Robotics

Subject area: Electrical Engineering

University:	TalTech
Level:	BA all years
Teaching mode:	blended: mostly online, but presence on campus required in certain period
Instructor(s):	Valery Vodovozov

Short description

This English-language course aims to study robotics as a science dealing with the design, work, and application of robots. It helps understand robots as unmanned program-managed machines for performing such activities as assembling, transportation, medical treatment, gaming, etc. The course gains knowledge and skills in the analysis, simulation and programming competitive solutions in the field. It also promotes the dissemination of ethical standards related to robotics.

Full description

https://moodle.taltech.ee/enrol/index.php?id=12702

Learning outcomes

1. Knowledge of developments of robots as universal machines and automata and skills of their classification on the basis of design, application field or level of a control system
2. Knowledge about the construction of robot manipulators and design and control principles of robot's control systems; skills to describe mathematically kinematics tasks of robots;
3. Knowledge about components used in robotics and skills to select and apply needed components for the composition of a robot manipulator or a control system;
4. Skills to calculate the load of robot drives and to select and apply a motor or a control unit required in a robot drive;
5. Skills to program and use industrial robots for automation of production processes;
6. Knowledge about software packages of virtual robotics and skills to use them for the development of new robot systems.

General information

Contact hours per week: 3

Total workload:	156 (in student hours for the whole course)
ECTS credits:	6
Language:	English
Course start date:	29 September 2022
Course end date:	15 January 2023
Add. info about start date:	
Weekly teaching day/time:	
Time zone:	CET +1 (Estonia, Israel)
Further information:	
Prerequisites:	1. basic knowledge of algebra, geometry, matrix calculations, and differential calculus; 2. basic knowledge of physics, at least mechanics, electricity, and optics; 3. computer proficiency at the level of a qualified end user and knowledge of office tools and computer graphics; 4. basic skill in programming, at least Basic language and operating systems.
Activities and methods:	Lectures, Lab-work, Self-study, Exercises
Presence on campus:	Lab works, 1 week in December

Final examination

Form:	assignment
Date:	15 January 2023
Location/format:	online
Re-sit possibility:	yes
Transcript available:	end of semester
Add. info/requirements:	Bonus system

Registration

To register for this course, follow the registration requirements of your **home university** as specified here: www.euroteq.eu/courses-registration.

Administration

Number of places: 15

Minimum participants: 1

Internal course code: ATR0030

Contact: valery.vodovozov@taltech.ee

This course is part of the EuroTeQ Engineering University joint course catalogue 2022/2023. This is a collaborative activity of the partner universities DTU, L'X, TU/e, TalTech, CTU, TUM as well as Technion. Students from these universities can participate in the offered courses. It is the responsibility of the student to check if you fulfil the requirements to participate in a specific course. Students are also advised to check with their home institution how to get recognition of the ECTS credits gained in courses of the EuroTeQ course catalogue. For further information about EuroTeQ Engineering University, visit www.euroteq.eu or get in touch with the above-mentioned point of contact.