



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

TOC (Theory of Constraints)

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### Course

Field of study

Logistics

Area of study (specialization)

Corporate Logistics

Level of study

Second-cycle studies

Form of study

full-time

Year/Semester

1/2

Profile of study

general academic

Course offered in

polish

Requirements

elective

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### Number of hours

Lecture

15

Tutorials

15

Laboratory classes

Projects/seminars

15

Other (e.g. online)

### Number of credit points

5

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### Lecturers

Responsible for the course/lecturer:

dr hab. inż. Łukasz Hadaś, prof. PP

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Wydział Inżynierii Zarządzania

ul. Rychlewskiego 2, 60-965 Poznań

Responsible for the course/lecturer:

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### Prerequisites

The student knows the basic concepts related to the management of production. The student has the



ability to perceive and interpret the phenomena occurring in the field of management. The student is aware of the impact of constraints on the effectiveness of production system.

### Course objective

The aim of the course is presentation TOC (Theory of Constraints) as a management concept. The student knows the basic principles of TOC and can use the tool to identify the limitations and process improvements. He knows the TOC tools appropriate to the material flow management.

### Course-related learning outcomes

#### Knowledge

1. Student knows the TOC (Theory of Constraints) and its basic concepts - [P7S\_WG\_02]
2. The student knows the Werbel-Bufor-Lina method and its application in material flow management - [P7S\_WG\_05]
3. The student knows the TOC principles and their application in the area of production and logistics - [P7S\_WG\_08]
4. Student knows the basic TOC tools used in management - [P7S\_WK\_01]

#### Skills

1. Student is able to indicate process improvements according to TOC rules - [P7S\_UW\_04]
2. Student is able to design a solution to managerial problems using appropriate tools and techniques TOC - [P7S\_UW\_05]
3. Student is able to design an analysis process to evaluate the proposed solutions based on TOC tools - [P7S\_UK\_01]

#### Social competences

The student is aware of the responsibility for their own work and readiness to comply with the rules of teamwork and taking responsibility in the project group - [P7S\_KR\_01]

### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Formative assessment:

- a) For the project: on the basis of progress in the implementation stages of the project, and knowledge of the issues necessary to carry
- b) for the classes: on the basis of discussions on knowledge of the issues necessary for the proper performance of the exercises
- c) for the lecture: on the basis of answers to questions about the topics covered in previous lectures

Recapitulative assessment:

- a) For the project: on the basis of (1) the quality of the project (2) answers to questions about the project
- b) For classes: from prepared reports.
- c) for the lecture: on the basis of colloquium - written



work on the issues discussed during the lecture. The exam can be applied after obtaining the ratings of the project and the laboratory. The exam is passed, after giving the correct answers to most questions

### Programme content

Lectures:

Presentation of the genesis of the TOC, the history of the development of concepts. Presentation methods: Five Focusing Steps, VAT Analysis, the procedures of buffers management - Traffic Light Analogy and methods DBR (Drum-Buffer-Rope). Critical Chain Project Management (CCPM) methodology. Comparison of production systems improvement according to logics: classical, Lean and TOC.

Project / exercises:

- The use of the procedure of buffers management (Traffic Light Analogy)
- Project management for. Critical Chain methodology (CCPM).
- Management of the production process flow for different variants of material streams (Goldratt Simulator Application) using DBR Solution.

### Teaching methods

Lecture: Information lecture, problem lecture

Exercise: exercise method, decision game

### Bibliography

Basic

1. Hadaś Ł. Cyplik P., TOC i Lean Production, Idea, narzędzia, praktyka zastosowania, Wydawnictwo Politechniki Poznańskiej, Poznań, 2013
2. Goldratt E., Cox J., Cel. Doskonałość w produkcji, WERBEL, Warszawa 2000
3. Goldratt E. M., Łańcuch krytyczny, MINT Books, Warszawa 2009

Additional

1. Goldratt E. M., Cel II, To nie przypadek, MINT Books, Warszawa 2007
2. Woepel M. J., Manufacturer's Guide to Implementing the Theory of Constraints, The St. Lucie Press, Boca Raton London New York Washington, D.C. 2001



### Breakdown of average student's workload

	Hours	ECTS
Total workload	125	5,0
Classes requiring direct contact with the teacher	65	3,0
Student's own work (literature studies, preparation for classes/tutorials, written preparation of classes and project, preparation for colloquium) ) <sup>1</sup>	60	2,0

<sup>1</sup> delete or add other activities as appropriate