Faculty of Civil and Environmental Engineering					
Study programme:	**Spatial management**	Degree level: full-time:	**Bachelor's degree**		
Specialization		Diploma path:	**-**		
Module name:	**Geodesy and cartography**				
Module type:	**obligatory**	Semester: **2**	ECTS **6**	Module ID:	**GS2117**
No. of hrs in semester:	L - 30 C - 30 LC- P- SW- 30 S-				
Prerequisites:	*Complete with prerequisites or "-"*	"-"			
Teaching methods:	*lecture, specialization workshop*	*Assessment:*	*Evaluation must be relevant to the intended learning outcomes*		
		lecture - test(-s); class - written test, evaluation/discussion of reports; specialization workshop - written test, evaluation/discussion of reports			
Aims and objectives:	*Showing the students the role and tasks of surveying in the economy; acquaint students with the theoretical basis, methods and surveying technologies; acquaint students with the basic geodetic products (including maps) and the scope of their use in solving spatial tasks.*				
Module content:	*Role and tasks of surveying. Maps as a source of spatial data. Maps and surveying the local development planning. Earth models, systems and frames of reference. Cartographic mapping methods. The measurements on the maps (coordinates, length, area, volume). Geodesic warp and coordinates account. Methods for situational measurement (square method, the method of pole, and others). Measurements of height - height measurement methods (geometric leveling, trigonometric leveling). Measurements of height - field leveling method (the method of distributed points, tachimetria, leveling volleyball, cross-leveling). GPS (Global Positioning System) - characterization, measurement technologies used in geodesy, surveying active network (ASG-EUPOS). Elements of photogrammetry. Remote sensing elements.*				

Learning outcomes	*Write min. 4, max. 8 learning outcomes in the following order: knowledge - skills - competences. Each learning outcome must be verifiable.*	*Relevance to the programme learning outcomes*
LO1	identifies systems and spatial reference systems used in geodesy	K_W12
LO2	recognizes the basic geospatial data capture methods	K_W12
LO3	versed in the trends and development in the field of geodesy and cartography and conditions of geodetic product news	K_W20
LO4	is, integrates and interprets knowledge of surveying the literature, databases, and other sources	K_U01, K_U16

LO5	applies this knowledge to solve specific engineering tasks and prepares documentation of tasks measuring, computing, design, and presents it in the form of written presentation	K_U02, K_U16, K_U21, K_U22	
LO6	applies the principles of health and safety	K_U19	
LO7	understands the need for continuous continuous improvement of their competence and qualificatione	K_K01	
LO8	working in a group, taking in the different roles	K_K03	
student workload	lecture attendance	15 x 2h	30
	participation in classes	15 x 2h	30
	preparation for specialization workshop	15 x 2h	30
	preparation for classes		10
	preparation for specjalization workshop		10
	preparation of reports on classes		20
	preparation of reports on specialization workshop		5
	preperation for tests/exams		20
	participation in student-teacher sessions		5
		TOTAL:	160
quantitative indicators	Student workload - activities that require direct teacher participation	95	ECTS 3,6
	Student workload - practical skills activities	110	4,1
basic references:	*1.Łyszkowicz A.: Geodezja czyli sztuka mierzenia Ziemi. Wyd.UWM, Olsztyn 2006;* *2.Elementy geodezji w pomiarach inżynierskich. Wyd.PB, Białystok 1995. (praca zbiorowa) ;* *3.Kosiński W. Geodezja. Wyd.Naukowe PWN, 2010.* *4.Przewłocki S.: Geodezja dla kierunków niegeodezyjnych. Wyd. Naukowe PWN, 2002;*		
supplementary references:	*1.Jagielski A.: Geodezja I. Wyd. GEODPIS, Kraków 2005;* *2.Jagielski A.: Geodezja II. Wyd. GEODPIS, Kraków 2007* *3.Brinker R.C., Minnick R.: The Surveying Handbook, Kluwer 2003.*		
learning outcomes	*methods of assessing learning outcomes*	type of class (if more than one) where the outcomes are assessed	
LO1	written test(-s) of lecture, tests on on class and specialization workshop	L, C, SW	
LO2	written test(-s) of lecture, tests on on class and specialization workshop	L, C, SW	
LO3	written test(-s) of lecture, tests on on class and specialization workshop	L, C, SW	
LO4	evaluating of work in classes; evaluating of reports and event. discussion	C, SW	
LO5	evaluating of work in classes; evaluating of reports and event. discussion	C, SW	
LO6	observation of work in classroom	C, SW	
LO7	observation of work in classroom	C, SW	
LO8	observation of work in classroom	C, SW	

Department:	**Division of Spatial Information**	Group instructors:	dr hab. inż. Andrzej Kobryń dr inż.. Waldemar Łupiński
Date:	30.01.2012	Coordinator:	dr hab. inż. Andrzej Kobryń

L - lecture C - class LC - laboratory class P-project
SW - specialization workshop S - seminar