

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Intelligent building		Code 1010325341010326003
Field of study Electrical Engineering	Profile of study (general academic, practical) (brak)	Year /Semester 2 / 4
Elective path/specialty Electrical and Computer Systems in	Subject offered in: Polish	Course (compulsory, elective) obligatory
Cycle of study: Second-cycle studies	Form of study (full-time, part-time) part-time	
No. of hours Lecture: 9 Classes: - Laboratory: - Project/seminars: 9		No. of credits 2
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 %) 2 100% 2 100%
Responsible for subject / lecturer: dr inż. Grzegorz Trzmiel email: Grzegorz.Trzmiel@put.poznan.pl tel. 616652693 Wydział Elektryczny ul. Piotrowo 3A 60-965 Poznań		
Prerequisites in terms of knowledge, skills and social competencies:		
1	Knowledge	Basic knowledge of electrical engineering, electronics and information technology, including building installations.
2	Skills	The ability to understand and interpret knowledge transmitted in the classroom. The ability to effectively self-education in a field related to the chosen field of study.
3	Social competencies	The awareness of the need to expand their competence, their willingness to cooperate within the team.
Assumptions and objectives of the course: Advanced knowledge of theoretical and practical problems associated with the construction components, subassemblies and systems for modern buildings "smart" and alarm systems.		
Study outcomes and reference to the educational results for a field of study		
Knowledge:		
1. He has ordered and theoretically founded knowledge in the design of electrical equipment and systems including their impact on the environment - [K_W05++]		
2. characterize the structure and principles of basic systems and equipment in buildings and prepare design methodology selected installations - [K_W08+]		
Skills:		
1. use knowledge of electrical systems of cooperation and information in buildings with their other systems for the preparation of technical documentation - [K_U03++, K_U10+]		
2. obtain information from the literature and the Internet, work individually and independently solve problems in the theory of analysis and design of systems and equipment in construction - [K_U08++]		
Social competencies:		
1. able to think and act in an entrepreneurial manner in the area of systems analysis and systems in buildings - [K_K01+]		
Assessment methods of study outcomes		

<p>Lectures:</p> <ul style="list-style-type: none"> - Assess the knowledge and skills shown on the written test. <p>Class Projects:</p> <ul style="list-style-type: none"> - Test and rewarding knowledge necessary for the accomplishment of the problems in the area of project tasks, - Continuous assessment for each course - rewarding the increase in the ability to use principles and methods have met. - Assess the knowledge and skills related to the implementation of the project tasks. <p>Get extra points for activity in the classroom, and in particular for:</p> <ul style="list-style-type: none"> - Proposing to discuss additional aspects of the subject, - The effectiveness of applying knowledge when solving a given problem, - Comments relating to the improvement of teaching materials, - Developed aesthetic care tasks - as part of self-study. 	
Course description	
<p>Applied methods of education: lectures: 9 h., projects: 9 h.</p> <p>Lectures: Standards for electrical engineering, computer science, telecommunications and electromagnetic compatibility in building intelligent and alarm systems. Principles of design and control systems in intelligent buildings. Development trends to transmit information and control in intelligent buildings. Issues of alarm systems.</p> <p>Projects: Laboratory building and designing intelligent systems, including installation and equipment building. Realization examples.</p> <p>Use students' knowledge of other subjects, initiate discussions, ask questions to increase student activity and autonomy.</p> <p>Classes at the university supplemented by materials enabling independent preparation for classes and extension messages</p> <p>Update 2017: Co-operation of various types of central control units with modern subassemblies (eg touch panel, alarm system, remote access) extending the functionality of building systems.</p>	
<p>Basic bibliography:</p> <ol style="list-style-type: none"> 1. Niezabitowska E., Budynek Inteligentny, t. I-II, Potrzeby użytkownika a standard budynku inteligentnego, Wydawnictwo Politechniki Śląskiej, Gliwice, 2010. 2. Nawrocki W., Sensory i systemy pomiarowe, Wydawnictwo Politechniki Poznańskiej, Poznań, 2006. 3. Niezabitowska E., Budynek Inteligentny, t. II, Podstawowe systemy bezpieczeństwa w budynkach inteligentnych, Wydawnictwo Politechniki Śląskiej, Gliwice, 2010. 4. Patykiewicz P., Nowoczesna instalacja elektryczna w inteligentnym budynku, COSiW SEP, Warszawa 2001. 5. Stanisławek R., Integracja systemów bezpieczeństwa w obiekcie, Systemy Alarmowe, 2002. 	
<p>Additional bibliography:</p> <ol style="list-style-type: none"> 1. Markiewicz H., Instalacje elektryczne, Wydawnictwo Naukowo-Techniczne, Warszawa, 2006. 2. Borkowski P. i inni, Podstawy integracji systemów zarządzania zasobami w obrębie obiektu, Wydawnictwo Naukowo-Techniczne Sp.z.o.o, Warszawa, 2009. 3. Wang S., Intelligent Buildings and Building Automation, Spon Press, Nowy Jork, 2010. 4. Pilich B, Engineering Smart Houses, Lyngby, 2004. 5. Piasecki A., Trzmiel G., Remote building control using the bluetooth technology, Monograph Computer Applications in Electrical Engineering, Poznan University of Technology 2016, vol. 14, pp. 457 ? 468. 6. Głuchy D., Kurz D., Trzmiel G., Aspekty projektowania i eksploatacji systemów przeciwpożarowych w obiektach przemysłowych, Computer applications in electrical engineering vol. 79/2014, Poznan University of Technology Academic Journals ? Electrical Engineering, Poznań, 2014, str. 149 ? 156. 7. Głuchy D., Jarmuda T., Kurz D., Skowronek K., Trzmiel G., Współpraca systemu fotowoltaicznego z układem zasilania w energię w budynku inteligentnym, INPE ? Informacje o normach i przepisach elektrycznych nr 152, Poznań, maj 2012, str. 67-73. 8. Głuchy D., Kurz D., Trzmiel G., Energy consumption by the teletask building management system, CPEE ? Computational Problems of Electrical Engineering, 9-12.09.2014, Terchova, Słowacja, pp. 41. 9. Diploma papers. 10. www.satel.pl 11. Internet. 	
Result of average student's workload	
Activity	Time (working hours)

1. participation in class lecture	9	
2. participation in class of project	9	
3. consultation on the lecture	4	
4. consultation on the project	4	
5. preparation for the exam	18	
6. exam	2	
7. preparation for projects	10	
Student's workload		
Source of workload	hours	ECTS
Total workload	60	2
Contact hours	28	1
Practical activities	23	1