Course Unit Descriptor

Study Programme: Mechanical Engineering

Course Unit Title: Mechanical design CAD/CAM

Course Unit Code: DAS317

Name of Lecturer(s): Associate Professor Eleonora Desnica

Type and Level of Studies: Master academic studies

Course Status (compulsory/elective): Elective

Semester (winter/summer): Winter

Language of instruction: English

Mode of course unit delivery (face-to-face/distance learning): face-to-face

Number of ECTS Allocated: 5

Prerequisites: None

Course Aims:

Aim of this course is to master principles in development and design of product with application of modern software systems (CAD/CAM/CAE), through use of computer in automatization process of calculation procedures and product design.

Learning Outcomes:

At the end of this course student will be familiarized with modern principles of product development and design with support in CAD systems. Also, they will be ready for work in CAD softwares, to make calculations, analysis and computer design of parts and assemblies for production needs, as individual or a team member.

Syllabus:

Theory

Computer application in machine design. The importance of product development. Definition of product, product lifespan, product characteristics. Product development and design using computer. Basics of design theory (conceptual design and detailed design). Systematization of technical components (hardware for CAD), CAD/CAE software packages for support of engineering design. CAD in mathematics and its functions. Graphic communications and network support in product design. Multiple product design. Intelligent CAD systems. Definition of virtual product design.

Practice

Through exercises (and seminar work), students deal with concrete examples in machine industry by working on CAD systems - AutoCAD, AutoCAD Mechanical. Also students will be learning the basics of 3D printing and 3D scanning.

Required Reading:

1. Lee, K. Principles of CAD/CAM/CAE systems, Addison – Wesley, USA, 1999.
2. Redwood, B., Schöffer, F., Garret, B. The 3D Printing Handbook: Technologies, design and applications, 3D Hubs, 2017.
3. Radhakrishnan, P., Subramanyan, S., Raju, V., CAD/CAM/CIM, New Age International, New Delhi, 2008.

Weekly Contact Hours: 4	**Lectures: 2**	**Practical work: 2**

Teaching Methods:

Verbal teaching methods. Illustrative teaching methods. Demonstration teaching methods. Laboratory and experimental.

Knowledge Assessment (maximum of 100 points):

Pre-exam obligations	points	**Final exam**	points
Active class participation	10	written exam	40
Practical work		oral exam	

Preliminary exam(s)	20		
Seminar(s)	30		