

<b>STUDY MODULE DESCRIPTION FORM</b>		
Name of the module/subject <b>Telematic in Transport</b>		Code <b>1010615221010612216</b>
Field of study <b>Transport</b>	Profile of study (general academic, practical) <b>(brak)</b>	Year /Semester <b>1 / 2</b>
Elective path/specialty <b>Road Transport</b>	Subject offered in: <b>Polish</b>	Course (compulsory, elective) <b>obligatory</b>
Cycle of study: <b>Second-cycle studies</b>	Form of study (full-time, part-time) <b>part-time</b>	
No. of hours Lecture: <b>20</b> Classes: <b>-</b> Laboratory: <b>18</b> Project/seminars: <b>-</b>		No. of credits <b>3</b>
Status of the course in the study program (Basic, major, other) <b>(brak)</b>		(university-wide, from another field) <b>(brak)</b>
Education areas and fields of science and art <b>technical sciences</b> <b>Technical sciences</b>		ECTS distribution (number and %) <b>3 100%</b> <b>3 100%</b>
<b>Responsible for subject / lecturer:</b>  dr inż. Grzegorz Ślaski email: grzegorz.slaski@put.poznan.pl tel. 61 665 2222 Faculty of Machines and Transport ul. Piotrowo 3 60-965 Poznań		
<b>Prerequisites in terms of knowledge, skills and social competencies:</b>		
1	<b>Knowledge</b>	The student has a basic knowledge of metrology, has a basic knowledge in the field of automation, has a basic knowledge of electrical engineering and electronics, has a basic knowledge of the organization and management
2	<b>Skills</b>	Is able to use the languages: native and international (English) at a level sufficient to enable understanding of technical texts. Is able to obtain information from the literature, internet, databases and other sources. Can integrate the information to interpret and learn from them, create and justify opinions. Has the ability to self-educate using modern teaching tools such as remote lectures, Internet websites and database, educational software, electronic books and journals
3	<b>Social competencies</b>	Understands the need and knows the possibilities of lifelong learning, knows the need for acquiring new knowledge for professional development. Is aware of and understands the importance and impact of non-technical aspects of transport engineering activities and its impact on the environment and responsibility for own decisions in short and long-term aspect.
<b>Assumptions and objectives of the course:</b> To make students familiar with fundamentals of control of processes in road transport by use of telematics and with state of the art of knowledge and technology in this area and development perspectives in the future. To present importance of quality of real time informations.		
<b>Study outcomes and reference to the educational results for a field of study</b>		
<b>Knowledge:</b>		
1. Has knowledge of transport problems and its influence on in the socio-economic system of the country and natural environment - [K2A_W05, K2A_W12, K2A_W14, K2A_W22]		
2. Understands the term of telematics and Intelligent Transportation Systems - [K2A_W05, K2A_W12, K2A_W14, K2A_W22]		
3. Has knowledge of possible use of control systems in transport allowing to design Intelligent Transportation Systems, understands the importance of acquiring and processing real time informations in these systems and importance of algorithm quality - [K2A_W05, K2A_W12, K2A_W14, K2A_W22]		
4. Has knowledge in the area of processing informations in real time and quality of decision making algorithm on the base of delivered informations - [K2A_W05, K2A_W12, K2A_W14, K2A_W22]		
5. Knows modern technical solutions and development directions of Intelligent Transportation Systems including infrastructure, communication technology and vehicle technology - [K2A_W05, K2A_W12, K2A_W14, K2A_W22]		
<b>Skills:</b>		

<p>1. The student is able to obtain information from the foreign literature concerning telematic system in transport (Intelligent Transportation Systems) - [K2A_U01, K2A_U06, K2A_U10]</p> <p>2. The student is able to recognize and interpret current ITS systems, comparing their functionality and technology - [K2A_U01, K2A_U06, K2A_U10]</p> <p>3. The student is able to point potential benefits and risks related with ITS systems implementation - [K2A_U01, K2A_U06, K2A_U10]</p> <p>4. The student is able to explain the differences of functioning different ITS applications - [K2A_U01, K2A_U06, K2A_U10]</p> <p>5. The student can analyze data necessary for ITS applications - [K2A_U01, K2A_U06, K2A_U10]</p>
<p><b>Social competencies:</b></p> <p>1. The student understands the need and knows the possibilities of lifelong learning, knows the need for acquiring new knowledge for professional development, can organize education process of others - [K2A_K01, K2A_K02, K2A_K06, K2A_K08]</p> <p>2. The student is aware of and understands the importance and impact of non-technical aspects of transport engineering activities and its impact on the environment and responsibility for own decisions in short and long-term aspect - [K2A_K01, K2A_K02, K2A_K06, K2A_K08]</p> <p>3. The student is aware of and understands the importance and impact of non-technical aspects of transport engineering activities and its impact on the environment and responsibility for own decisions in short and long-term aspect - [K2A_K01, K2A_K02, K2A_K06, K2A_K08]</p>

