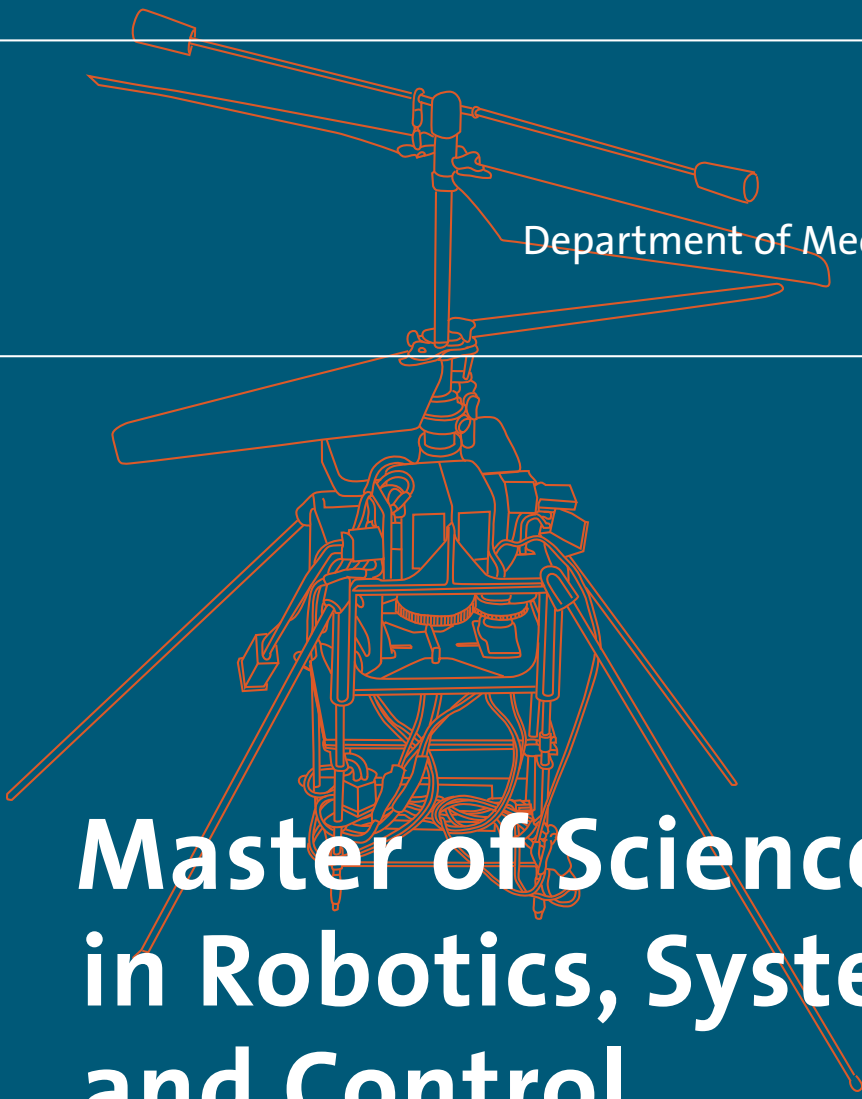
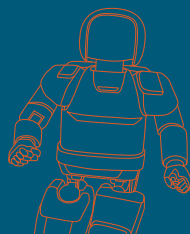
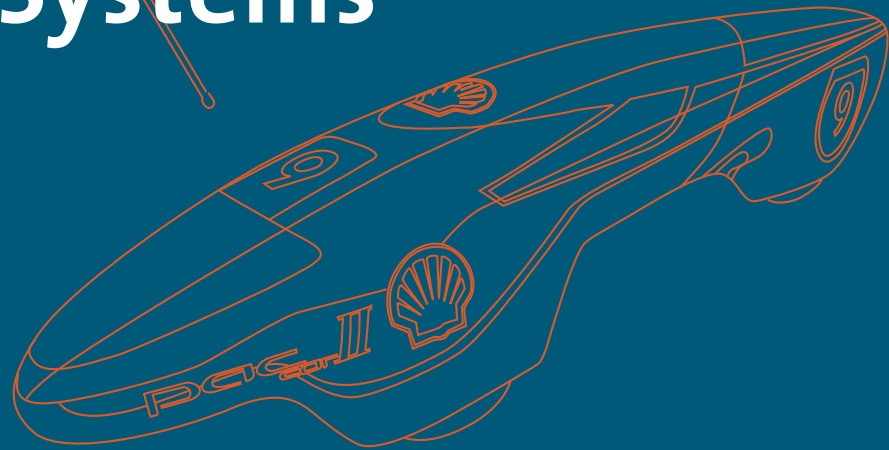


MASTER

Department of Mechanical and Process Engineering



Master of Science ETH in Robotics, Systems and Control



ETH

Eidgenössische Technische Hochschule Zürich
Swiss Federal Institute of Technology Zurich

Master of Science ETH in Robotics, Systems and Control

Products and systems are more complex than ever and require an integration of technologies from all engineering science disciplines. In response to this trend, ETH Zurich has recruited a number of top professors from around the world to create a leading center in the field of robotics, systems and control. Research activities range from fundamental theory in modeling and control to challenging applications in biomedical and rehabilitation engineering, power systems, automobiles and aircraft, space robots, air traffic management, home robots, micro/nano robots, and much more. These exciting efforts transcend traditional boundaries and require engineers with interdisciplinary backgrounds and skills.

