

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Oils, Fuels and Other Exploitation Materials for Motor Vehicles		Code 1010621261010610213
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: - Laboratory: 1 Project/seminars: -		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		ECTS distribution (number and %) 3 100%
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 (and other exploitation fluids)		
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]		
Skills:		
1. Student knows properties and different kind of: engine oils, gear oils, other industry oils - [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 is aware of importance of storage and management of used oils. - [K1A_K02]		
2. Student understands the influence of fuel combustion and ageing oils to environment. - [K1A_K06]		
Assessment methods of study outcomes		
Written and oral exam		
Course description		
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.		

Basic bibliography:		
1. Zwierzycki W.: Oleje, paliwa i smary dla motoryzacji i przemysłu, Wyd. ITeE, Radom 2001 (486 str.) - również serwer Biblioteki PP - materiały dydaktyczne on-line.		
2. Zwierzycki W.: Płyny eksploatacyjne dla środków transportu drogowego. Charakterystyka funkcjonalna i ekologiczna. Wyd. Politechniki Poznańskiej, Poznań 2006 (333 str.)		
Additional bibliography:		
Result of average student's workload		
Activity	Time (working hours)	
1. Participation in lecture	15	
2. Consultations	5	
3. Exam preparedness	5	
4. Participation in exam	2	
5. Preparedness to laboratories	14	
6. Participation in laboratories	15	
7. Consultations	5	
8. Consolidation on lecture	3	
9. Preparedness to exam	8	
Student's workload		
Source of workload	hours	ECTS
Total workload	72	3
Contact hours	42	2
Practical activities	30	1