

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Physics of Buildings		Code 1010115111010110025
Field of study Civil Engineering Extramural Second-cycle	Profile of study (general academic, practical) general academic	Year /Semester 1 / 1
Elective path/specialty Structural Engineering	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: 20 Classes: 10 Laboratory: - Project/seminars: -		No. of credits 6
Status of the course in the study program (Basic, major, other) major		(university-wide, from another field) from field
Education areas and fields of science and art technical sciences Technical sciences		ECTS distribution (number and %) 6 100% 6 100%
Responsible for subject / lecturer: DSc. Eng. Barbara Ksit email: barbara.ksit@put.poznan.pl tel. tel. 48 61 6652864 Civil and Environmental Engineering Piotrowo 5, 60-965 Poznań		Responsible for subject / lecturer: DSc. Eng. Marlena Kucz email: marlena.kucz@put.poznan.pl tel. tel 48 61 6653358 Civil and Environmental Engineering Piotrowo 5, 60-965 Poznań
Prerequisites in terms of knowledge, skills and social competencies:		
1	Knowledge	knowledge after first cycle studies after the civil engineering course or other technical studies
2	Skills	Student can design a construction barrier (e.g.wall, roof) due to thermals condition and taking into account the moisture conditions
3	Social competencies	Awareness of the need to constantly update and supplement knowledge construction and engineering skills
Assumptions and objectives of the course: -Assumptions and objectives of the course: Widening and deepening knowledge of building physics: thermodynamics and hygrometry, acoustics, lighting and passive. Acquaintance with physics building. Acquaintance with rules governing design of energy efficient houses. Ability to calculate a heat transfer coefficient for different barrier. Basic knowledge about a passive houses. Deepen their knowledge of building physics and acoustics.		
Study outcomes and reference to the educational results for a field of study		
Knowledge:		
1. She/He knows rules about transparent barrier, knows rules about calculation - [K_W02,K_W03,K_W04,K_W07]		
2. She/He knows the basic principles (heat transfer) working compartments containing a of air layer - [K_W02,K_W03,K_W04,K_W07]		
3. She/He knows the general and the technical requirements for design of building and envelope in terms of protection against noise - [K_W02,K_W03,K_W04,K_W07]		
4. She/He knows the solutions and requirements for passive and zero energy building - [K_W02,K_W03,K_W04,K_W07]		
Skills:		
1. She/He can classify buildings in terms of thermal condition - [K_U01, K_U018, K_U05]		
2. She/He can describe and analyse the causes of the problems of acoustic and lighting in the building - [K_U01,K_U018,K_U05]		
3. She/He can design a barrier taking into account an acoustic effect and with airflow ventilation - [K_U01,K_U018,K_U05]		
Social competencies:		
1. She/He is acquires the ability to work in a team - [K_U16, K_K05K_K01]		
2. She/He is able to set priorities for the implementation of specific actions - [K_U16, K_K05K_K01]		

Assessment methods of study outcomes		
<p>-Assessment of knowledge: activity during classes and a lectures. Points might be earned for: the activity during the classes, knowledge presented during the exam. The grading scale determined% from: 90 very good (A) 85 good plus (B) 75 Good (C) 65 Adequate plus (D) 55 Sufficient 55 (E) Less than 54 inadequate (F)</p>		
Course description		
<p>-Lecture: transparent barrier, building protection from the noise (acoustic problem), factors affecting the lighting of the building, knowledge of energy-efficient, passive and zero-energy building, knowledge of Renewable energy sources (sun, biomass) Classes: Determination of the ventilation in the flat roof, calculation of heat loss for building, sound issues (acoustic problem) in building construction, calculation of the heat transfer coefficient with including thermal bridges</p>		
Basic bibliography:		
<ol style="list-style-type: none"> Praca zbiorowa pod kier. P. Klemma: Budownictwo ogólne t.2 wyd. Arkady 2005 aktualne normy(PN-EN ISO 6946:2008, DIN 4108 cz.3, PN-B-02151-03:1999,PN-EN 12464: 2002 ...) Rozporządzenie Ministra Infrastruktury z 12 kwietnia 2002 w sprawie warunków technicznych, jakim powinny odpowiadać budynki i ich usytuowanie. (Dz. U. nr 75 z 15 czerwca 2002r., poz.690 wersja:2009.07.08 lub późniejsze oraz z 2003 r. Nr 33, poz. 270) Błaszczyczyński T., Ksit B., Dyzman B., Budownictwo zrównoważone z elementami certyfikacji energetycznej, 2012 		
Additional bibliography:		
<ol style="list-style-type: none"> Instrukcja ITB nr 406: Metody obliczania izolacyjności akustycznej między pomieszczeniami w budynku według PN-EN 12354-1:2002 i PN-EN 12354-2:2002 Instrukcja ITB nr 293: Projektowanie pod względem akustycznym przegród w budynkach Praca zbiorowa pod redakcją Adama Lisika: „Odnawialne źródła energii w architekturze?”. Wydawnictwo Politechniki Śląskiej, Gliwice 2002 		
Result of average student's workload		
Activity	Time (working hours)	
1. 1 Preparing to pass the lecture	10	
2. Participation for lectures	20	
3. Prepare for classes	5	
4. Participation in classes	10	
5. Complete calculation in home	10	
6. Preparing to pass the exam	5	
7. Participation in the consultation (minimum three consultations)	3	
Student's workload		
Source of workload	hours	ECTS
Total workload	150	6
Contact hours	35	1
Practical activities	85	3