

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject (-)		Code 1010601151010617568
Field of study Aerospace Engineering	Profile of study (general academic, practical) (brak)	Year /Semester 3 / 5
Elective path/specialty Aircraft Piloting	Subject offered in: Polish	Course (compulsory, elective) obligatory
Cycle of study: First-cycle studies	Form of study (full-time, part-time) full-time	
No. of hours Lecture: 2 Classes: 1 Laboratory: - Project/seminars: -		No. of credits 4
Status of the course in the study program (Basic, major, other) (brak)		(university-wide, from another field) (brak)
Education areas and fields of science and art technical sciences Technical sciences		ECTS distribution (number and %) 4 100% 4 100%
Responsible for subject / lecturer: dr inż. Marcin Kiciński email: marcin.kicinski[at]put.poznan.pl tel. 61 665 21 29 Wydział Inżynierii Transportu ul. Piotrowo 3 60-965 Poznań		
Prerequisites in terms of knowledge, skills and social competencies:		
1	Knowledge	Student has a basic knowledge of geography and earth sciences.
2	Skills	Student is able to associate and integrate the information, analyze the phenomena occurring in the environment, draw conclusions, formulate and justify opinions
3	Social competencies	Student is able to do a literature research and knows the rules of discussion
Assumptions and objectives of the course: Understanding the basics and the extended information on Geographic Information System (GIS).		
Study outcomes and reference to the educational results for a field of study		
Knowledge:		
1. Has basic and extended knowledge of the construction of the information on Geographic Information System (GIS) - [K1A_W03]		
2. has broadened knowledge necessary for understanding of profile subjects and specialist knowledge about construction, methods of construction, manufacturing, operation, air traffic management, security systems, impact on the economy, society and the aviation and aerospace environment - [K1A_W23]		
Skills:		
1. can use verbal communication in one additional foreign language at the level of everyday language, can describe issues in the field of the studied field of study in this language, can prepare technical documentation descriptively - drawing engineering, transport and / or logistic tasks - [K1A_U07]		
Social competencies:		
1. is aware of the importance and understands the non-technical aspects and effects of engineering activities, including its impact on the environment, and the related responsibility for decisions - [K1A_K02]		
2. can interact and work in a group, taking on different roles in it - [K1A_K03]		
Assessment methods of study outcomes		
Written final exam and test		

Course description		
Introduction to geographic information systems, characteristics of geographic data (attributes, relations, types of graphic objects, geographic data models), reference systems, coordinate systems, cartographic mapping, legal aspects of geographic information systems, spatial data properties and the essence of error sources the GIS data, GIS software.		
Basic bibliography:		
1. Bielecka E.: Systemy informacji geograficznej: teoria i zastosowania. Wydawnictwo Polsko-Japońskiej Wyższej Szkoły Technik Komputerowych, Warszawa 2006. 2. Iwańczak B.: QGIS 2.14.3. Tworzenie i analiza map. Wydawnictwo Helion, wydanie II, Warszawa 2016. 3. Jan Van Sickle: Ebasic GIS Coordinates. CRC Press, wydanie III, 2017. 4. Longley P.A., Goodchild M.F., Maguire D.J., Rhind D.W.: GIS. Teoria i praktyka. Wydawnictwo Naukowe PWN, Warszawa 2006. 5. Zmuda-Trzebiatowski P.: 2.14.3 QGIS. Wstęp do QGIS - samouczek, Politechnika Poznańska, Poznań 2018. Materiał dostępny na stronie: www.dts.put.poznan.pl		
Additional bibliography:		
1. Jian Guo Liu, Philippa J. Mason: Image Processing and GIS for Remote Sensing: Techniques and Applications Wydawnictwo Wiley Blackwell, wydanie II, 2016. 2. Kwiecień J.: Systemy informacji geograficznej ? podstawy. ATR w Bydgoszczy, Bydgoszcz 2004 3. Peter Dale: Mathematical Techniques in GIS Wydawnictwo CRC Press, wydanie II, 2014. 4. Shashi Shekhar, Shashi Shekhar, Hui Xiong: Encyclopedia of GIS, Springer, wydanie II, 2017.		
Result of average student's workload		
Activity	Time (working hours)	
1. Preparation for classes	10	
2. Participation in classes, lecturer (according to plan)	45	
3. Consolidation of the content of classes / report	28	
4. Consultations	5	
5. Preparation for the exam / pass	11	
6. Participation in the exam	1	
Student's workload		
Source of workload	hours	ECTS
Total workload	100	4
Contact hours	51	2
Practical activities	0	0