POZNAN UNIVERSITY OF TECHNOLOGY

EUROPEAN CREDIT TRANSFER AND ACCUMULATION SYSTEM (ECTS)

COURSE DESCRIPTION CARD - SYLLABUS

Course name
SIX SIGMA METHODOLOGY IN PRODUCTION MANAGEMENT [S5SD1>MSSZP]

Course

Proposed by Discipline	Year/Semester
–	2/3
Level of study	Course offered in
Doctoral School	English
Form of study	Requirements
full-time	elective

Number of hours

Lecture	Laboratory classes	Other
4	0	0
Tutorials	Projects/seminars	
0	0	

Number of credit points

1,00

Coordinators	Lecturers
dr inż. Filip Karaśkiewicz filip.karaskiewicz@put.poznan.pl	

Prerequisites

Knowledge: Basic knowledge of practical production company management including statistical approach in problem solving. Skills: Basic statistical reasoning, task management. Social competences: leadership based on practical statistics.

Course objective

Purpose is to introduce students into specific way of managin g production company; based on simple statistics tools and strong analytical approach.

Course-related learning outcomes

Knowledge:
A PhD student who graduated from doctoral school knows and understands:
1) global achievements, covering theoretical foundations as well as general and selected specific issues that are relevant to scientific disciplines studied at the Doctoral School, to the extent that enables revision of existing paradigms, [P8S_WG/SzD_W01]
2) scientific research methodology in disciplines represented at the Doctoral School, [P8S_WG/SzD_W03]
3) principles of disseminating results of scientific activity, also in an open access mode, [P8S_WG/SzD_W04]
4) basic principles of knowledge transfer to the economic and social sphere as well as those of

commercialization of results of scientific activities and knowhow related to these results, [P8S_WK/ SzD_W07]

Skills:
A PhD student who graduated from doctoral school can:
1) communicate on specialist issues on the level that allows active participation in the international scientific community, [P8S_UK/SzD_U04]
2) plan and implement individual and team research projects, also in the international community, [P8S_UO/ SzD_U09]
3) independently plan and act for their self-development as well as inspire and organize development of others, [P8S_UU/SzD_U10]
4) plan classes and groups of classes and conduct them with the use of up-to-date methods and tools, [P8S_UU/SzD_U11]

Social competences:
A PhD student who graduated from doctoral school is ready to:
1) acknowledge the importance of knowledge in solving cognitive and practical problems, [P8S_KK/ SzD_K03]
2) think and act in an entrepreneurial manner, [P8S_KO/SzD_K06]

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

This mini-project aims to deepen understanding of the Six Sigma DMAIC framework through practical application and statistical analysis. Students will demonstrate their ability to structure improvement projects using DMAIC and interpret relevant data through appropriate statistical tools.

Task 1: Development of Six Sigma Project Examples
Instructions:
- Prepare three distinct examples of potential Six Sigma projects.
- For each project, clearly define and elaborate on the five phases of the DMAIC methodology.
- Include specific activities, statistical tools, and analytical techniques used in each phase.

Evaluation Criteria (7 points total):
- 1 point for maintaining correct DMAIC structure across all examples.
- 3 points for clear and comprehensive explanations of each DMAIC phase.
- 3 points for relevant examples of activities, statistics, and analyses used in each phase.

Task 2: Statistical Analysis and Visualization

Instructions:
- Present three statistical analyses relevant to the DMAIC methodology.
- Each analysis should be accompanied by a correctly structured diagram or plot (e.g., Pareto chart, control chart, histogram).
- Provide a detailed interpretation of each diagram, explaining:
- What the diagram shows.
- How it supports decision-making within the DMAIC framework.

Evaluation Criteria (6 points total):
- 3 points for accurate and well-structured visualizations.
- 3 points for clear and insightful explanations of each analysis.

Total Points Available: 13
Score 3 : 7 points
Score 3,5: 9 points
Score 4 : 10 points
Score 4,5 : 12 points
Score 5: 13 points

Programme content

Programme covers usage of statistical tools in production management including process and human resources management.

Course topics

1. Introducing Six Sigma fundamentals with DMAIC.
2. Histogram and Pareto analysis. SPC and process capability in production environment.
3. KPIs management.
4. Task Management Leadership in sixsigma

Teaching methods

Lecture: Multimedia presentation including illustrations and examples.

Bibliography

Basic:
1. Brue G., Six Sigma for Managers - 2nd edition, ISBN-10: 0071838635, 2015
2. Pawłowski E., Trzcieliński S., Zarządzanie przedsiębiorstwem: funkcje i struktury, 2011

Additional:
-

Breakdown of average student's workload

	Hours	ECTS
Total workload	25	1,00
Classes requiring direct contact with the teacher	4	0,00
Doctoral student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation)	21	1,00