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3. Student can make the development of preparing him to undertake scientific work $\,$ - [K_U18]

Faculty of Civil and Environmental Engineering

- 1. Can carry out certain tasks to work independently, to work in a team and manage a team. [K_K01]
- 2. Student is responsible for the accuracy of the results of their work and an assessment of the work under his team -[K_K02]
- 3. Student can complement and extens knowledge of modern processes and technologies in construction [K_K03]

Assessment methods of study outcomes

Lecture:

Exam in writing or using the Moodle system.

Scoring:

55-64% - 3

65-74% - 3.5

75-84% - 4

85-94% - 4.5

95-100% - 5

Exercises:

Final test in writing or using Moodle system.

Active participation in the exercises.

Preparation of the report of the exercises after classes.

Scoring:

55-64% - 3

65-74% - 3.5

75-84% - 4

85-94% - 4.5

95-100% - 5

Course description

The principle of flexibility in the design.

Flexibility in use.

Flexible approach to the construction process.

Examples of the use of flexibility in the construction industry in the world.

The concept of NPV and Global Market.

Tools such as decision tree.

Productivity tools group - brainstorming.

Basic bibliography:

- 1. Flexibility in Engineering Design, Richard De Neufville, Stefan Scholtes
- 2. Applied Systems Analysis: Engineering Planning and Technology Management, Richard De Neufville
- 3. Materiały szkoleniowe udostępnione na portalu Moodle

Additional bibliography:

- 1. Systems Analysis for Engineers and Managers, Richard De Neufville
- 2. Engineering Design: A Systematic Approach, Gerhard Pahl, W. Beitz, Jörg Feldhusen, Karl-Heinrich Grote
- 3. Project Management Institute, A Guide to the Project Management Body of Knowledge (PMBOK Guide), Fifth Edition
- 4. Airport Systems: Planning, Design, and Management, Richard De Neufville, Amedeo Odoni

Result of average student's workload

Activity	Time (working hours)
1. Participation in lectures	15
2. Exam preparation	30
3. Participation in exercises	15
4. Reports preparation	15
5. Final test preparation	15

Student's workload

Poznan University of Technology Faculty of Civil and Environmental Engineering

Source of workload	hours	ECTS
Total workload	90	2
Contact hours	30	2
Practical activities	15	1