Description of course

Code of course	**1160-TRTSEM-MSA-0210**
Name of course	***Management of Investment Process in Transport***
Version of course	2021/22

A. *Place of the course in system of studies*

Level of education	*Second-cycle degree*
Form and mode of studies	*Full-time studies*
Field of studies	*Transport*
Profile of studies	*General academic profile*
Specialization	*Transport systems engineering and management*
Place of teaching of course	*Warsaw University of Technology, Faculty of Transport, Division of Transportation Systems Engineering and Logistics*
Place of realization of course	*Not applicable*
Coordinator of course	*Professor Marianna Jacyna, Ph.D., DSc., Division of Transportation Systems Engineering and Logistics, Warsaw University of Technology, Faculty of Transport*

B. *General characteristic of the course*

Group/Block of courses	*Specialization subject*
Level of course	*Intermediate level*
Type of course	*Compulsory subject*
Language of course	*English*
Location of the course in the study plan – nominal semester	2
Location of the course in the academic year	*Summer semester*
Preliminary requirements - formal	*None.*
Limit of students	*Lecture: 100, exercise: 24*

C. *Effects of education and manner of teaching*

Purpose of course	*Gain knowledge and basic skills in modern transport investment project management based on the determination of the critical path using CPM, PERT and the values of the following indicators: Net Present Value (NPV), the payback period of the investment, Internal Rate of Return (IRR) and project risk indicators.*

Effects of education with reference to the learning outcomes for the area and field of study

No. effect	Description of the effect	Reference to the characteristics of learning outcomes	Reference to the learning outcomes in the program
Assumed learning outcomes in terms of knowledge			
W01	*Have basic theoretical knowledge of project management and investment projects in transport, its participants and the investment project timetable.*	I.P7S_WG.o I.P7S_WK	Tr2A_W10 Tr2A_W12
W02	*Has knowledge of modern management tools and techniques including CPM based project management, PERT - Estimates of time, cost and savings. Fixed and predictable duration of the investment proces.*	I.P7S_WG.o I.P7S_WK	Tr2A_W10 Tr2A_W12
W03	*Will have knowledge of project management, scheduling and risk management based on NPV (Net Present Value), payback period, IRR (Internal Rate of Return).*	I.P7S_WG.o I.P7S_WK	Tr2A_W10 Tr2A_W12
Assumed learning outcomes in terms of skills			
U01	*Can practically use standard project management tools*	I.P7S_UW.o. III.P7S_UW.o I.P7S_UO	Tr2A_U06 Tr2A_U15 Tr2A_U20
U02	*Will be able to estimate the risk, time and cost of project implementation and financial indicators such as NPV, IRR, payback period.*	I.P7S_UW.o III.P7S_UW.o I.P7S_UO	Tr2A_U15 Tr2A_U18 Tr2A_U20

Assumed learning outcomes in the field of social competences				
–	–		–	–

Form of didactic studies and number of hours	*Lecture*	*Exercise*	*Laboratory*	*Project*	*Other*
On a weekly plan	1	1	0	0	0
Throughout the semester	15	15	0	0	0

Contents of education - separately for each form of didactic studies	*Lecture*: *1. Basics of design and investment processes in transport.* *2. Types of investment projects - investments and the investment process and its participants.* *3. Scheduling of an investment project: linear schedules, network methods.* *4 Project management guidelines, project schedule, process diagram.* *5. Project management - CPM, PERT - Estimates of time, costs and savings. Fixed and projected duration of the investment process.* *6. Net present value (NPV) method. Payback period of investment expenditures. Rules of decision making using NPV.* *7. Internal Rate of Return (IRR). IRR - advantages and disadvantages of the method* *8. Example project - description of solutions and influence on the process. Risks associated with the implementation of the project (investment process).Financial indicators for the evaluation of options.* *Exercise*: *Practical example of project management - Gantt chart and determination of critical path by CPM, PERT method. Tasks with different variants for the set time and the expected time of the investment process realisation. Tasks with project comparison using the Net Present Value (NPV) method. Rules for calculating the period of return on investment expenditure. Rules of decision making with the use of NPV. Tasks of comparing projects using the internal rate of return (IRR).*
Teaching methods	*Lecture*: *Multimedia presentation of the lecture content, cases study, discussion.* *Exercise*: *Analytical solutions in the field of project selection method CPM, PERT and financial indicators.*

Methods of verification of effects of education

No. effect	*Methods of verification*
Assumed learning outcomes in terms of knowledge	
W01	*Practical test - multiple-choice questions. It is required to answer at least 51% of the asked questions*
W02	*Practical test - multiple-choice questions. It is required to answer at least 51% of the asked questions*
W03	*Practical test - multiple-choice questions. It is required to answer at least 51% of the asked questions*
Assumed learning outcomes in terms of skills	
U01	*3 project exercises including one large project of a specific investment (carried out in students groups).*
U02	*Test containing one task taking into account the project selection based on the financial indicators NPV, IRR, payback period and project of a specific investment (carried out in students groups)*
Assumed learning outcomes in the field of social competences	
–	–

Methods of evaluation	*Lecture:* *1 test during semester* *Exercises:* *1 test containing one task taking into account the project selection based on the financial indicators NPV, IRR, payback period (and retake of test) and additionally 3 project exercises including one large project of a specific investment (carried out in students groups), Exercises take into account the Gantt chart and determine the critical path using the CPM method , PERT.* *Integrated degree:* *Average of the partial grades.*
Exam	Yes

Literature	*Basic literature*: 1) Project Management. A Systems Approach to Planning, Scheduling, and Controlling. Seventh Edition, Harold Kerzner, John Wiley & Sons, 2001. 2) Princilples of Project Management: http://www.free-management-ebooks.com/dldebk-pdf/fme-project-principles.pdf. 3) Project Management Handbook: https://www.projectmanagement-training.net/wordpress/wp-content/uploads/2015/11/ book_project_management.pdf 4) Project Management – From Simple to Complex: https://www.saylor.org/site/textbooks/ Project%20Management%20-%20From%20Simple %20to%20Complex.pdf.
Website of the course	–
D. *Student's activity*	
Number of ECTS credits	2
Number of hours of student's work to achieve effects of education	*60 hours, including: work on lectures 15 hours, work on exercises 15 hours, reading related materials and own work 7 hours, consultations 3 hours, preparing to tests 9 hours, preparing to exams 9 hours, taking an exam 2 hours.*
Number of ECTS credits on the course with direct participation of academic teacher	*1,5 ECTS (35 hours, including: work on lectures 15 hours, work on exercises 15 hours, consultations 3 hours, taking an exam 2 hours)*
Number of ECTS credits on practical activities on the course	0
E. *Additional information*	
Notes	*As long as it does not cause changes in the relationship of a given subject with the directional effects in the content of education, changes may be introduced on an ongoing basis, taking into account the latest scientific achievements.*
Date of last edition	2021-02-10 16:45