



Subject card

Subject name and code	Radio Communication in Transport, PG_00064094						
Field of study	Electronics and Telecommunications						
Date of commencement of studies	February 2025	Academic year of realisation of subject			2024/2025		
Education level	second-cycle studies	Subject group			Optional subject group Specialty subject group Subject group related to scientific research in the field of study		
Mode of study	Full-time studies	Mode of delivery			at the university		
Year of study	1	Language of instruction			English		
Semester of study	1	ECTS credits			2.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Department of Radiocommunication Systems and Networks -> Faculty of Electronics, Telecommunications and Informatics						
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Małgorzata Gajewska					
	Teachers	dr inż. Małgorzata Gajewska					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	0.0	0.0	15.0	30
	E-learning hours included: 0.0						
Learning activity and number of study hours	Learning activity	Participation in didactic classes included in study plan	Participation in consultation hours		Self-study		SUM
	Number of study hours	30	3.0		17.0		50
Subject objectives	The aim of the course is to familiarize the student with radio communication systems in transport.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K7_W03] knows and understands, to an increased extent, the construction and operating principles of components and systems related to the field of study, including theories, methods and complex relationships between them and selected specific issues - appropriate for the curriculum	The student understands the operation of radio communication systems in transport.			[SW1] Assessment of factual knowledge		
	[K7_U09] can carry out a critical analysis of the functioning of existing technical solutions and assess these solutions, as well as apply experience related to the maintenance of advanced technical systems, devices and facilities typical for the field of studies, gained in the professional engineering environment	The student is able to present systems used in transport and critically analyze them.			[SU2] Assessment of ability to analyse information		

Subject contents	<p>1. Telecommunications, sensor and electronic systems in transport, classification and their importance in the transport of the future.</p> <p>2. Trunking and dispatching communication - basic properties.</p> <p>3. Radio communication systems in rail and urban transport: GSM-R, TETRA, DMR, LTE. Traffic control systems in rail transport ERTMS.</p> <p>4. Safety systems in land transport eCall system.</p> <p>5. Localization systems in transport - overview and general characteristics. GNSS systems: GPS, Glonass, Galileo.</p> <p>6. Modern forms of M2M communication and their importance in telematics and transport logistics.</p> <p>7. V2X systems - development of future communication</p> <p>8. Internet of things and electronic and telecommunications systems in the infrastructure of smart cities Smart Cities.</p> <p>9. Information systems in water and inland transport.</p> <p>10. Maritime communication systems, alarm and safety communications, GMDSS system.</p> <p>11. Telematics systems and logistics support in maritime transport.</p> <p>12. Telematics systems, electronic and IT logistics support in road transport - examples and characteristics.</p> <p>13. Telematics systems, electronic and IT logistics support in rail transport - examples and characteristics.</p> <p>14. Intelligent Transport Systems.</p> <p>15. Prospects for the development of transport in the light of the implementation of 5G cellular systems.</p>		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Seminar	50.0%	30.0%
	Colloquium	50.0%	70.0%
Recommended reading	Basic literature	Hasan S.,F ., Siddique N., Chakraborty S.: Intelligent Transport Systems. 802.11 based Vehicular Communications. Springer, 2018.	
	Supplementary literature	No requirements	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed	List and discuss intelligent transportation systems.		
Work placement	Not applicable		

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