

**FACULTY OF CIVIL ENGINEERING****SUBJECT CARD**

**Name in English:** Roads, streets and airports  
**Name in Polish:** Drogi, ulice i lotniska  
**Main field of study (if applicable):** *Civil Engineering*  
**Specialization (if applicable):** Civil Engineering  
**Level and form of studies:** ~~1st~~ / 2nd level\*, full-time / ~~part-time~~\*  
**Kind of subject:** obligatory / ~~optional~~ / ~~university-wide~~\*  
**Subject code:** CEB004162  
**Group of courses:** YES / NO\*

	Lecture	Classes	Laboratory	Project	Seminar
Number of hours of organized classes in University (ZZU)	<b>30</b>			<b>30</b>	
Number of hours of total student workload (CNPS)	<b>60</b>			<b>60</b>	
Form of crediting	<del>Examination</del> / crediting with grade *	Examination / crediting with grade *	Examination=/crediting with grade *	<del>Examination</del> / crediting with grade *	Examination=/crediting with grade *
For group of courses mark (X) final course					
Number of ECTS points	<b>2</b>			<b>2</b>	
including number of ECTS points for practical (P) classes				<b>2,0</b>	
including number of ECTS points for direct teacher-student contact (BK) classes	<b>1,3</b>			<b>1,3</b>	

\*cross out if not applicable

**PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES**

1. Student knows the basics of mathematical statistics
2. Student knows the basics of roads' and streets' design
3. Student knows the basics of roads' traffic signals design

**SUBJECT OBJECTIVES**

- C1. Familiarizing the students with methodology of traffic forecasting, crossings design (intersections and interchanges), advanced signaling, airports' elements
- C2. Education skills of: traffic forecasting, crossings design (intersections and interchanges), advanced signaling, airports' elements
- C3. Strengthening the ability to conduct research in the group

SUBJECT EDUCATIONAL EFFECTS	
<b>Relating to knowledge:</b>	
PEK_W01	Student knows how make traffic forecasting
PEK_W02	Student knows the rules of design the road's crossings (intersections and interchanges) and advanced signaling
PEK_W03	Student knows the rules of design the airports' elements
<b>Relating to skills:</b>	
PEK_U01	Student can forecast the traffic
PEK_U02	Student can design the road's crossings (intersections and interchanges) and advanced signaling
PEK_U03	Student can design the airports' elements
<b>Relating to social competences:</b>	
PEK_K01	Student can cooperate with the group in traffic analyses

PROGRAMME CONTENT		
Form of classes - lecture		Number of hours
Lec1	Classification. Basic terms and definitions	2
Lec2	Prognoses and modelling of traffic	2
Lec3	Road's design. Multicriteria analyses	2
Lec4	Intersections	2
Lec5	Interchanges	2
Lec6	Traffic engineering – fundamentals	2
Lec7	Control the traffic. Signal planning	2
Lec8	The capacity of roads and junctions	2
Lec9	Elements of airports. Field planning	2
Lec10	Number, length and directions of airport's runways	2
Lec11	Street design	2
Lec12	Planning of public transport	2
Lec13	Calmed traffic. Pedestrians and Cyclists	2
Lec14	Pavements, materials, keeping of roads	2
Lec15	Test	2
<b>Total hours</b>		<b>30</b>

Form of classes - class		Number of hours
Cl1		
...		
<b>Total hours</b>		

Form of classes - laboratory		Number of hours
Lab1		
...		
<b>Total hours</b>		

Form of classes - project		Number of hours
Proj1	Introduction	2
Proj2	Prognoses of traffic	2
Proj3	Routing calls from city to airport	2
Proj4	Choice of variant	2

Proj5	Location plan for the selected variant	2
Proj6	Intersection location plan	2
Proj7	Interchange location plan	2
Proj8	Signaling project - preliminary calculations	2
Proj9	Signaling project - accommodation	2
Proj10	Evaluation of traffic conditions for the intersection	2
Proj11	Complement existing work	2
Proj12	Calculate the length and direction of the runways at the airport	2
Proj13	Airfield location plan at the airport	2
Proj14	Project summary	2
Proj15	Mark	2
	<b>Total hours</b>	<b>30</b>

Form of classes - seminar		Number of hours
Sem1		
...		
	<b>Total hours</b>	

TEACHING TOOLS USED	
N1.	multimedia presentation
N2.	personal computer, interactive whiteboard (calculations, drawings, descriptions)

