Course Title:	**Engineering 3D Design**
Institute/Division:	Department of Automation and Computer Engineering Faculty of Electrical and Computer Engineering
Course code:	**E-E3D**
Erasmus subject code:	0714 Electronics and automation
Number of contact hours:	45
Course duration:	1 semester (Spring/Summer)
ECTS credits:	6
Course description:	This course introduces Erasmus students to the fundamentals and practical applications of 3D engineering design using Autodesk Inventor. It is tailored for students in mechanical engineering, mechatronics, and related disciplines who aim to develop strong digital design and modeling competencies aligned with modern engineering practice. The course focuses on parametric 3D modeling techniques, enabling students to create, modify, and optimize parts and assemblies in a structured and efficient way. Core topics include sketching, feature-based modeling, constraints, dimensioning, and design intent. Students will also explore assembly modeling, interference analysis, and motion simulation to understand how components interact within mechanical systems. In addition, the course covers the generation of technical documentation, including 2D engineering drawings, tolerancing, and annotations in accordance with international standards. Emphasis is placed on translating design concepts into fully defined and manufacturable models. Hands-on laboratory sessions are central to the course, providing extensive practice in designing individual components and complex assemblies using Autodesk Inventor. Through guided exercises and project-based assignments, students will gain experience in solving realistic engineering design problems and developing complete digital prototypes. Main course areas: • Create parametric 3D models of mechanical parts • Design and manage assemblies with multiple components • Apply constraints and design intent principles effectively • Generate professional 2D technical drawings from 3D models • Use CAD tools to support the engineering design process The course combines theoretical instruction with intensive practical training, equipping students with essential CAD skills required in contemporary product development, manufacturing, and engineering design workflows.
Course type:	Lectures (5h), Laboratory (25h), Project (15h)

Literature:	Manual of Engineering Drawing by P Colin H Simmons Elementary Engineering Drawing by N.D.Bhatt Instruction for the AutoCAD and Inventor program
Assessment method:	For laboratory exercises, the assessment will be made after finishing the given exercises and finishing the bigger final project. (practical assessment method)
Prerequisites:	Basic knowledge of engineering graphics and design. Basic knowledge of how to read engineering drawings. Basic knowledge of the essential elements of English grammar and mechanics.
Contact Person:	Prof. Łukasz Ścisło, lukasz.scislo@pk.edu.pl