

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Theory of Constraints		Code 1011102421011117650
Field of study Logistics - Full-time studies - Second-cycle	Profile of study (general academic, practical) (brak)	Year /Semester 1 / 2
Elective path/specialty Corporate Logistics	Subject offered in: -	Course (compulsory, elective) elective
Cycle of study: Second-cycle studies	Form of study (full-time,part-time) full-time	
No. of hours Lecture: 15 Classes: 15 Laboratory: - Project/seminars: 15		No. of credits 5
Status of the course in the study program (Basic, major, other) (brak)		(university-wide, from another field) (brak)
Education areas and fields of science and art technical sciences Technical sciences		ECTS distribution (number and %) 2 100% 2 100%
Responsible for subject / lecturer: dr inż. Łukasz Hadaś email: lukasz.hadas@put.poznan.pl tel. (61) 665 34 01 Wydział Inżynierii Zarządzania ul. Strzelecka 11 60-965 Poznań		
Prerequisites in terms of knowledge, skills and social competencies:		
1	Knowledge	The student knows the basic concepts related to the production management
2	Skills	The student has the ability to see, association, interpretation of the phenomena occurring in the field of management
3	Social competencies	The student is aware of the impact of constraints on the effectiveness of management systems
Assumptions and objectives of the course: 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.		
Study outcomes and reference to the educational results for a field of study		
Knowledge:		
1. The student describes the relationship between the "bottleneck" and the system in the areas of application of TOC - [K2A_W03]		
2. The student explains the characteristics of the production system of balanced and unbalanced potential - [K2A_W05]		
3. The student explains the use of tools Drum - Buffer - Rope in the management of the flow of material streams - [K2A_W08]		
4. The student characterized the idea of TOC and its basic concepts - [K2A_W09]		
5. The student characterized the basic tools of TOC - [K2A_W13]		
6. The student describes the practice of inventory management with the use methods Traffic Light Analogy - [K2A_W18]		
Skills:		
1. The students realizes self-study to expand the ability to use tools TOC - [K2A_U05]		
2. The student is able to design a process of analysis to evaluate the proposed solutions based on tools TOC - [K2A_U09]		
3. The student can identify process improvements according to the principles of TOC - [K2A_U16]		
4. The student is able design a solution to the problems of managerial with use of appropriate tools and techniques to TOC - [K2A_U17]		
Social competencies:		

1. The student is aware of their responsibility for their own work and a willingness to respect the principles of teamwork and responsibility in the project team - [K2A_K03]
2. The student is aware of the impact constraints on the entrepreneurship in the context of achieved results - [K2A_K06]
3. The student is able to present and defend their developed solutions - [K2A_K07]

Assessment methods of study outcomes

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

Course description

Lectures:

Presentation of the genesis of the TOC, the history of the development of concepts, conditions in which was created the algorithm OPT.

Presentation methods: Five Focusing Steps, VAT Analysis, the management procedures buffers - Traffic Light Analogy and methods DBR (Drum-Buffer-Rope).

Critical Chain Project Management (CCPM) methodology

Comparison of production systems operating by logics: classical, JIT and TOC.

Projects / exercises:

Case studies:

- The use of the management procedure buffers (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)

Basic bibliography:

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., Cel II, To nie przypadek, MINT Books, Warszawa 2007
4. Goldratt E. M., Łańcuch krytyczny, MINT Books, Warszawa 2009
5. Hadaś Ł., Cyplik P., TOC i Lean Production, Idea, narzędzia, praktyka zastosowania, Wydawnictwo Politechniki Poznańskiej, Poznań, 2013
6. Goldratt E., Cox J., Cel. Doskonałość w produkcji, WERBEL, Warszawa 2000
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9. Hadaś Ł., Cyplik P., TOC i Lean Production, Idea, narzędzia, praktyka zastosowania, Wydawnictwo Politechniki Poznańskiej, Poznań, 2013
10. Goldratt E., Cox J., Cel. Doskonałość w produkcji, WERBEL, Warszawa 2000
11. Goldratt E. M., Cel II, To nie przypadek, MINT Books, Warszawa 2007
12. Goldratt E. M., Łańcuch krytyczny, MINT Books, Warszawa 2009

Additional bibliography:

1. Hadaś Ł., Fertsch M., Cyplik P., Planowanie i sterowanie produkcją, Wydawnictwo Politechniki Poznańskiej, Poznań, 2012
2. Woepfel M. J., Manufacturer?s Guide to Implementing the Theory of Constraints, The St. Lucie Press, Boca Raton London New York Washington, D.C. 2001
3. Hadaś Ł., Fertsch M., Cyplik P., Planowanie i sterowanie produkcją, Wydawnictwo Politechniki Poznańskiej, Poznań, 2012
4. Woepfel M. J., Manufacturer?s Guide to Implementing the Theory of Constraints, The St. Lucie Press, Boca Raton London New York Washington, D.C. 2001
5. Hadaś Ł., Fertsch M., Cyplik P., Planowanie i sterowanie produkcją, Wydawnictwo Politechniki Poznańskiej, Poznań, 2012
6. Woepfel M. J., Manufacturer?s Guide to Implementing the Theory of Constraints, The St. Lucie Press, Boca Raton London New York Washington, D.C. 2001

Result of average student's workload

Activity		Time (working hours)
1. Lecture		15
2. Project		15
3. Classes:		15
4. Own study/work		5
Student's workload		
Source of workload	hours	ECTS
Total workload	50	2
Contact hours	45	1
Practical activities	30	1