SYLLABUS

Name: Engineering project
Name in Polish: Projekt inżynierski
Name in English: Engineering project

Information on course:

Course offered by department:	Faculty of Organisation and Management
Course for department:	Silesian University of Technology
Study level and form:	Bechelor's degree, Full-time
Term:	summer semester 2022/2023, winter semester 2023/2024
Coordinator of course edition:	dr hab. inż. Magdalena Palacz, prof. PŚ, prof. dr hab. Grażyna Płaza

Default type of course examination report:

Passing the course

Language:

English

Course homepage:

https://platforma.polsl.pl/roz/

ECTS

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Short description:

The aim of the course is the acquisition by the student of knowledge and skills in the identification, analysis, and exploration and solution of problems in the field of production engineering. The student also acquires the ability to realize compact studies presenting all the above-mentioned stages of problem description in the form of an engineering project, and, in addition, to present his/her own project achievements. In addition, the student becomes familiar with the formal aspects of the process of preparing an engineering project, contained in particular the formal and legal documentation of the Silesian University of Technology.
The course also aims to shape the student's appropriate attitude characterized by their activity and independence in conducting research in the field of searching and applying modern solutions supporting the studies on a selected engineering problem, and, also criticism, independence of thinking, decision-making, planning and organizational ability.

Description:

Program content

1 The diploma process at the Silesian University of Technology.
2. The essence and objectives of the diploma thesis as an engineering project, the structure of the thesis.
3. The concept of an engineering problem, how to formulate and describe an engineering problem.
4. The role and methods of recognizing the knowledge of the engineering problem. Methodology of conducting critical literature analysis in electronic bibliographic resources. Presentation and ways of working with e-resources available in the Library of the Silesian University of Technology.
5. Methods of creative problem solving.
6. Work methodology for preparing a presentation and presenting the results of project work.

Number of hours of classes with direct participation of academic teachers or other persons teaching courses and students:
Seminar: 15/30h
Number of hours with direct participation of academic teachers or other instructors: 15/30
Number of hours allocated to students' own work:
Preparation of work: 80/270 h
Preparation of presentation: 10/45 h
Total number of hours: 150/300
Number of ECTS credits: 4/11
of which
Number of ECTS credits obtained from classes with direct participation of academic teachers or other instructors and students: 0,5/1

Bibliography:

Scientific manuscripts (available in e-resources of Silesian University of Technology https://www.bg.polsl.pl/ebazy/listaebaz_s3.html):
Sin Wang Chong, Ting Jun Lin, Yulu Chen, A methodological review of systematic literature reviews in higher education: Heterogeneity and homogeneity, Educational Research Review, Volume 35, 2022, 100426, ISSN 1747-938X, https://doi.org/10.1016/j.edurev.2021.100426. (https://www.sciencedirect.com/science/article/pii/S1747938X2100049X)
Davide Russo, Christian Spreafico, TRIZ 40 Inventive Principles Classification through FBS Ontology,
Procedia Engineering, Volume 131, 2015, Pages 737-746, ISSN 1877-7058, https://doi.org/10.1016/j.proeng.2015.12.367. (https://www.sciencedirect.com/science/article/pii/S1877705815042514)
Xiantong Yang, Mengmeng Zhang, Yuehan Zhao, Qiang Wang, Jon-Chao Hong, Relationship between creative thinking and experimental design thinking in science education: Independent or related, Thinking Skills and Creativity, Volume 46, 2022, 101183, ISSN 1871-1871, https://doi.org/10.1016/j.tsc.2022.101183. (https://www.sciencedirect.com/science/article/pii/S1871187122001869)
Additionally:
Regulamin Studiów w Politechnice Śląskiej

Learning outcomes:

Student knows and understands:
K1A_W05 the issues of the principles of conducting and developing the results of physical measurements, the types of measurement uncertainty and how to determine them.

Skills
Student is able to:
K1A_U07 design - according to the given specification - and perform a simple technical system and implement a technological process, using appropriately selected methods, techniques, tools and materials.

K1A_U13 while identifying and formulating specifications of engineering tasks and solving them:
- use analytical, simulation and experimental methods,
- recognize their system and non-technical aspects, including ethical aspects,
- make a preliminary economic assessment of the proposed solutions and engineering activities undertaken.

K1A_U14 use the knowledge possessed - formulate and solve complex and unusual problems and innovatively perform tasks in variable and not fully predictable conditions by:
- proper selection of sources and information from them, making evaluation, critical analysis and synthesis of this information,
- selecting and applying appropriate methods and tools, including advanced information and communication technology (ICT).

Social competences
Student is ready for:
K1A_K02 recognition of the importance of knowledge in solving cognitive and practical problems and consulting experts in the event of difficulties in solving the problem.

Assessment methods and assessment criteria:

Summer semester – Submission and successful completion of the interim thesis - the theoretical part of the engineering project, attendance at the seminar.
Winter semester - A condition of getting the pass mark for the course is submitting approved by the supervisor and a finished engineering project in the system of Archivisation of thesis of the Silesian University of Technology and presentation of the project during the last classes.
Evaluation of the project is carried out according to the criteria specified in the Quality Assurance Book of the Silesian University of Technology. The assessment includes the content as well as the linguistic and editing aspects of the thesis.

Practical placement:

Not applicable