

Robotics 2: Modeling, Analysis, and Control 2023 Summer

Organizer	Prof. Dr. Jochen Steil
Lecturer	Dr. Bertold Bongardt
Exercises	Sven Tittel, Bertold Bongardt

Format	2 SWS (L) + 2 SWS (E)
Times	Mon, 11:30 – 13:00 (L) + Wed, 09:45 – 11:15 (E)
Rooms	SN 19.2 (Mon), PK 4.1 (Wed)

Module	INF-ROB-45
Credit points	5

Goals

Based on the course ‘Robotics 1: Technical and Mathematical Foundations’ in the previous winter semester, we intensify the study of robotics in the second term. Using the fundamental concepts studied in the first lecture, we focus on more practical issues arising in robotics in the second lecture. Attending ‘Robotics 2’, you prepare to attend the advanced robotics classes offered by the IRP.

Audience

Students of Computer Science and STEM (Science, Technology, Engineering and Mathematics)

Literature

Relevant reading material will be announced in the lecture

Overview

Block	Date	Topics
01	2023-04-12	Introduction and Wrap-Up
02	2023-04-17	Robotics Software and System Control
03	2023-04-24	Introduction to Dynamics
04	2023-05-08	Advanced Techniques of Robot Control
05	2023-05-15	Plans and Trajectories
06	2023-05-22	Principles of Sensing and Measuring
07	2023-06-05	Robot Programming: Fundamentals

08	2023-06-12	Robot Programming: Tools, Components, Schemata
09	2023-06-19	Combinatorics: Mechanisms, Graphs, and Matrices
10	2023-06-26	Methods for Special and General Geometries
11	2023-07-03	Design, Workspace, Redundancy, Shapes
12	2023-07-10	Configurations, Modes, Manipulability, Singularities
13	2023-07-17	Non-Rigidity: Contact, Haptics, Elasticity
