

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Ecodesign		Code 1010612221010616538
Field of study Mechanika i budowa maszyn	Profile of study (general academic, practical) (brak)	Year /Semester 1 / 2
Elective path/specialty Product engineering (Inżynieria produktu)	Subject offered in: English	Course (compulsory, elective) obligatory
Cycle of study: Second-cycle studies	Form of study (full-time, part-time) full-time	
No. of hours Lecture: 1 Classes: - Laboratory: - Project/seminars: 1		No. of credits 3
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 %) 3 100% 3 100%
Responsible for subject / lecturer: dr inż. Jędrzej Kasprzak email: jedrzej.kasprzak@put.poznan.pl tel. 61 665 2232 Machines and Transport Piotrowo 3, 60-965 Poznań		
Prerequisites in terms of knowledge, skills and social competencies:		
1	Knowledge	Basic knowledge of the basics of machine design and the theory of machines and mechanisms. Basic, structured knowledge of metal materials used in machine design. Basic knowledge of manufacturing techniques used in the machine industry. Basic knowledge of a machine life cycle, recycling of machine elements, construction materials and consumables. Basic knowledge of machines and technology impact on the natural environment and global energy balance.
2	Skills	Ability to prepare technical documentation (descriptive and graphic) of an engineering task. Ability to create a diagram of a system, select its items and perform basic calculations. Ability to browse catalogs and webpages of machine elements producers for ready parts to use in own projects. Ability to assess the material, environmental and labor input for an assembly of a simple machine. Ability to organize and manage the design process of an uncomplicated machine.
3	Social competencies	Awareness and understanding the importance and impact of non-technical aspects of mechanical engineering activities and its impact on the environment and responsibility for own decisions.
Assumptions and objectives of the course: Gaining proficiency in approach to design of a product with special consideration for the environmental impacts of the product during its whole lifecycle. Explaining and supervising engineering tasks aimed at reduction in the consumption of materials and energy in the machine design process.		
Study outcomes and reference to the educational results for a field of study		
Knowledge:		
1. Life cycle thinking background and principles of ecodesign. - [K2A_W13]		
2. Extended knowledge of the standards for machines dedicated to the environmental protection. - [K2A_W21]		
Skills:		

1. Ability to implement ecodesign principles for designing new machines or redevelopment of machine design documentation. - [K2A_U06]
2. Ability to implement ecodesign principles for designing new machines or redevelopment of machine design documentation. - [K2A_U07]
3. Ability to assess potential negative impacts for the natural environment and humans, originating from the designed machine or a vehicle. - [K1A_U14]
Social competencies:
1. Understanding the need for being up-to-date in areas broadly connected with machine design (manufacturing, materials science, environmental sciences, industry standards). - [K2A_K01]

Assessment methods of study outcomes		
Lecture: written examination. Project: positive assessment of a group project task.		
Course description		
Basic assumptions of ecodesign. Relation to traditional design perspective. Principles of ecodesign. Ecodesign procedure. Tools for ecodesign. Ecodesign tools based on life cycle thinking principle. Examples of ecodesign (case studies). Ecodesign framework for selected machines categories.		
Basic bibliography:		
1. Kurczewski P., Lewandowska A. (red.), Zasady prośrodowiskowego projektowania obiektów technicznych dla potrzeb zarządzania ich cyklem życia, 2008. KMB Druk, Poznań		
Additional bibliography:		
1. Wimmer W., Züst R., Lee K.-M. (2004): Ecodesign Implementation ? A Systematic Guidance on Integrating Environmental Considerations into Product Development, Dordrecht, Springer		
2. Journal of Industrial Ecology		
3. Journal of Engineering Design		
Result of average student's workload		
Activity	Time (working hours)	
1. Lecture participation	15	
2. Consolidation of lecture content	5	
3. Project participation	15	
4. Consultation	3	
5. Preparation for assessment	10	
6. Assessment participation	2	
Student's workload		
Source of workload	hours	ECTS
Total workload	50	3
Contact hours	35	0
Practical activities	0	0