SYLLABUS

Name: Technical elective courses (PBL, 4 sem.) 3D Printing
Name in Polish: Druk 3D
Name in English: 3D Printing

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 2024/2025
Coordinator of course edition:	mgr inż. Beniamin Stecuła

Default type of course examination report:

Language:

english

Course homepage:

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

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Short description:

The aim of the course is to provide students with knowledge in the field of 3D printing and the ability to use it in practice when using 3D printers.

Description:

The laboratory includes:

1. Overview of what 3D printing is
2. Applications of 3D printing
3. Getting to know the materials on the example of ready-made printouts
4. Types of printers and other devices for creating in 3D
5. Types of 3D printing technology
6. Preparation and processing of models
7. Configuration and setting of print parameters
8. Overview of G-code and its editing
9. Multi-colour prints
10. Making Your Own Projects

NUMBER OF HOURS
Number of hours of classes with the direct participation of academic teachers or other lecturers and students
- Project: 30 hours
Number of hours devoted to the student's own work: 60 hours, including:
- Preparation for laboratory classes and project work: 60 hours
Total hours: 90.

Bibliography:

- Budzik G., Druk 3d jako element przemysłu przyszłości analiza rynku i tendencje rozwoju, ISBN 978-83-7934-610-3
- Kloski Liza Wallach Kloski Nick, Druk 3D. Praktyczny przewodnik po sprzęcie, oprogramowaniu i usługach (Make: Getting Started with 3D Printing)
- Richard Horne i Kalani Kirk Hausman, Druk 3D dla początkujących (wydanie drugie)
- ORZEŁ, Bartosz; STECUŁA, Kinga. Comparison of 3D Printout Quality from FDM and MSLA Technology in Unit Production. *Symmetry*, 2022, 14.5: 910.

Learning outcomes:

Knowledge

Basic engineering processes and technologies in the life cycle of technical equipment, objects and systems and ways of solving typical engineering tasks, particularly in relation to the organization of production processes and production management.	K1A _W3
Fundamental problems of contemporary civilization relevant to the production engineering.	K1A _W7

Skills

Identify, formulate and solve complex and unusual engineering problems related to the field of management and production engineering by applying the principles of engineering, science and mathematics, as well as perform tasks under conditions that are not fully predictable.	K1A _U1
Plan and conduct experiments, including measurements and computer simulations, visualize data and interpret the obtained results and draw conclusions.	K1A _U3
When identifying and formulating specifications for engineering tasks and solving them: -select and use analytical, simulation and experimental methods, including computer-aided methods, -recognize their system and non-technical aspects, including ethical aspects -make preliminary economic assessment of the proposed solutions and engineering actions taken, -analyze technology transfer and innovation.	K1A _U4
Make a critical analysis of the functioning of existing technical and technological solutions in production systems function, evaluate these solutions and suggest appropriate improvements and innovations in this regard.	K1A _U5
Work individually and in a team, assuming different roles in it, plan and organize this work, as well as interact with other people as part of teamwork (also of an interdisciplinary nature) using specialist terminology and modern information and communication technologies, and take part in the debate.	K1A _U7
Solve practical engineering tasks taking into account engineering standards and norms and applying specific technologies appropriate to production engineering, using experience gained in a professional engineering environment.	K1A _U8

Social competence

Responsible performance of professional roles, compliance with the rules of professional ethics and requiring it from others, care for the achievements and traditions of the profession; is aware of the importance and understands non-technical aspects and effects of engineering activities.	K1A _K3

Assessment methods and assessment criteria:

Attendance at the laboratory is mandatory.

Requirements for passing the course:

-Completion and passing of all tasks from the laboratory part.

-Preparation of work related to 3D printing

Practical placement:

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