STUDY MODULE DESCRIPTION FORM

Name of the module/subject		Code
Electrotechnics in Means of Transport		**1010601241010322073**
Field of study **Transport**	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) **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:

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Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	Basic knowledge of electrical engineering and electronics
2	**Skills**	Linking physics with the principles of operation of technical equipment. Interpretation of wiring diagrams. Combining electrical circuits. Collaboration in a team (group of laboratory).
3	**Social competencies**	Awareness of the importance and need for the use of electrical and electronic engineering work. The ability to expand its powers.

Assumptions and objectives of the course:

Knowledge of both theoretical and practical problems associated with the operation and diagnosis of electrical and electronic equipment used in motor vehicles.

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

Knowledge:

1. He knows the properties, characteristics, solutions and test methods for circuit components: the power supply, ignition systems, electronic fuel injection systems and lighting equipment. - [K1A_W18]
2. He knows the design and operation of non-electrical transducers for electrical quantities used in the automotive industry. - [K1A_W16]

Skills:

1. He can apply his knowledge in the field of electrical engineering and electronics to selected electrical and electronic systems in the automotive industry. - [K1A_U01]
2. He can run the selected electrical and electronic systems in motor vehicles and carry out their basic diagnostic tests. - [K1A_U01]

Social competencies:

1. He can think and act in an entrepreneurial manner of electrical and electronic equipment used in the automotive industry. - [K1A_K07]

Assessment methods of study outcomes

Assessment the results of knowledge, evaluation reports and papers prepared

Course description

Functional properties, parameters, technical solutions, methods of diagnosis and typical fault circuit elements: supply and start, classical and electronic ignition systems, electronic fuel injection systems, and lighting and signaling systems. Non-electrical transducers for electrical quantities used in automotive systems - design, operation, parameters, and methods of diagnosis.

Basic bibliography:

1. Denton T., Automobile electrical and electronic systems, Arnold, London 1995, 2000.
2. Herner A., Riehl H.J., Elektrik, elektronik, Vogel Verlag, Würzburg (Deutschland), 2001
3. Kasedorf J., Benzineinspritzung und Katalysatortechnik, Vogel Verlag, Würzburg (Deutschland), 1995
4. Ocioszyński J., Zespoły elektryczne i elektroniczne w samochodach, WNT, Warszawa 1999.
5. Sitek K., Diagnostyka samochodowa, Wydawnictwo AUTO, Warszawa 1999.
6. Konopiński M., Elektronika w technice motoryzacyjnej, WKiŁ, Warszawa, 1987.

Additional bibliography:

1. Czujniki w pojazdach samochodowych. Informator techniczny BOSCH, WKiŁ, W-wa 2002

Result of average student's workload

Activity	Time (working hours)
1. Participation in lectures	15
2. Udział w ćwiczeniach laboratoryjnych	15
3. Capturing the content of the lecture	7
4. Strengthening laboratory content, a report, preparing for the next class	22
5. Participation in the completion of	1

Student's workload

Source of workload	hours	ECTS
Total workload	60	3
Contact hours	31	1
Practical activities	37	1