

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Proecology of Cars Production and Service		Code 1010621261010622434
Field of study Transport	Profile of study (general academic, practical) (brak)	Year /Semester 3 / 6
Elective path/specialty Ecology of Transport	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: 1 Classes: 1 Laboratory: - Project/seminars: -		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: Prof. dr hab. inż. Marek Idzior email: marek.idzior@put.poznan.pl tel. 61 665 2119 Faculty of Working Machines and Transportation ul. Piotrowo 3 60-965 Poznań		
Prerequisites in terms of knowledge, skills and social competencies:		
1	Knowledge	Student has a broader and deeper knowledge of the design of vehicle and combustion engines and solving complex engineering tasks and ecology.
2	Skills	He has an ability of the reading of schemes, sketches and technical drawings, connected thematically with vehicle and internal-combustion engine.
3	Social competencies	He understands connections between the structure and technologies of the structure of vehicle and internal-combustion engine and ecology.
Assumptions and objectives of the course: To make students basic knowledge over about ecological production processes, methods of the production and materials of structural parts and teams of i vehicle and internal-combustion engines		
Study outcomes and reference to the educational results for a field of study		
Knowledge:		
1. He has a basic knowledge about methods of producing vehicle and internal-combustion engines - [W02] 2. He knows ecological structural materials of both the technology of producing the part and teams of vehicle and internal-combustion engines - [W03] 3. He has a knowledge about tendencies of developmental methods of producing vehicle and internal-combustion engines and basic knowledge about ecology - [W05]		
Skills:		
1. Has knowledge of subject matter of ecological processes of producing vehicle and internal-combustion engines together him with structure - [U01] 2. He is able to obtain information from specialist literature and to assess the degree of the technological modernity of the internal-combustion engine - [U07] 3. He has a basic preparation to the work at ecological production and the operation of vehicle and internal-combustion engines - [U11]		
Social competencies:		
1. He understands the need of supplementing the knowledge by the entire professional life - [K01] 2. He is aware and meaning of effects understands specificities of processes of producing vehicle and internal-combustion engines to the natural environment of the man - [K02]		

Assessment methods of study outcomes		
Written test, which is based on answers related to the selection of given answers and open questions. Credits will be given after achieving at least 50% of points. Answers are scores from 0 to 1 point		
Course description		
Ecological conditioning of processes of producing and operating motor vehicles. Environment-friendly technologies and materials. Basic notions from the scope of the technology, technological documentation, labour intensity, material consumption rate, optimization of processes, classification. Technology of producing vehicles and engines and their elements: engine block, cylindrical heads, cylindrical cornets, pistons, piston rings, connecting rods, bearings, valves, valve springs, cams and camshafts - structure, materials, production, control. Tubular wires methods of the bending, cleaning. Assembly methods, fundamental processes, organization of working positions. Maintainability of motor vehicles. Essential systems and methods of repair. The technical support but repair. Technological overall process of repair. Methods of the regeneration of the part. Remedy the planning. Establishing structural-technological requirements for części repaired. The development of techniques of repairs of vehicles and their parts. Safeguarding the circle against pollutants from factories. The recycling and the recycling		
Basic bibliography:		
1. Cypko J., Cypko E., Podstawy technologii i organizacji napraw pojazdów mechanicznych. WKiŁ, Warszawa 1982		
2. Izdebski K., Modelowanie i symulacja procesów technologicznych montażu, WPB, Białystok, 2002		
3. Jezierski J., Technologia tłokowych silników wysokoprężnych, WNT, Warszawa, 1999		
4. Kapiński St., Kształtowanie elementów nadwozi samochodów, WKiŁ, Warszawa, 1996		
5. Nowakowski P., Łukasik T., Wybrane techniki komputerowe w projektowaniu i wytwarzaniu, WPS, Gliwice, 2003		
6. Stolarski B. (red.): Technologia budowy samochodów, część I: Technologia silników spalinowych. Wydawnictwo Politechniki Krakowskiej, Kraków 1977		
Additional bibliography:		
1. The press and specialist magazines		
2. Information materials of companies producing internal-combustion engines		
Result of average student's workload		
Activity	Time (working hours)	
1. Participation in lectures	30	
2. Literature studies	5	
3. Consultation	1	
4. Preparation for written credits (based on lectures)	10	
5. Participation in written test solving	2	
Student's workload		
Source of workload	hours	ECTS
Total workload	50	2
Contact hours	34	1
Practical activities	16	1