

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Ecological technologies in civil engineering		Code 1010101161010117437
Field of study Civil Engineering First-cycle Studies	Profile of study (general academic, practical) (brak)	Year /Semester 3 / 6
Elective path/specialty -	Subject offered in: Polish	Course (compulsory, elective) elective
Cycle of study: First-cycle studies	Form of study (full-time, part-time) full-time	
No. of hours Lecture: 15 Classes: - Laboratory: - Project/seminars: 15		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		ECTS distribution (number and %) 2 100%
Responsible for subject / lecturer: Roman Milwicz email: roman.milwicz@put.poznan.pl tel. 605 201 199 Budownictwa i Inżynierii Środowiska Piotrowo 5		
Prerequisites in terms of knowledge, skills and social competencies:		
1	Knowledge	basic rules of science, chemistry, biology and mathematics
2	Skills	computer usage
3	Social competencies	work in groups, creativity
Assumptions and objectives of the course: The aim of the course is to acquaint students with the latest trends in ecology, mainly in construction. An important element is also to realize the essence of ecological solutions and participate in the construction sector in the global energy consumption.		
Study outcomes and reference to the educational results for a field of study		
Knowledge:		
1. One has knowledge of the impact of the investment and the existing buildings on the environment - [K_W13] 2. One has knowledge of infrastructure management in the full life cycle of objects. - [K_W19] 3. One knows and apply the law building - [K_W17]		
Skills:		
1. student uses special tools to find useful information, communication and acquisition software supporting the work of the designer and organizer of construction processes - [K_U05] 2. student is able to choose the tool (analytical or numerical) to solve technical problems - [K_U13]		
Social competencies:		
1. Can student - implementing specific zadania- work independently, to work in a team and manage a team - [K_K01] 2. the student is responsible for the accuracy of the results of their work and the evaluation of the work of a subordinate unit - [K_K02] 3. student complements and extends the knowledge in the field of modern processes and technologies in the construction industry - [K_K03]		
Assessment methods of study outcomes		
final work, test		

Course description		
renewable energy sources solar panels photovoltaics Air heat pumps The heat pump heat exchanger and a ground solar architecture ecological building: timber frame, straw bale, clay		
Basic bibliography: 1. W.Nitka "Szkieletowy dom drewniany" 2. Z. Bromberek "Eco-Resorts" 3. G. Boyle Renewable Energy: Power for a Sustainable Future		
Additional bibliography:		
Result of average student's workload		
Activity	Time (working hours)	
1. lectures	15	
2. exercise	15	
3. literature	60	
Student's workload		
Source of workload	hours	ECTS
Total workload	90	2
Contact hours	30	1
Practical activities	30	1