

Study Programme: Geodesy
Course Unit Title: Satellite Geodesy
Course Unit Code:
Name of Lecturer(s): Associate Professor Vukan Ogrizović
Type and Level of Studies: Bachelor Academic Degree
Course Status (compulsory/elective): Compulsory
Semester (winter/summer): Winter
Language of instruction: English
Mode of course unit delivery (face-to-face/distance learning): Face-to-face
Number of ECTS Allocated: 5
Prerequisites: None
Course Aims: Introducing satellite technologies and methods applied in Geodesy
Learning Outcomes: After complete course, a student will be skilled in theory of satellite techniques applied in Geodesy and will be able to collect and process measurements related to radio-astronomy, satellite altimetry, and global navigation satellite systems.
Syllabus: <i>Theory</i> <ol style="list-style-type: none"> 1. Principles, methods, and utilization possibilities of satellite measurements in Geodesy and Geophysics. 2. Fundamental principles of Satellite Geodesy. 3. Satellite moving in Earth gravity field. Undisturbed satellite moving. 4. Gravitational impacts. Acceleration caused by Sun and Moon. Solar wind pressure. 5. Very Long Baseline Interferometry. History and development. Application fields in Geodesy. Basic concept. 6. Collecting and data processing of Very Long Baseline Interferometry data. Data analysis and accuracy. 7. Test I 8. Satellite Laser Ranging. 9. Lunar Laser Ranging. 10. Satellite altimetry. 11. Global Navigation Satellite Systems - GNSS. 12. GNSS observables. 13. GNSS positioning. 14. Ionospheric and tropospheric corrections. 15. Test II <i>Practice</i> Calculation of orbital parameters. Measurement and analysis of Solar radio-beaming. Processing of satellite altimetry measurements. Conversion of binary GNSS formats into RINEX. GNSS measurements processing. Calculation of coordinate differences. Accuracy estimation.
Required Reading: <ol style="list-style-type: none"> 1. Sanz Subirana, J., Juan Zomoza, J.M, Hernandez-Pajares, M.: GNSS data processing: Volume I: Fundamentals

and algorithms, European Space Agency, 2013.

2. Sanz Subirana, J., Juan Zomoza, J.M, Hernandez-Pajares, M.: GNSS data processing: Volume II: Laboratory exercises, European Space Agency, 2013.
3. Seeber, G.: Satellite Geodesy, 2nd completely revised and extended edition, Walter de Gruyter - Berlin - New York, 2003.

Weekly Contact Hours: 60

Lectures: 30

Practical work: 30

Teaching Methods:

Lectures and students group work

Knowledge Assessment (maximum of 100 points): 100

Pre-exam obligations	points	Final exam	points
Active class participation		written exam	
Test I and Test II	50	oral exam	50
Preliminary exam(s)		
Seminar(s)			

The methods of knowledge assessment may differ; the table presents only some of the options: written exam, oral exam, project presentation, seminars, etc.