in the Earth’s atmosphere and on the surface. Passive and active methods in remote sensing. Managing archives, possibilities for downloading data. Creating composite images. Visual interpretations: specific questions of mapping water surfaces, settlements, vegetation, soils. utilizing satellite radar data in practice. Introduction to Google Earth Engine: basics, code editor, search, re-classification, filters other functions.* | | | | |
| **14. Course outline / Milestones**   1. History and Scope of RS 2. Digital Imagery 3. Image Interpretation 4. Land Observation Satellite, Copernicus 5. Active Microwave, Sentinel-1 6. Preprocessing - Optical data 7. Image Classification 8. Object based Image Analysis 9. Application 10. SAR data application 11. Introduction to Google Earth Engine (GEE) 12. GEE filters and function 13. GEE classification | | | | |
| **15. Mid-semester works**  One midterm and one final exam, weighed as 40 and 60%, respectively. The final exam covers all topics of the semester. | | | | |
| **16. Summative assessment, formative assessment**  <50% 1 50 to 65% 2 65 to 75% 3 75 to 85% 4 85%< 5 | | | | |
| **17. Reading assignments:**   1. James B. Campbell, Randolph H. Wynne 2011: Introduction to Remote Sensing. New York ; London: Guilford Press, 667 p. | | | | |
| **18. Recommended texts:**  Richards J.A. Remote sensing digital image analysis (5ed., Springer, 2013)(ISBN 9783642300615) | | | | |
| **Date** | 13 November, 2017 | **Prepared** |  | |
| Levente RONCZYK PhD  instructor-in-charge | |
| **Endorsed** | | |  | |
| András TRÓCSÁNYI PhD leader of the program | |