

Robotics 2: Modeling, Analysis, and Control 2019 Summer

Organizer	Prof. Dr. Jochen Steil
Lecturer	Dr. Bertold Bongardt
Exercises	Sinan Barut, Sven Tittel, Pouya Mohammadi, Heiko Donat

Format	2 SWS (L) + 2 SWS (E)
Times	Mon, 11:30 – 13:00 (L) + Wed, 09:45 – 11:15 (E)
Rooms	PK 4.1 (L) + SN 19.7 (E)

Module	INF-ROB-26
Credit points	5
Examinations	– verbal –

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	Monday	Topic
01	04-08	Introduction: Review and Preview
02	04-15	Configurations, Modes, Redundancy
03	04-29	Robot Design and Geometric Shapes
04	05-06	Analysis of Workspace and Singularities
05	05-13	Modeling Systems and Processes
06	05-20	Robot Programming: Fundamentals
07	05-27	Robot Programming: Tools, Components, Schemata
08	06-03	Planning Methods
09	06-17	Principles of Sensing and Measuring
10	06-24	Contact, Haptics, Elasticity
11	07-01	Techniques of Dynamic Robot Control
12	07-08	Tools for Analysis and Simulation
13	07-15	Summary