

Dynamics of Robots and Machines

Subject area: Mechanical Engineering

University:	TalTech
Level:	MA all years
Teaching mode:	hybrid: some students participate online, other students attend real-life
Instructor(s):	Leo Teder

Short description

Dynamics of Robots and Machines course give an overview of the structure, kinematics, and dynamics of mechanisms used in robotics and mechatronic systems. The course provides practical knowledge about analysis and mathematical modeling of fundamental problems of respective mechanism's motion and develops knowledge and skills needed to solve complex problems of system motion. Students will select appropriate drive designs to implement the required motion in simulation using MATLAB/Simulink.

Full description

<https://ois.ttu.ee/subject/EEM0020>

Learning outcomes

Having successfully passed the course, the student

- 1) has knowledge of structure of drive mechanisms used in robotics and mechatronics systems;
- 2) has knowledge in defining and reasoning needed for dynamics problem specification,
- 3) understands physical phenomena behind the system motion enough to realistically describe external forces that are present in systems and influence the motion,
- 4) is able to analyse and model mathematically basic problems of system dynamics and select appropriate drive systems;
- 5) is able to apply modern computer tools (MATLAB, Simulink) to solve problems of system dynamics;
- 6) is able to interpret the results in terms of the original statement of the problem.

General information

Contact hours per week: 4

Total workload: 156 (in student hours for the whole course)

ECTS credits: 6
Language: English

Course start date: 28 August 2022
Course end date: 21 January 2023
Add. info about start date:
Weekly teaching day/time:
Time zone: CET +1 (Estonia, Israel)
Further information:

Prerequisites: basics of mechanical engineering
Activities and methods: Lectures, Exercises
Presence on campus: whole semester

Final examination

Form: written
Date:
Location/format: on campus of host institution
Re-sit possibility: yes
Transcript available: end of semester
Add. info/requirements:

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:
Minimum participants:
Internal course code: EEM0020
Contact: leo.teder@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.