Study program: Mechanical Engineering

Type and level of studies: Bachelor studies

Course unit: Basics in Digital Prototyping of Machines and Structures 1

Teacher in charge: Prof. Dr Nebojša Zdravković

Language of instruction: English

ECTS: 7

Prerequisites: Computer graphics

Semester: Winter semester

Course unit objective:
The students will learn basic CAD (*Computer-Aided Design)* principles, workflows, model types, applications, and techniques in digital prototyping of machines and structures.

Learning outcomes of the Course unit
The students can design parts, make assemblies and generate production drawings of machines and structures using Autodesk Inventor Professional software.

Course unit contents
Theoretical classes
Introduction to Digital prototyping of machines and structures. Types of CAD models and applications. Feature-based parametric modelling of machine parts. Typical part modelling workflow. Sketch constraints and techniques. Basic part modelling techniques. Advanced part modelling techniques. Reusing features. Part material and appearance. Assembly design workflows. Assembly constraints. Use of standard parts. Bill of materials. Assembly design views and representations. Presentations and exploded views. Documentation generation workflow. Drawing template and style. Drawing resources. Drawing views creation. Part drawing annotation. Assembly drawing annotation.
Practical classes
Practical classes are realized through building complete CAD models and creating production documentation of real-life assemblies. They are based on detailed workflows containing step-by-step instructions for each part, assembly model creation, and drawings generation.

Literature
1. Sham Tickoo: Autodesk Inventor 2016 for Designers, CADCIM Technologies, 2017.
2. Curtis Waguespack: Mastering Autodesk Inventor 2014 and Autodesk Inventor LT 2014, Sybex, 2013.

Number of active teaching hours				**Other classes**
Lectures: 30	Practice: 15	Other forms of classes: 30	Independent work:	

Teaching methods
Theoretical classes are in the form of lectures in the classroom, where students are introduced to basic principles in CAD. The exercises are performed in the computer laboratory using Autodesk Inventor Professional software.

Examination methods (maximum 100 points)			
Exam prerequisites	**No. of points:**	**Final exam**	**No. of points:**
Student's activity during lectures	10	oral examination	
practical classes/tests	45	written examination	45
Seminars/homework		.....	
Project			
Other			

Grading system		
Grade	**No. of points**	**Description**
10	**91-100**	Excellent
9	**81-90**	Exceptionally good
8	**71-80**	Very good
7	**61-70**	Good
6	**51-60**	Passing
5	**Less than 51**	Failing