COURSE DESCRIPTION CARD - SYLLABUS

Course name
Risk management [S2MiBM2>ZR]

Course

Field of study
Mechanical Engineering

Year/Semester
1/2

Area of study (specialization)
Virtual Engineering Design

Profile of study
general academic

Level of study
second-cycle

Course offered in
Polish

Form of study
full-time

Requirements
compulsory

Number of hours

Lecture
15

Laboratory classes
0

Other
0

Tutorials
0

Projects/seminars
15

Number of credit points

2,00

Coordinators

dr hab. inż. Hubert Jopek
hubert.jopek@put.poznan.pl

Lecturers

Prerequisites

Knowledge of mathematics, and in particular statistics at the academic level. Knowledge in the field of economics, knowledge in the field of planning and management of technological processes.

Course objective

Knowledge of risk management in the organization and in particular in the execution of projects and the preparation and supervision of processes.

Course-related learning outcomes

Knowledge:
1. The student has broadens theoretical knowledge related to the planning processes including strategic and production planing (construction, technological and organizational planning).
2. The student has extensive knowledge of mathematical statistics, mainly in the area of forecasting in the company and process simulation.
3. Knows and understands the basic concepts and principles of economic, legal, ethical and other non-technical conditions of various types of professional activity related to the field of Mechanics and Machine Construction, including the principles of protection of industrial property and copyright.

4. The Student know the basic methods and techniques used to solve complex engineering tasks related to modeling and process improvement (including business processes).

Skills:
1. The student is able to develop forecasts using the methods of regression analysis and the methods of moving average, moving weighted average and exponential smoothing. Student is also able to develop a model illustrating changes in process parameters, taking into account the risk drift.
2. The student can develop a model of the process and tasks (operations) carried out in processes and apply modeling to simulate the analyzed objects.
3. Is able to take into account social, economic, legal, ecological and other non-technical conditions in solving engineering problems.
4. Te student is able to assess the reliability of technical objects.

Social competences:
The student is aware of the effects of engineering activities both in the technical and non-technical areas. The student is also aware of the consequences of decisions made and responsibility for the decisions made.
Correctly identifies and resolves dilemmas related to the profession.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Completion of the lecture based on the points obtained during the test and during the activity in the classroom. Passing requires more than 50% of points:> 50% - 3.0,> 60% - 3+,> 70% - 4,> 80% - 4+,> 90% of points - 5.0
project: Assessment based on the risk management concept prepared for selected problem. The form and quality of the prepared materials are assessed.
Grades: very good - if the ratio of sums of achieved and total points is bigger than 90,1%; good plus - if the ratio of sums of achieved and total points is between 80,1-90%; good - if the ratio of sums of achieved and total points is between 70,1-80%; satisfactory plus - if the ratio of sums of achieved and total points is between 60,1-70%; satisfactory - if the ratio of sums of achieved and total points is between 50,1-60%; if the sum is smaller than 50% - unsatisfactory.

Programme content

Introduce the concept of risk management, and in particular risk management in an organization, familiarize with methods of identifying, estimating, controlling, reporting, and minimizing and avoiding risks. Discuss the concept of risk in relation to issues of occupational safety, maintenance and reliability of machinery, data security, financial risk, project management.

Course topics

The class is devoted to presenting methods for analyzing, assessing and dealing with risk. Students are introduced to various concepts of risk: in a broad sense (as the probability of deviation from the expected result) as well as in a narrower sense (as the probability of an undesirable event).
The following risk management issues are presented in the course.
1. basic scheme of risk management based on ISO 31000 standard
2. presentation of methods of analysis, estimation and risk assessment. Quantitative and qualitative methods. General methods (e.g. FMEA, HAZOP) and dedicated to specific applications (e.g. HACCP, VaR).
3. discussion of selected risk management standards applicable in selected fields, including machine safety issues, production processes
In maintenance of machinery and equipment.
4. development of procedures, scenario methods, contingency plans, crisis management
5. basic information on financial risk: time value of money volatility, exchange rates, hedging and financial instruments to minimize risk
6. issues related to cyber security
7. risk in project management.

Teaching methods

Lecture: lecture / problem lecture / lecture with multimedia presentation The content presented at the lecture is provided in the form of a multimedia presentation in combination with a classic blackboard lecture enriched with demonstrations related to the presented issues.
Project: project method, problem solving, solving practical problems, searching for sources, team work, discussion.
Classes conducted in a stationary form or as webinar.

Bibliography

Basic:
Risk management - Risk assessment techniques
Jajuga K. "Zarządzanie ryzykiem", PWN, Warszawa, 2018
Tarczyński W, Mojsiewicz M. Zarządzanie ryzykiem. Podstawowe zagadnienia , PWE, Warszawa 2001
Wróblewski D. "Zarządzanie ryzykiem" - przegląda wybranych metodyk, CNBOP-PIB, Józefów 2015

Additional:
Holliwell J., The Financial Risk Manual: A Systematic Guide to Identifying and Managing Financial Risk, Pearson Education Limited, 1997.
Hubbard D.W., The Failure of Risk Management, John Wiley and Sons Ltd New Jersey, 2009.

Breakdown of average student's workload

	Hours	ECTS
Total workload	50	2,00
Classes requiring direct contact with the teacher	30	1,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	20	1,00