Faculty of Civil and Environmental Engineering							
Study programme:	**Spatial management SPACE AND PROPERTY MANAGEMENT**		Degree level: time/part-time programme:		full- **Master's degree**		
Specialization	**SaPM**		Diploma path:		**-**		
Module name:	**Geoinformation in spatial management**						
Module type:	**obligatory**		Semester:	**2**	ECTS **3**	Module ID:	**GPS219**
No. of hrs in semester:	L - 15 C -		LC- P-	SW- 30		S-	
Prerequisites:	*Complete with prerequisites or "-"*		*"-"*				
Teaching methods:	*lecture, class, laboratory class, project, seminar, specialization workshop*		Assessment:	*Evaluation must be relevant to the intended learning outcomes*			
			lecture - written assessment; spacialization workshop - completion, presentation and discussion of the project				
Aims and objectives:	*To familiarize students with the possibilities and methods of use of geospatial data in the process of planning and space management; acquaint students with the methods wielokryteralnego decision support in the field of space management.*						
Module content:	*Characteristics, procedures and tools for solving decision problems in the management of space. Selected multi-criteria analysis methods (methods based on the ranking of alternatives, MAUT method, TOPSIS method, the indexing method). AHP method for solving multi-criteria decision problems. The possibilities of using geospatial data in a spatial economy. Sources, infrastructure and availability of spatial data. Geospatial reference database (real estate cadastre, topographic database, the database heights, other spatial databases). City, county and regional geo-information systems.*						
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 the sources of geospatial data to solve various dilemmas associated with management of space		K_W20				
LO2	identifies the importance and the potential use of geospatial data in spatial management		K_W10, K_W18				
LO3	knows selected multicriteria decision support methods related to the management of space		K_W01, K_W18				
	retrieves and integrates geospatial data from a variety of geo-information systems and other sources		K_U01, K_U17				
LO5	known methods of analysis used in solving multi-criteria problems related to the management of space		K_U09, K_U20				

LO6	developing descriptive and graphic documentation tasks wielokryteriowym decision support	K_U02	
LO7	understands the need for continuous learning and improve their competence	K_K01	
LO8	responsibly preparing to perform an important role in society	K_K05	
student workload	lecture attendance	15 x 1 h	15
	participation in specialization workshop	15 x 2h	30
	preparation for specialization workshop		5
	work on projects, reports, etc.		20
	participation in student-teacher sessions		5
	preparation for discussion of project		5
	preparation for exams/tests		5
	preparation for presentation of project		5
		TOTAL:	90
quantitative indicators	Student workload - activities that require direct teacher participation	50	ECTS
			1,7
	Student workload - practical skills activities	70	2,3
basic references:	*1. Longley P.A. i in., GIS – teoria i praktyka, Wyd. Naukowe PWN, Warszawa 2008.* *2. Gotlib D., Iwaniak A., Olszewski R., GIS – obszary zastosowań, Wyd. Naukowe PWN, 2007.* *3. Biruk S., Jaworski K., Tokarski Z.: Podstawy organizacji robót drogowych. Wyd.Naukowe PWN, 2007.* *4. Kobryń A. Geoinformacja w gospodarowaniu przestrzenią. Oficyna Wyd. PB, Białystok 2012 (w przygotowaniu)*		
supplementary references:	*1. Kaczmarek L., Medyńska-Gulij B., Źródła i metody pozyskiwania danych przestrzennych w badaniach środowiska przyrodniczego, Wyd. Naukowe Bogucki, Poznań 2007.* *2. Sikorski M. Instrukcja do programu Expert Choice. Politechnika Gdańska, Gdańsk 2007.* *3. Multi-criteria analysis: a manual. Dep.for Communities and Local Government, London 2009.* *4. Zopounidis C., Pardalos P.: Handbook of Multicriteria Analysis. Springer 2010.*		

learning outcomes	*methods of assessing learning outcomes*	type of class (if more than one) where the outcomes are assessed
LO1	written assessment of lecture, discussion and assessment of project on specialization workshop	L, SW
LO2	written assessment of lecture, discussion and assessment of project on specialization workshop	L, SW
LO3	written assessment of lecture, discussion and assessment of project on specialization workshop	L, SW
LO4	evaluation of work in the classes, evaluating and discussion of project	SW
LO5	evaluation of work in the classes, evaluating and discussion of project	SW
LO6	evaluation of work in the classes, evaluating and discussion of project	SW
LO7	observation of work in the classroom	SW

LO8	observation of work in the classroom		SW
Department:	**Division of Spatial Information**	Group instructors:	dr hab. inż. Andrzej Kobryń mgr inż.. Karolina Ogrodnik
Date:	30.01.2012	Coordinator:	dr hab. inż. Andrzej Kobryń

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