SYLLABUS

Name: **Implementation of innovations in technical systems (p.w.)**
Name in Polish:
Name in English:

Information on course:

Course offered by department: Faculty of Organisation and Management
Course for department: Silesian University of Technology
Study level and form: Bachelor's degree, Full-time
Term: summer semester 2022/2023
Coordinator of course edition: dr inż. Stefan Senczyna

Default type of course examination report:

ZAL

Language:

English

Course homepage:

https://platforma.polsl.pl/roz/course/view.php?id=382

ECTS

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Short description:

A series of lectures covering knowledge about technical systems, the importance and formal conditions of innovation and selected methods of implementing innovation. The processes of producing goods and providing services currently include streams of resource and knowledge flows in the complex organization of an enterprise. Understanding the role of Innovation and how to implement innovations in production processes is the basic goal of the lectures. An important component of the lectures is to discuss the social and economic importance of innovation. The presentation of methods for implementing innovations in technical systems is supported by a case study. Students acquire knowledge for cooperation in projects implementing innovations in technical systems

Description:

Lecture topics:
- Definitions of Innovation and innovativeness in the technical, economic and social context. Structural and process models of the technical system.
- Creative, conceptual and design processes in obtaining innovative solutions for the technical system.
- Experiment, prototyping, modeling as creative methods and techniques in the search for innovation
- Technology Assessment as a practical process of evaluating new or emerging technology itself or in comparison to existing or competing technologies, using safety, effectiveness, efficiency, performance, risk management, strategic, financial and competitive criteria.
- Case study of the application of the Technology Assessment methodology
- Sensitive methods in planning innovations in the product life cycle
- Building technical, economic and social criteria for implementing innovations in the life cycle of a technical system
- Innovative trends in the area of ecology and climate
- The role of project management in the enterprise in response to the needs of implementing innovations, in particular pro-ecological innovations.

The course includes 30 hours of lectures. The student's own work covers 30 hours, including the development of reports on topics discussed during lectures and preparation for the final exam.

Bibliography:

1. Meyer Arnou de: Inspire to innovate : management and innovation in Asia. Palgrave Macmillan, Basingstoke– New York 2005.
2. Carayannis E. G., Assimakopoulos D., Kondo M.: Innovation networks and knowledge clusters : findings and insights from the US, EU and Japan. Palgrave Macmillan, New York 2008.
3. Levitt J.: The handbook of maintenance management. Industrial Press, New York 1997.
4. Niebel B. W.: Engineering maintenance management. Marcel Dekker, New York 1994.
5. Verganti R.: Design-driven innovation : changing the rules of competition by radically innovating what things mean. Harvard Business Press, Boston MA 2009
6. Managing the Innovation Process | Sloan School of Management | MIT OpenCourseWare
7. Managing Innovation and Entrepreneurship | Sloan School of Management | MIT OpenCourseWare
8. Lecture Notes | Product Design and Development | Sloan School of Management | MIT OpenCourseWare

Learning outcomes:

- the student has knowledge about the impact of innovation on the technical system, in particular in the ecological area, and understands the use of technical, economic and social criteria in the classification of innovations (K1A_W20)
- the student is able to build criteria covering technical, economic and social aspects for assessing innovation in the aspect of the technical system and make a comparative assessment of the innovativeness of the resulting technical system (K1A_U08)
- the student uses sensitive methods in planning innovations in the product life cycle using process models and process visualization tools and is able to plan and implement his/her own lifelong learning (K1A_U19)
- the student understands the issues discussed during classes, joins the discussion and uses the indicated literature using English language (K1A_U15)
- the student understands the basic principles of protecting intellectual values in the context of implementing innovations (K1A_K05)

Assessment methods and assessment criteria:

The assessment includes two components:
- activity during classes – maximum 20 points
- case study, made on the basis of the assumptions discussed during classes - maximum 80 points.

Grading scale:
Bdb above 90 points
pdb above 80 points
db above 70 points
pdst above 60 points
dst above 50 points

Practical placement:

Not applicable