EVALUATION OF SUBJECT EDUCATIONAL EFFECTS ACHIEVEMENT		
Evaluation F – forming (during semester), P – concluding (at semester end)	Educational effect number	Way of evaluating educational effect achievement
F1 (project)	PEK_U01	report
F2 (project)	PEK_U02 PEK_K01	report
F3 (project)	PEK_U03	report
$P(\text{project}) = F1 * 0,3 + F2 * 0,4 + F3 * 0,3$		
P (lecture)	PEK_W01 PEK_W02 PEK_W03	test

PRIMARY AND SECONDARY LITERATURE	
<b><u>PRIMARY LITERATURE:</u></b>	
[1]	Robinson R., Road Engineering for Development, Taylor & Francis, 2004
[2]	Wells A.T., Young S., Airport Planning and Management, McGraw-Hill Professional, 2004
[3]	Roess R.P., Prassas E.S., McShane W.R., Traffic Engineering (3rd Edition), Prentice Hall, 2004
<b><u>SECONDARY LITERATURE:</u></b>	
[1]	Manual of Uniform Traffic Control Devices (MUTCD) 2003
[2]	Highway Capacity Manual (HCM) 2000
[3]	Chosen articles from „Journal of Transportation Engineering”

<b>SUBJECT SUPERVISOR (NAME AND SURNAME, DIVISION, E-MAIL ADDRESS)</b>
Maciej, Kruszyna, Zakład Dróg i Lotnisk, Instytut Inżynierii Lądowej, <a href="mailto:maciej.kruszyna@pwr.wroc.pl">maciej.kruszyna@pwr.wroc.pl</a>
<b>MEMBERS OF THE EDUCATIONAL TEAM (NAME AND SURNAME, E-MAIL ADDRESS)</b>
Antoni, Szydło, <a href="mailto:antoni.szydlo@pwr.wroc.pl">antoni.szydlo@pwr.wroc.pl</a> , Robert, Wardęga, <a href="mailto:robert.wardega@pwr.wroc.pl">robert.wardega@pwr.wroc.pl</a> , Łukasz, Skotnicki, <a href="mailto:lukasz.skotnicki@pwr.wroc.pl">lukasz.skotnicki@pwr.wroc.pl</a> , Jarosław, Kuźniewski, <a href="mailto:jaroslaw.kuzniewski@pwr.wroc.pl">jaroslaw.kuzniewski@pwr.wroc.pl</a> , Henryk, Koba, <a href="mailto:henryk.koba@pwr.wroc.pl">henryk.koba@pwr.wroc.pl</a> Dariusz, Dobrucki, <a href="mailto:dariusz.dobrucki@pwr.wroc.pl">dariusz.dobrucki@pwr.wroc.pl</a> , Czesław, Wolek, <a href="mailto:czeslaw.wolek@pwr.wroc.pl">czeslaw.wolek@pwr.wroc.pl</a> , Bartłomiej, Krawczyk, <a href="mailto:b.krawczyk@pwr.wroc.pl">b.krawczyk@pwr.wroc.pl</a> , Krzysztof, Gasz, <a href="mailto:krzysztof.gasz@pwr.wroc.pl">krzysztof.gasz@pwr.wroc.pl</a>

MATRIX OF CORRELATION BETWEEN EDUCATIONAL EFFECTS FOR SUBJECT  
**Roads, streets and airports**  
AND EDUCATIONAAL EFFECTS FOR MAIN FIELD OF STUDY *Civil Engineering*  
AND SPECIALIZATION **Civil Engineering**

Subject educational effect	Correlation between subject educational effect and educational effects defined for main field of study and specialization (if applicable)**	Subject objectives ***	Programme content ***	Teaching tool number ***
<b>Knowledge</b>				
<b>PEK_W01</b>	K2_W01, K2S_CEB_W20	C1	Lec1 – Lec3, Lec11 – Lec14	N1
<b>PEK_W02</b>	K2_W06, K2_W09, K2S_CEB_W20	C1	Lec4 – Lec8	N1
<b>PEK_W03</b>	K2_W06, K2_W09, K2S_CEB_W19	C1	Lec9 – Lec10	N1
<b>Skills</b>				
<b>PEK_U01</b>	K2_U01, K2_U16, K2S_CEB_U22	C2	Proj2 – Proj5	N1, N2
<b>PEK_U02</b>	K2_U08, K2_U12, K2S_CEB_U22	C2	Proj6 – Proj11	N1, N2
<b>PEK_U03</b>	K2_U08, K2_U12, K2S_CEB_U22	C2	Proj12 – Proj14	N1, N2
<b>Social competences</b>				
<b>PEK_K01</b>	K2_K01, K2_K02, K2_K03	C3	Proj6, Proj7	N2

\*\* - enter symbols for main-field-of-study/specialization educational effects

\*\*\* - from table above