STUDY MODULE DESCRIPTION FORM

Name of the module/subject	Code
Junction of roads with planning of communication systems	**1010101171010129349**

Field of study	Profile of study (general academic, practical)	Year /Semester
Sustainable Building Engineering First-cycle	**(brak)**	**4 / 7**
Elective path/specialty	Subject offered in:	Course (compulsory, elective)
-	**Polish**	**elective**

Cycle of study:	Form of study (full-time,part-time)
First-cycle studies	**full-time**

No. of hours	No. of credits
Lecture: **30** Classes: **-** Laboratory: **-** Project/seminars: **15**	**3**

Status of the course in the study program (Basic, major, other)	(university-wide, from another field)
(brak)	**(brak)**

Education areas and fields of science and art	ECTS distribution (number and %)
technical sciences	**3 100%**

Responsible for subject / lecturer:

dr inż. Jarosław Wilanowicz
email: jaroslaw.wilanowicz@put.poznan.pl
tel. 61-665-24-86
Faculty of Civil and Environmental Engineering
Piotrowo street, 5

Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	K_W06. The student has knowledge of road design guidelines and related technical conditions. K_W07 i K_W09. The student knows the rules of the design and construction of road earthworks.
2	**Skills**	K_U01. The student is able to classify the elements of road. K_U08. The student knows how to dimension the basic elements of the road.
3	**Social competencies**	K_K06. The student is aware of the need to improve his professional skills. K_K10. The student follows the rules of ethics.

Assumptions and objectives of the course:

1) Transfer of engineering knowledge in the scope of design and operation of the junctions at grade and the grade separated junctions.

2) Development of skills concerning to identify basic problems in the design of junctions and road interchanges.

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

Knowledge:

1. The student knows the rules of the dimensioning and designing of geometric details of road intersections and grade separated junctions. - [K_W06 i K_W07]

2. The student knows the technical requirements concerning designing of road intersections and grade separated junctions and their components. - [K_W06]

3. The student has a basic knowledge about the design of road infrastructure. - [K_W10]

Skills:

1. The student is able to make a classification of road intersections and grade separated junctions. - [K_U01]

2. The student knows how to design a simple road intersection and grade separated junction. - [K_U07]

3. The student knows how to dimension the basic geometric details of road intersections and grade separated junctions. - [K_U08]

Social competencies:

1. The student is able to work independently on assigned task. - [K_K01]

2. The student is aware of the need to improve his professional skills. - [K_K06]

3. The student follows the rules of ethics. - [K_K10]

Assessment methods of study outcomes

Student's knowledge are assessed based on a written pass, which takes place on the last lectures per semester (according to the plan of studies).

The written pass consists of three questions and takes 45 minutes.

Information about the form and date of test and its duration shall be provided to students during the first lecture in the semester.

Student's skills are evaluated on the basis of performed project, and its qualitative assessment is based on essential and aesthetic performing of drawing and computational exercies (the subject and content of the project is given on the theme card).

Completion date of the project is the last design tutorial in the semester.

Course description

Basic classification and description of road intersections and grade separated junctions (one-, two- and multi-level crossing).

The types of traffic maneuvers at junctions and road interchanges, their impact on the collision and traffic safety.

Principles of design of geometric details of road intersections and grade separated junctions.

Types of cross section for slip road. Basic methods of used traffic management systems (traffic signing and road marking).

Basic bibliography:

1. A Policy on Geometric Design of Highways and Streets, 6th Edition. 2011 by the American Association of State Highway and Transportation Officials.

2. Freeway and Interchange Geometric Design Handbook. byJoel P. Leisch. Publisher: Institute of Transportation Engineers (Jan. 2005). ISBN-10: 0935403949. ISBN-13: 978-0935403947.

3. Transportation Engineering, 1st Edition. Theory, Practice and Modeling. Authors: Dusan Teodorovic Milan Janic. eBook ISBN: 9780128038895. Paperback ISBN: 9780128038185.

Additional bibliography:

1. Obwieszczenie Ministra Infrastruktury i Budownictwa z dnia 23 grudnia 2015 r. w sprawie ogłoszenia jednolitego tekstu rozporządzenia Ministra Transportu i Gospodarki Morskiej z 1999 r. w sprawie warunków technicznych, jakim powinny odpowiadać drogi publiczne i ich usytuowanie (Dz.U. z dnia 29 stycznia 2016 r., Poz. 124).

2. Wytyczne projektowania skrzyżowań drogowych. Generalna Dyrekcja Dróg Publicznych, Warszawa 2001.

3. Krystek Ryszard (praca zbiorowa). Węzły drogowe i autostradowe, Wydawnictwo Komunikacji i Łączności, Warszawa 2008.

4. Rozporządzenie Ministra Infrastruktury z dnia 16 stycznia 2002r. w sprawie przepisów techniczno-budowlanych dotyczących autostrad płatnych, Dz. U. Nr 12 (poz. 116), Warszawa, 15 lutego 2002r.

5. Szczuraszek T., Bezpieczeństwo ruchu miejskiego, WKiŁ, Warszawa 2006.

6. Rozporządzenie Ministra Infrastruktury z dn. 3 lipca 2003 r. w sprawie szczegółowych warunków technicznych dla znaków i sygnałów drogowych oraz urządzeń bezpieczeństwa ruchu drogowego i warunków ich umieszczania na drogach (Dz.U. nr 220, poz. 2181 z dn. 23 grudnia 2003r. z późn. zmian., załączniki nr od 1 do 4).

7. Tracz M., Allsop R.E., Skrzyżowania z sygnalizacją świetlną, WKiŁ, Warszawa 1990.

Result of average student's workload

Activity	Time (working hours)
1. Direct participation of the student in the lectures.	30
2. Direct participation of the student in the design classes.	15
3. Additional consultation with the teacher.	5
4. Independent execution of the project.	12
5. Learning student to prepare himself to pass the exam.	12
6. Direct participation of the student in the writing pass.	1

Student's workload

Source of workload	hours	ECTS
Total workload	75	3
Contact hours	45	2
Practical activities	15	1