STUDY MODULE DESCRIPTION FORM

Name of the module/subject		Code
Engine oftertreatment systems		**1010625321010622312**
Field of study: **Transport**	Profile of study (general academic, practical): **general academic**	Year /Semester: **1 / 2**
Elective path/specialty: **Ecology of Transport**	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: **9** Classes: **9** Laboratory: **-** Project/seminars: **-**		No. of credits: **2**
Status of the course in the study program (Basic, major, other): **other**	(university-wide, from another field): **university-wide**	
Education areas and fields of science and art: **technical sciences** **Technical sciences**		ECTS distribution (number and %): **2 100%** **2 100%**

Responsible for subject / lecturer:

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Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	student has knowledge of cleaning exhaust gas, the construction, operation, performance, classification, calculation of exhaust systems parameters
2	**Skills**	student is able to integrate the information, make their interpretation, draw conclusions, formulate and justify opinions
3	**Social competencies**	student is aware of and understands the consequences of negative technical aspects and engineering activities and their impact on the environment

Assumptions and objectives of the course:

familiarize yourself with the methods of cleaning exhaust gas, refer to the construction of an exhaust aftertreatment and their operation, the impact on the cost of the vehicle, its maintenance and correct operation

Study outcomes and reference to the educational results for a field of study

Knowledge:

1. He knows the terminology in English related to the engines and exhaust aftertreatment systems - [- [K2A_W22]]
2. He knows the methodology of control and diagnosis the aftertreatment systems - [-[K2A_W14]]
3. He knows the methodology of measuring exhaust emissions from vehicles with exhaust aftertreatment systems - [-[K2A_W17]]
4. He knows the applicability of particular components in vehicles of different categories - [-[K2A_W22]]
5. He knows the mechanisms of operation of an exhaust aftertreatment system - [-[K2A_W17]]
6. He has a general knowledge of the development trends of the means of transport - [-[K2A_W14]]

Skills:

1. He can classify categories of vehicles in terms of their level of ecological performance - [-[K2A_U10]]
2. He can integrate the information - [-[K2A_U01]]
3. He can draw conclusions and formulate and justify opinions - [-[K2A_U13]]
4. He can take the information from the literature - [-[K2A_U01]]

Social competencies:

1. He understands the need to learn - [- [K2A_K01]]
2. He is aware of the importance of engineering activities in terms of ecology - [- [K2A_K03]]
3. He can inspire his colleagues for learning about ecology - [- [K2A_K08]]
4. Able to independently develop their knowledge of the exhaust gas regulations - [- [K2A_K06]]

Assessment methods of study outcomes
Test of knowledge of exhaust aftertreatment systems. Two tests during the semester
Course description
Lecture ? construction, operation of engine exhaust treatment and exhaust aftertreatment systems. Exercise ? calculation of functional parameters of the components of exhaust aftertreatment systems
Basic bibliography:
1. Jerzy Merkisz, Paweł Fuć, Piotr Lijewski, Fizykochemiczne aspekty budowy i eksploatacji filtrów cząstek stałych. Poznań 2016. 2. Jerzy Merkisz, Ekologiczne problemy silników spalinowych, Wyd. Politechniki Poznańskiej, Poznań 1998 3. Uwe Rokosch, Układy oczyszczania spalin i pokładowe systemy diagnostyczne samochodów. ISBN 978-83-206-1657-6 4. Diesel exhaust aftertreatment technologies. SAE Books and Papers ? all editions
Additional bibliography:
1. Wojciech Serdecki, Badania silników spalinowych. Wyd. Politechniki Poznańskiej, Poznań 2012

Result of average student's workload

Activity	Time (working hours)
1. 1. Udział w wykładzie	15
2. 2. Utrwalanie treści wykładu	5
3. 3. Konsultacje	2
4. 4. Przygotowanie do zaliczenia	5
5. 5. Przygotowanie do ćwiczeń audytoryjnych	8
6. 6. Udział w ćwiczeniach audytoryjnych	10
7. 7. Utrwalanie treści ćwiczeń/sprawozdanie	8

Student's workload

Source of workload	hours	ECTS
Total workload	58	2
Contact hours	32	1
Practical activities	26	1