<p><b>Assessment methods of study outcomes</b></p>
<p>Written test, which is based on answers related to the selection of given answers and open questions. Credits will be given after achieving at least 50% of points. Answers are scores from 0 to 1 point.</p>

<p><b>Course description</b></p>
<p>1. INTRODUCTORY INFORMATION: problems induced by road traffic, the role of ITS systems in decreasing traffic accidents, natural environment protection, fuel consumption reduction</p> <p>2. AREAS OF ITS SYSTEMS ACTIVITY: overall, short description of ITS systems activity areas and characteristics of proposed solutions of ITS systems,</p> <p>3. INFORMATION ACQUIRING TECHNOLOGIES USED FOR ITS SYSTEMS</p> <p>4. INFORMATION PROCESSING IN ITS SYSTEMS</p> <p>5. TRAFFIC FLOW MODELS USED FOR INVESTIGATING ITS SYSTEMS</p> <p>6. INFORMATION DISSEMINATION TECHNOLOGIES FOR ITS SYSTEMS</p> <p>7. ELECTRONIC TOLL COLLECTION SYSTEMS (ETC) - development and degree of use of ETC systems, safety and comfort of ETC system use, development of ETC structure, different structures of ETC systems, environmental based road payments, development perspectives of ETC systems,</p> <p>8. ADVANCED TRAVELER INFORMATION SYSTEMS - pre-trip informations, en-route informations, journey planners, navigation systems, driver real time informations systems, internet based traveler and driver information systems</p> <p>9. ADVANCED PUBLIC TRANSPORT SYSTEMS - real time passenger information systems, travel booking systems, journey planning systems, ride sharing systems, automatic timetable planning ,</p> <p>10. ADVANCED PARKING SYSTEMS - local and city parking systems.</p> <p>11. ADVANCED VEHICLE CONTROL SYSTEMS - assist or modification of driver work, automating the guidance of automobiles, improving road traffic safety,</p> <p>12. COMMERCIAL VEHICLE OPERATION - optimization of commercial vehicle traffic from point of view of economy and environment protection, the influence of commercial vehicle on road surface condition and air pollution, commercial vehicle control systems, the influence of commercial vehicle control systems on improving road traffic safety</p> <p>13. ITS SYSTEM BUSINESS MODELS public-private partnership strategy, role and responsibilities distribution,</p> <p>14. STANDARDIZATION PROBLEMS - development of ITS systems architecture, standardization of communication technologies for ITS systems,</p>

<p><b>Basic bibliography:</b></p> <p>1. Nowacki G.: Telematyka transportu drogowego, Wydawnictwo ITS, 2008.</p> <p>2. PIARC : The Intelligent Transport Systems handbook ? 2nd Edition, PIARC- 2004.</p>
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<p><b>Additional bibliography:</b></p> <p>1. Adamski A.: Inteligentne systemy transportowe: sterowanie, nadzór i zarządzanie, AGH Uczelniane Wydawnictwa Naukowo-Dydaktyczne, 2003.</p> <p>2. Towpik K., Gołaszewski A., Kukulski J.: Infrastruktura transportu samochodowego, Oficyna Wydawnicza Politechniki Warszawskiej, 2006.</p> <p>3. Leśko M., Guzik J.: Sterowanie ruchem drogowym - sterowniki i systemy sterowania i nadzoru ruchu, Wydawnictwo Politechniki Śląskiej, Gliwice 2000.</p> <p>4. Leśko M., Guzik J.: Sterowanie ruchem drogowym - sygnalizacja świetlna i detektory ruchu pojazdów, Wydawnictwo Politechniki Śląskiej, Gliwice 2000.</p>
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<b>Result of average student's workload</b>		
<b>Activity</b>	<b>Time (working hours)</b>	
1. Participation in lectures	20	
2. Literature studies	10	
3. Consultation	1	
4. Preparation for written credits (based on lectures)	10	
5. Participation in written test solving	2	
6. Preparation for classes	9	
7. Participation in classes	18	
<b>Student's workload</b>		
<b>Source of workload</b>	<b>hours</b>	<b>ECTS</b>
Total workload	70	3
Contact hours	41	2
Practical activities	18	1