Polish course name	**INFRASTRUKTURA TRANSPORTU**
English course name	**TRANSPORT INFRASTRUCTURE**
Course code	**WIP-MDL-D1-TI-05**
Field of study	**Materials design and logistics**
Level of qualification	**First degree**
Form of study	**Full-time**
Semester	**5**
Number of ECTS points	**2**
Ways of assessment	**Test**

Number of hours per semester

Lecture	Seminar	Classes	Laboratory	Project
15		15		

TEACHERS:

Dr Judyta Kabus,
Dr hab. inż. Anna Brzozowska, prof. PCz.,
Dr Mateusz Chłąd.

COURSE OBJECTIVES:

- **C1** Provide students with knowledge in the field of transport infrastructure, the specifics of transport infrastructure, barriers to the development of transport infrastructure, ways of transport's impact on the environment and contemporary challenges to transport.
- **C2** Gaining the knowledge necessary to present and justify the reasons for the current state of development of transport infrastructure for individual modes of transport.

PRELIMINARY REQUIREMENTS FOR KNOWLEDGE, SKILLS AND OTHER COMPETENCES:

1. The ability to use the acquired knowledge when making decisions about transport infrastructure.

2. The ability to analyze and evaluate the condition of transport infrastructure.

COURSE CONTENT

LECTURE

- **L1** Introduction to the subject. Presentation of basic concepts and terms related to transport infrastructure.
- **L2 - L4** Specifics of road transport infrastructure.
- **L5, L6** The specificity of railway transport infrastructure.
- **L7, L8** Specifics of air transport infrastructure.
- **L9 - L11** Specifics of water and inland transport infrastructure.
- **L12, L13** Specifics of transmission infrastructure.
- **L14, L15** Trends in the development of transport infrastructure.

CLASSES

- **C1, C2** Introductory classes - explanation of how to perform individual tasks and presentations on selected types of transport infrastructures.
- **C3, C4** Comprehensive analysis of selected types of transport infrastructures.
- **C5, C6** Activities of transport infrastructures for the development of national and international transport - presentation of a comparative analysis, discussion.
- **C7, C8, C9** Presentation and discussion of the functioning of enterprises based on the infrastructure used - the case study.
- **C10, C11, C12** Critical discussion of the presented topics in terms of the assessment of road, rail and air transport infrastructure (presentations in electronic form).
- **C13, C14, C15** Critical discussion of the presented topics in terms of the assessment of water, inland and transmission infrastructure (presentations in electronic form).

BASIC REFERENCES

1. Kozłowski M., Porty lotnicze - infrastruktura, eksploatacja i zarządzanie, Oficyna Wydaw. Politechniki Warszawskiej, Warszawa 2015 r.
2. Liberadzki M., Finansowanie infrastruktury transportowej w Polsce: innowacyjne instrumenty finansowe: publiczno-prywatne partnerstwo, Oficyna Wydaw. Szkoła Główna Handlowa, Warszawa 2014 r.

3. Markusik S., Infrastruktura logistyczna w transporcie/T. 3 Cz. 1, Wydaw. Politechniki Śląskiej, Gliwice 2013 r.
4. Szarata A., Modelowanie podróży wzbudzonych oraz tłumionych zmianą stanu infrastruktury transportowej. Inżynieria lądowa, Wydaw. Politechniki Krakowskiej im. Tadeusza Kościuszki, Kraków 2013 r.
5. Brzozowska A., Lis T., Najważniejsze porty transportu morskiego i śródlądowego w Niemczech i Polsce, Logistyka nr 6/2013 r.
6. Brzozowska A., Terminale kontenerowe w sektorze transportu morskiego - przykład BCT, Logistyka nr 5/2013.
7. Brzozowska A., Zarządzanie w globalnych sieciach transportowych, Gospodarka Materiałowa & Logistyka, nr 10 (1226)/2013.
8. Kozubek P. R., Efektywność inwestycji infrastrukturalnych w transporcie kolejowym: analiza i ocena, Wydaw. Politechniki Świętokrzyskiej, Kielce 2012 r.
9. Łukasiewicz A., Interesariusze w przedsięwzięciach infrastruktury drogowej i kolejowej, Instytut Badawczy Dróg i Mostów, Warszawa 2012 r.
10. Towpik K., Koleje dużych prędkości: infrastruktura drogi kolejowej, Oficyna Wydaw. Politechniki Warszawskiej, Warszawa 2012 r.
11. Kozubek P. R., Ocena transportowych inwestycji infrastrukturalnych współfinansowanych z funduszy Unii Europejskiej, Instytut Nauk.-Wydaw. SPATIUM, Radom 2011 r.
12. Markusik S., Infrastruktura logistyczna w transporcie/T. 2, Wydaw. Politechniki Śląskiej, Gliwice 2010 r.
14. Brzozowska A., Organization of Transport. Theoretical Approach, (in:) Brzozowska A., red. Economical and Organizational Aspects of Transportation.
15. Kabus J., Znaczenie technologii informatycznych w zarządzaniu łańcuchem dostaw, [w:] Logistyka nr 6, 2014 r., s. 14305-14310.

