

Title	<b>Programming of robots and CNC machines</b>	Code	<b>10102212610102202294</b>
Field	<b>Mechanical Engineering</b>	Year / Semester	<b>3 / 6</b>
Specialty	<b>Profile Mechanical Engineering</b>	Course	<b>core</b>
Hours	Lectures: <b>1</b> Classes: -    Laboratory: <b>1</b> Projects / seminars: -	Number of credits	<b>3</b>
		Language	<b>polish</b>

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**Status of the course in the study program:**

Profile course at Faculty of Mechanical Engineering and Management, field of Mechanical Engineering ? first cycle of stationary studies - Bachelor Sc. degree

**Assumptions and objectives of the course:**

The student should obtain theoretical and practical knowledge of programming robots and CNC machines

**Contents of the course (course description):**

Lecture: Structure kinematics and dynamics of two-dimensional mechanisms; Design of two-dimensional mechanisms. Kinematics (forward - direct and inverse transformation) of industrial robots with serial and parallel structures. Today?s programming languages of industrial robots (algorithms and instructions). Configuration of movement parameters. Robot safety basics. The main problem of CNC programming: the sign of co-ordinate axis, notation of CNC program for Fanuc, Siemens and Heidenhain control systems, programming of basics machining operation such as: drilling, contour milling, pocket milling and turning, CNC programming with sub programs, repeat command, parameters and cycles, basics of workshop programming (WOP). Laboratory: Controlling and programming of the CNC machines and robots.

**Introductory courses and the required pre-knowledge:**

Basic knowledge of mechanics, automation and theory of the mechanisms

**Courses form and teaching methods:**

Lectures supported by slides and video films, Laboratory of CNC machines and robotization

**Form and terms of complete the course - requirements and assessment methods:**

Written tests and oral examination. Estimation of project realized on laboratory exercises

**Basic Bibliography:**

**Additional Bibliography:**