
Course title: Computer-aided design of standard structures

ECTS credit allocation (and other scores): 3

Semester: spring

Level of study: ISCED-6 - first-cycle programmes (EQF-6)

Branch of science: Engineering and technology

Language: English

Number of hours per semester: 30

Course coordinator/ Department and e-mail: Bartosz Moczulak, Department of Mechanics and Fundamentals of Machine Design, bartosz.moczulak@uwm.edu.pl

Type of classes: classes and lectures

Substantive content

CLASSES: Presentation of trends in workflow automation and the integration of various software tools to support the design process. Handling design variants. Principles of automating work using custom libraries of parts, operations, and sketches. The importance of creating part, assembly, and drawing templates, illustrated with examples. Automating assembly model creation by defining constraints within the parts themselves. Principles of creating parts within an assembly context based on existing components.

LECTURES: File properties. Saving part and drawing templates. Weldment modeling basics. Adding an arbitrary solid body to an existing structure. Defining custom profiles. Sheet metal modeling basics. Converting faces to sheet metal. Designing parts in the context of an assembly. Surface modeling basics. Gear design. Selected topics in design automation. Sketch library. Assembly automation. Assembly features.

Learning purpose: Introducing students to modern techniques for the multi-variant design of welded and sheet metal structures.

On completion of the study programme the graduate will gain:

Knowledge: The student possesses advanced knowledge of computer-aided design.

Skills: The student is able to use engineering software for design and automation.

Social Competencies: The student is aware of the need for continuous development in CAD techniques.

Basic literature: Beginning AutoCAD 2021 exercise workbook, Shrock, Cheryl R., author.; Heather, Steve, editor. 2020, Learn SolidWorks 2020: a hands-on guide to becoming an accomplished SolidWorks associate and professional Almattar, Tayseer, author. 2019

Supplementary literature: SolidWorks basics: a project based approach, Fulkerson, Fred, author. 2015

The allocated number of ECTS points consists of:

Contact hours with an academic teacher: 30

Student's independent work: 60