Course Unit Descriptor

Study Programme: Mechatronics

Course Unit Title: Industrial Robotics

Course Unit Code: H308

Name of Lecturer(s): Branislav Borovac

Type and Level of Studies: Bachelor level

Course Status (compulsory/elective): compulsory

Semester (winter/summer): summer

Language of instruction: English

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

Number of ECTS Allocated: 8

Prerequisites: None

Course Aims:

Objective is for students to master fundamentals of industrial robotics.

Learning Outcomes:

The outcome is knowledge of fundamentals of industrial robotics.

Syllabus:

Definitions, homogenous transformations, robot kinematics (direct and inverse problem), Denavit-Hartenber notation, Jacobian, synthesis of trajectories, robot dynamics, robot control, robot programming, sensors in robotics and their application, application of robots in industrial tasks.

Required Reading: Relevant literature in English, tbd

Weekly Contact Hours: 8	**Lectures: 4**	**Practical work: 4**

Teaching Methods:

Classes are realized through lectures and practical classes. During practical classes, students are required to pass one partial examination and to carry out tree computer practices. Partial examination includes: homogenous transformation, direct and inverse kinematic problem, direct and inverse dynamic problem, trajectories planning, controlling of industrial robots. Computer practical classes are realized in MATLAB. The first practice includes homogenous transformations, the second DH notation, the third trajectory calculation (inner coordination). Each practice is presented and defended. In order to be entitled to take the final examination student needs to pass partial examination and successfully defend practice. The final examination is based on test and theoretical questions.

Knowledge Assessment (maximum of 100 points):

Pre-exam obligations	points	**Final exam**	points
Group assignment		Examination Assignment	
Exercises			
Test			
Test			

The methods of knowledge assessment may differ; the table presents only some of the options: written exam, oral exam, project presentation, seminars, etc.