SUPPLEMENTARY REFERENCE MATERIALS

1. Brzozowska A., Miler R. K., Implementation of the Green Shipping Practices as an Element of the Maritime Transport Restructuring Processes, Publishing House: Foundation of the Cracow University of Economics, Kraków 2017 r.
2. Kabus J., Miciuła I., Piersiala L., Risk in Supply Chain Management, [w:] European Research Studies Journal, Vol. 23, Iss. 4, 2020 r., s. 467-480.

3. Nowicka-Skowron M., Brzozowska A., Nowakowska-Grunt J., Systemy transportowe a polityka zrównoważonego rozwoju w Unii Europejskiej (w:) Wielowymiarowość zarządzania XXI wieku (red.) Jakubiec Marcin, Barcik Agnieszka Bielsko-Biała: Wydawnictwo Naukowe Akademii Techniczno-Humanistycznej w Bielsku-Białej, 2018 r.
4. Chłąd M., Analysis and Development of Sustainable Transport Development in Selected EU Countries, Institute of Economic Research, Toruń, 2019 r.
5. Chłąd M., Nowakowska – Grunt J., Directions of the Transport System Development on the Example of Selected Cities, Transportation Research Procedia, Vol.39, 2019 r.

LEARNING OUTCOMES

- **EU1** The student has knowledge and can see the current trends in the development of infrastructure.
- **EU2** The student has knowledge of the transport infrastructure in organizational and economic terms.

TEACHING TOOLS

- Lecture with the use of audiovisual means.
- Exercises - reference materials, textbook and script.

WAYS OF ASSESSMENT (F – FORMATIVE, P – SUMMATIVE)

- **F1**. Assessment of the implementation of tasks included in the curriculum.
- **F2**. Assessment of the mastery of the teaching material being the subject of exercises - final test.
- **P1**. Assessment of the mastery of the teaching material within the lectures - final test.

STUDENT WORKLOAD

Form of activity	Number of hours	ECTS
Contact hours with the teacher		
Lectures	15	0,6
Seminar		

Classes	15	0,6
Laboratory		
Project		
Test	3	0,12
Exam		
Total contact hours	33	1,32
Student's own work		
Getting acquainted with the indicated literature	7	0,28
Preparation for seminar		
Preparation for classes		
Preparation for lab		
Project preparation		
Consultation	4	0,16
Preparation for the test	6	0,24
Total student's own work	17	0,68
Total number of hours/ ECTS points for the course	**50**	**2,0**

ADDITIONAL INFORMATION

Timetable of classes	https://wip.pcz.pl/dla-studentow/plan-zajec/studia-stStationne
Information about the consultation (time + place)	https://wip.pcz.pl/dla-studentow/konsultacje-dla-studentow

MATRIX OF LEARNING OUTCOMES REALISATION

Learning outcome	**Reference of given outcome to outcomes defined for whole program**	**Course objectives**	**Course content**	**Ways of assessment**
EU 1	K_W01, K_W02, K_U04, K_K01,	C1, C2	L1 - L15 C1 - C15	F1, F2, P1

EU 2	K_W01, K_W02, K_U04, K_K01,	C1, C2	L1 - L15 C1 - C15	F1, F2, P1

FORM OF ASSESSMENT - DETAILS

EU1 The student has knowledge and can see the current trends in infrastructure development.

- 2,0 The student does not know the basic rules of transport infrastructure.
- 3,0 The student knows the basic rules of transport infrastructure, but is unable to use it in practice.
- 3,5 The student almost knows the basic rules in the field of transport infrastructure.
- 4,0 The student knows the general knowledge of transport infrastructure well and understands the current development trends and is able to use them in practice.
- 4,5 Student has almost very good information on transport infrastructure.
- 5,0 The student knows the basic rules of transport infrastructure very well and knows how to use it in practice, relating it to the current development trends.

EU2 The student has knowledge of the transport infrastructure in organizational and economic terms.

- 2,0 The student is not able to define the scope of the transport infrastructure.
- 3,0 The student knows the basic rules of transport infrastructure, but is unable to use it in practice.
- 3,5 The student can almost define the basic rules in the field of transport infrastructure.
- 4,0 The student is able to present general knowledge of transport infrastructure in organizational and economic terms and is able to use it in practice.
- 4,5 The student is able to determine information in the field of transport infrastructure almost very well.
- 5,0 The student knows the basic rules of transport infrastructure very well and knows how to use it in practice, relating it to the current development trends.