STUDY MODULE DESCRIPTION FORM

Name of the module/subject **Motorways and expressways**		Code **1010102121010126031**
Field of study **Civil Engineering Second-cycle Studies**	Profile of study (general academic, practical) **general academic**	Year /Semester **1 / 2**
Elective path/specialty **Roads and Highways**	Subject offered in: **Polish**	Course (compulsory, elective) **obligatory**
Cycle of study: **Second-cycle studies**	Form of study (full-time,part-time) **full-time**	
No. of hours Lecture: **30** Classes: **-** Laboratory: **-** Project/seminars: **30**		No. of credits **4**
Status of the course in the study program (Basic, major, other) **major**	(university-wide, from another field) **from field**	
Education areas and fields of science and art **technical sciences** **Technical sciences**		ECTS distribution (number and %) **4 100%** **4 100%**

Responsible for subject / lecturer:

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Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	Student knows classification and scope of computer software supporting the analysis and design of roads. Student knows the standards and conditions for the design of roads and their components Student knows the principles of design, construction and operation of roads.
2	**Skills**	Student knows how to make a classification of roads. Student uses specialized tools in order to obtain useful information, communication and acquisition software to support the work of the designer and organizer of the road construction process. Student is able to develop the project and draw up the technical documentation concerning road construction in a selected CAD.
3	**Social competencies**	Carrying out certain tasks Student can work individually. Student is responsible for the accuracy of the results of his work. Student proceeds in accordance with the rules of ethics.

Assumptions and objectives of the course:

Familiarize Students with the technical rules concerning the design and construction of highways and expressways.

Overview of legislation on toll motorways.

Acquisition of skills in the field of motorways design in the foreground, in the longitudinal and transverse cross-section, items of equipment, service areas and toll stations.

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

Knowledge:

1. Student knows the principles of analysis and design of the elements of motorways and expressways - [K_W02]
2. Student has knowledge about the impact of the investment and existing motorways and expressways on the environment - [K_W13]
3. Student knows the principles of design, construction and operation of motorways and expressways - [K_W16]

Skills:

1. Student is able to assess loads on motorways and expressways - [K_U01]
2. Student can design elements and connections in complex construction projects (concerning highways and expressways) - [K_U03]
3. Student can dimension complicated construction details of motorways and expressways) - [K_U09]

Social competencies:

1. Student can Individually complement and extend the knowledge of modern processes and technologies in road engineering - [K_K03]
2. Student is aware of the need for sustainable, energy-efficient development in road construction - [K_K04]
3. Student is aware of the need to enhance his professional and personal competence - [K_K06]

Assessment methods of study outcomes

Assessment of lectures in the form of written test conducted in the last (15th) week of semester.
Grading Scale:
Percentage of points scored - rating
91 to 100 very good (A)
81 to 90 good plus (B)
71 to 80 good (C)
61 to 70 satisfactory plus (D)
51 to 60 satisfactory (E)
50 or less unsatisfactory (F)
Students' skills are tested through the assessment of exercise in designing performed individually.

Course description

The development of motorways and expressways in Poland and over the world.
Directional system of motorways and expressways in Poland.
Technical rules concerning construction of toll motorways.
Technical parameters of the design of motorways and expressways in the plan, longitudinal and cross sections.
Elements of a road lane of motorway.
Technical Equipment of motorways.
Drainage facilities.
Service areas.
Toll systems.
Equipment for traffic organizations ans safety.
Technical Equipment of motorways and expressways.
Safety motorways and expressways operation.
Evaluation of technical state of motorways and expressways pavements.
Capacity and stability earth objects and pavement construction of motorways and expressways.
Act on Toll Motorways and the National Road Fund.
Act on special rules for the preparation and implementation of investment in public roads.
The tender procedure for construction and operation of toll motorways.
The contract for the construction and operation of toll motorways.
Systems for collecting paid on toll Motorways.
Environmental Protection Law.
The Natura 2000 Program.
Assess for the impact of the motorways on the environment.
Green bridges.

Basic bibliography:

1. USTAWA z dnia 27 października 1994 r. o autostradach płatnych oraz o Krajowym Funduszu Drogowym
2. USTAWA z dnia 12 stycznia 2007 r. o drogowych spółkach specjalnego przeznaczenia
3. ROZPORZĄDZENIE MINISTRA INFRASTRUKTURY z dnia 16 stycznia 2002 r. w sprawie przepisów techniczno-budowlanych dotyczących autostrad płatnych.
4. ROZPORZĄDZENIE MINISTRA INFRASTRUKTURY z dnia 29 kwietnia 2004 r. w sprawie opłat za przejazd autostradą.
5. ROZPORZĄDZENIE RADY MINISTRÓW z dnia 20 października 2009 r. zmieniające rozporządzenie w sprawie sieci autostrad i dróg ekspresowych.

Additional bibliography:

Result of average student's workload

Activity	**Time (working hours)**
1. Participation in lectures and exercises in designing	60
2. Developing design exercises	25
3. Preparation for the test	25

Student's workload		
Source of workload	**hours**	**ECTS**
Total workload	100	4
Contact hours	60	2
Practical activities	30	1