

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Oils, Fuels and Other Exploitation Materials for Motor Vehicles		Code 1010604141010610213
Field of study Mechanical Engineering	Profile of study (general academic, practical) (brak)	Year /Semester 2 / 4
Elective path/specialty -	Subject offered in: Polish	Course (compulsory, elective) obligatory
Cycle of study: First-cycle studies	Form of study (full-time, part-time) part-time	
No. of hours Lecture: 12 Classes: - Laboratory: - Project/seminars: -		No. of credits 1
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 %) 1 100%
Responsible for subject / lecturer: prof. dr hab. inż. Wiesław Zwierzycki email: Wieslaw.Zwierzycki@put.poznan.pl tel. tel. 61-665 2236 Wydział Maszyn Roboczych i Transportu ul. Piotrowo 3 60-965 Poznań		
Prerequisites in terms of knowledge, skills and social competencies:		
1	Knowledge	Student has basic knowledge of chemistry, operation principle of combustion engine and industrial machines.
2	Skills	Student can learn from different knowledge sources.
3	Social competencies	Student understands the need for continuous learning.
Assumptions and objectives of the course: Basic knowledge of chemistry, production process, properties and exploitation of fuels and lubricants		
Study outcomes and reference to the educational results for a field of study		
Knowledge:		
1. Student has basic knowledge of chemistry and production process of mineral and synthetic oils - [K1A_W03]		
2. Student knows properties and different kind of: engine oils, gear oils, other industry oils - [K1A_W03]		
3. Student knows about lubricant ageing effects and knows how to diagnose it - [K1A_W21]		
4. Student is aware of the environmental impacts of fuels, lubricants and other exploitation fluids - [K1A_W11]		
Skills:		
1. Student can define properties of lubricants and greases - [K1A_U01]		
2. Student can choose right lubricant to given device by working conditions and show the right replacement. - [K1A_U17]		
Social competencies:		
1. Student understands the influence of fuel combustion and ageing oils to environment - [K1A_K06]		
2. Student is aware of importance of storage and management of used oils - [K1A_K02]		
Assessment methods of study outcomes		
Egzamin pisemny i ustny		
Course description		

<p>Chemical structure and production process of mineral and synthetic oils. Lubricants used in automotive (engine oils, gear oils, greases). Other automotive exploitation fluids (brake fluids, coolants, vehicle windscreen washing fluids). Engine fuels (distribution problems). Industrial exploitation fluids (machine oils, compressors oils, turbines oils etc.). Ageing of exploitation fluids (diagnostics states). Exploitation fluids versus environmental.</p>		
<p>Basic bibliography:</p> <ol style="list-style-type: none"> Hagel R., Zakrzewski J.: Miernictwo dynamiczne, WNT Warszawa 1984 Nawrocki W.: Komputerowe systemy pomiarowe, WKŁ Warszawa 2002 Piotrowski J.: Podstawy miernictwa, WNT Warszawa 2002 Zwierzycki W.: Oleje, paliwa i smary dla motoryzacji i przemysłu, Wyd. ITeE, Radom 2001 Zwierzycki W.: Płyny eksploatacyjne dla środków transportu drogowego. Charakterystyka funkcjonalna i ekologiczna. Wyd. Politechniki Poznańskiej, Poznań 2006 		
<p>Additional bibliography:</p>		
<p>Result of average student's workload</p>		
<p>Activity</p>	<p>Time (working hours)</p>	
1. Udział w wykładzie	15	
2. Konsultacje	2	
3. Utrwalanie materiału	8	
<p>Student's workload</p>		
<p>Source of workload</p>	<p>hours</p>	<p>ECTS</p>
Total workload	67	3
Contact hours	36	1
Practical activities	42	2