COURSE DESCRIPTION CARD - SYLLABUS

Course name
TOC (Theory of Constraints) [S2Log2-SPL>TOC]

Course

Field of study
Logistics

Year/Semester
1/2

Area of study (specialization)
Production-logistics Systems

Profile of study
general academic

Level of study
second-cycle

Course offered in
Polish

Form of study
full-time

Requirements
elective

Number of hours

Lecture
15

Laboratory classes
0

Other
0

Tutorials
15

Projects/seminars
15

Number of credit points

4,00

Coordinators

dr hab. inż. Łukasz Hadaś prof. PP
lukasz.hadas@put.poznan.pl

Lecturers

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:
1. 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:

Lecture: Formative assessment: on the basis of answers to questions about the issues discussed in previous lectures or a partial test. Summative assessment: on the basis of a test - written work - on the issues discussed in the lecture or test. The lecture is passed after providing factually correct answers to most of the issues raised, the pass mark is 50% of points.
Exercises: Formative assessment: on the basis of a conversation on the knowledge of the issues necessary for the correct implementation of the current exercise. Summative assessment: based on a written study.
Project: Formative assessment: on the basis of the progress in the implementation of the stages of the project and knowledge of the issues necessary for its implementation. Summative assessment: on the basis of the substantive quality of the implemented project and the defense of the completed project.

Programme content

The program includes the concept of Theory of Constraints (TOC): Five Focusing Steps method, Traffic Light Analogy buffer management procedure, DBR (Drum-Buffer-Rope) method, project management according to the critical chain methodology (CCPM).

Course topics

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.
Exercise: 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.
Project: 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.
Project: 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. Woeppel 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	100	4,00
Classes requiring direct contact with the teacher	45	2,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	55	2,00