COURSE DESCRIPTION CARD - SYLLABUS

Course name
Inventive methods in design [S2ZiIP2>MIwP]

Course

Field of study
Management and Production Engineering

Year/Semester
2/3

Area of study (specialization)
Production control

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
0

Projects/seminars
15

Number of credit points

2,00

Coordinators

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Lecturers

Prerequisites

The student possesses elementary knowledge of production management, as well as technical knowledge related to the discipline of mechanical engineering. The student is capable of perceiving and making a preliminary analysis of issues occurring in the organization. The student knows the fundamentals of product design.

Course objective

The aim of the course is to familiarize students with the methods used in the area of creative problem solving in the field of product design.

Course-related learning outcomes

Knowledge:
The student operates comfortably with the basic terms of innovative design.
The student knows the stages of creative process.
The student knows the methods of cretaive problem solving.

Skills:

The student has the ability to use basic methods of creative problem solving in practice.
The student is capable of selecting a creative solution method for a specific project.
The student is capable of developing the design of a new product using the learnt methods.

Social competences:
The student is creative. Working in a team, the student is capable of justifying decisions and is aware of the resulting responsibilities.
The student is able to cooperate in a team.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture: passing grade based on active participation in lectures and discussion.
Project: Passing grade on the based on the developed group project. In order to receive credit, the project must be successfully evaluated and all required tasks included in the project must be completed.

Programme content

The process of creative problem solving (basic concepts and stages).
Methods of creative problem solving (classification, characteristics).
Creation of a new product (taking into account eco-innovation).

Course topics

Lecture:
1. Introduction to the subject.
2. The process of creative problem solving (basic concepts and stages).
3. Familiarization with inventive methods.
4. Methods of creative problem solving (classification, characteristics).
5. Possibilities of application of inventive methods in the design of new products.
6. Creation of a new product (taking into account eco-innovation).
7 Conducting an ingenuity session.
8. Conducting a refinement session.
9. Summary of the results obtained during the session.
Project:
1. discussion of the project.
2. Selecting the design methodology for the innovative product.
3. Defining the environmental aspects of the designed product.
4. Application of selected methods of creative problem solving to develop the concept of an innovative product.
5. Evaluation of the obtained solutions.
6. Development of conceptual assumptions of the innovative product.
7. Development of the product design.
8. Cost analysis for the developed product.
9. Presentation of projects.

Teaching methods

Lecture: multimedia presentation illustrated with examples given on the blackboard, solving tasks, discussion. Lecture conducted remotely using the synchronous access method.
Project: solving practical problems, finding sources, working in a team, discussion.

Bibliography

Basic:
1. Rutkowski I. P., Rozwój nowego produktu. Metody i uwarunkowania. PWE, Warszawa, 2007
2. Antoszkiewicz A., Metody heurystyczne. Twórcze rozwiązywanie problemów. PWE, Warszawa 1990
3. Knosala R., Boratyńska-Sala A., Jurczyk-Bunkowska M., Moczała A., Zarządzanie innowacjami, PWE, Warszawa 2013

Additional:

1. Hamrol A., Strategie i praktyki sprawnego działania Lean Six Sigma i inne, PWN, Warszawa, 2016
2. Szmidt K., Trening kreatywności, Wydawnictwo Helion, Gliwice 2008

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