COURSE DESCRIPTION CARD

Faculty of Civil Engineering and Environmental Sciences									
Field of study								**Degree level and programme type**	
Specialization/ diploma path								**Study profile**	**Academic profile**
Course name	**Engineering geodesy**							**Course code**	**IS-FCEE-00139-1S**
								Course type	**Erasmus**
Forms and number of hours of tuition	**L**	**C**	**LC**	**P**	**SW**	**FW**	**S**	**Semester**	**summer**
	15				**30**			**No. of ECTS credits**	**3**
Entry requirements	**Basics of mathematics and geography at high school level**								
Course objectives	The purpose of education is to familiarization with basic knowledge in the field of acquisition and development of land information, the development of the construction project surveying, staking situational and height, the measurement of inventory related to the technical infrastructure of land, technology measurement of displacements and deformations of engineering structures.								
Course content	Areas of interest geodesy as a science. Systems of reference geodetic measurements. Coordinate systems used in geodesy. Elements of coordinates. The role and the division of geodetic networks. Methods and equipment for measuring angular and linear. Measurement methods situational. Methods and equipment for measuring altitude. Maps situational-height and their use for environmental engineering. Calculation methods associated with situational-elevation maps. Maps for design purposes. Methods staking situational and height. Geodetic measurements related to the implementation and operation of utilities. Geodetic records of public utilities - design principles and main tasks. Measurements of displacements and deformations and constructions. General principles of GPS measurements.								
Teaching methods	Lecture, specialization workshop								
Assessment method	lecture - test; specialization workshop – tests, report of calculation works								

Symbol of learning outcome	**Learning outcomes**	**Reference to the learning outcomes for the field of study**
LO1	Student characterizes standard technical projections	K_W02, K_K01
LO2	Student maps models of sipmle architectural objects	K_W02
LO3	Student reads the graphic parts of a technical documentation	K_U04
LO4	Student reproduces spatially mapped construction works	K_U04
LO5	Student uses geometry design techniques	K_U04, K_K01, K_K07
LO6	Student works in a team executing of the engineering grafics tasks	K_K03

Symbol of learning outcome	Methods of assessing the learning outcomes	Type of tuition during which the outcome is assessed
LO1	written test lecture, test in specialization workshop	L, SW
LO2	written test lecture, test in specialization workshop	L, SW
LO3	written test lecture, test in specialization workshop	L, SW
LO4	observation of work activities and discussion with the defense of the sampling work	SW
LO5	observation of work activities and discussion with the defense of the sampling work	SW
LO6	observation of work activities and discussion with the defense of the sampling work	SW

Student workload (in hours)		**No. of hours**
Calculation	lecture attendance	15x1h = 15h
	participation in classes, laboratory classes, etc.	15x2h = 30h
	preparation for classes, laboratoratory classes, projects, seminars, etc.	10
	working on projects, reports, etc.	20
	participation in student-teacher sessions related to the classes/seminar/project	5
	implementation of project tasks	5
	preparation for and participation in exams/tests	10
	TOTAL:	**95**

Quantitative indicators	**HOURS**	**No. of ECTS credits**
Student workload – activities that require direct teacher participation	50	1,5
Student workload – practical activities	70	1,5

Basic references	1. Łyszkowicz A., Łyszkowicz S.: "Surveying", Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa 2010
Supplementary references	1. Schofield W., Breach M.: Engineering Surveying, Elsevier, Sixth Edition civil-team.weebly.com/.../engineering_surveying_w._schofieldmark_breach_6th_ed.pdf 2. Guide to Engineering & Land Surveying, California Board for Professional Engineers and land Surveyors,Sacramento CA, http://www.bpelsg.ca.gov/pubs/local_officials_guide.pdf 3. Basic concepts of surveying, https://www.discountpdh.com/course/basic_concepts_of_surveying.pdf

Organisational unit conducting the course	**Department of Energy-Efficient Construction and Geodesy**	**Date of issuing the programme**
Author of the programme	Waldemar Łupiński, PhD	**20.02.2020**

L – lecture, C – classes, LC – laboratory classes, P – project, SW – specialization workshop, FW - field work, S – seminar