Program Overview

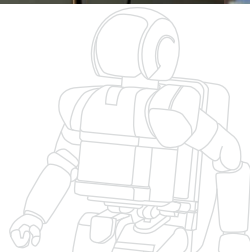
The Master in Robotics, Systems and Control is a specialized program for students seeking an outstanding education covering mechanical and electrical engineering and computer science. Bridging the gap between the engineering disciplines, the program offers students a unique learning environment that enables them to develop innovative, intelligent products and systems to address the most important challenges of our time in the areas of energy supply, the environment, health care and trans-

portation. A number of fundamental theoretical and application-specific topics can be pursued including:

- > Robot Design, Modeling and Control and their Practical Application
- > Systems Engineering: Design and Optimization of Products and Systems
- > Physical Modeling and Simulation
- > Optimization and Control
- > Perception, Graphics, Virtual Reality
- > Embedded and Distributed Computing
- > Artificial Intelligence

Program Structure

For students to acquire multidisciplinary knowledge and skills, courses offered by the Department of Mechanical and Process Engineering (D-MAVT), the Department of Information Technology and Electrical Engineering (D-ITET) and the Department of Computer Science (D-INFK) are available. In addition, students participate in ongoing research projects within a semester time-frame and a longer-term Master thesis. The language of instruction is English.



“Products and systems are more complex than ever and require an integration of technologies from all engineering science disciplines.”

CORE COURSES

36 ECTS

These courses lay the foundation for the Master program by providing students with core knowledge in their respective area of specialization.

MULTIDISCIPLINARY COURSES

6 ECTS

These courses deepen and broaden knowledge in the areas of computer science, electrical engineering and information technology, and mechanical engineering.

COURSES IN HUMANITIES, SOCIAL AND POLITICAL SCIENCES

2 ECTS

These courses may be selected from the course catalogue of the Department of Humanities, Social and Political Sciences. They are aimed at enriching the students' general education.

INTERNSHIP

8 ECTS

A twelve week internship exposes the students to industrial or research environments outside ETH.

SEMESTER PROJECT

8 ECTS

The semester project provides an introduction to research in robotics, systems and control through a project conducted in one of the highly respected ETH labs participating in this program.

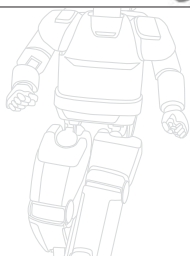
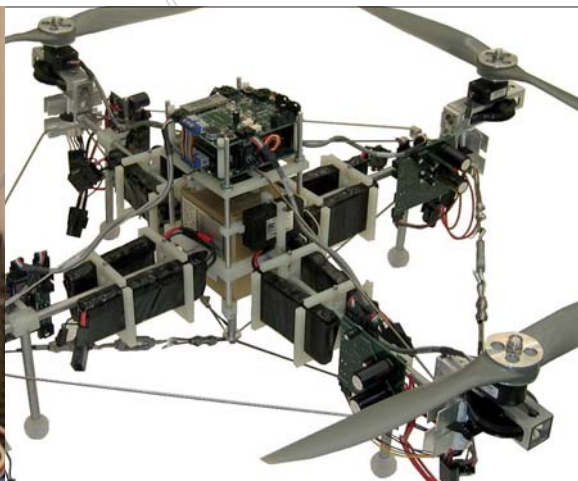
MASTER THESIS

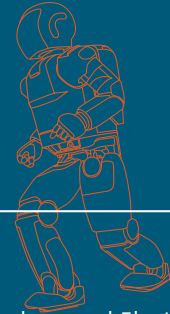
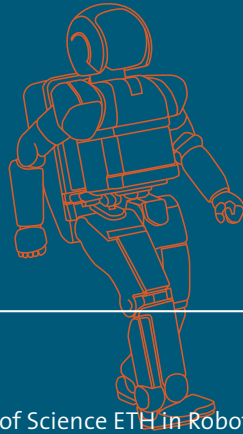
30 ECTS

The thesis is aimed at enhancing the student's capability to work independently toward the solution of a theoretical or applied problem at the cutting edge of technology. The Master thesis is a six month, full-time project that concludes the Master program.

Tutors

The program is supported by a tutor system. This provides flexibility in tailoring interdisciplinary educational programs for students coming from different disciplines interested in various fields. Tutors for the Master program are from different Departments: D-MAVT, D-ITET, D-INFK and D-HEST.





Qualification Profile

Graduates of the Master of Science ETH in Robotics, Systems and Control possess an internationally recognized degree and a level of education and experience that prepares them for professional careers in all fields where systems-level thinking and interdisciplinary knowledge is of prime importance. They are capable of leading and managing interdisciplinary projects in engineering and beyond. Opportunities range from research labs to high-tech companies in fields such as robotics, product and systems design, manufacturing and production, home appliances, energy technology, automobiles and aircraft, micro/nanotechnology, space technology, rehabilitation engineering, health care, and much more.

The Departments

The master's in Robotics, Systems and Control is offered jointly by the three departments: D-MAVT, D-ITET and D-INFK of ETH Zurich.

The Department of Mechanical and Process Engineering (D-MAVT) is recognized as a center of excellence throughout the world. Research undertaken by W.C. Röntgen (Nobel prize), H. Rohrer (Nobel prize), A. Stodola and J. Ackeret exemplifies the landmark innovations created in the MAVT department.

The Department of Information Technology and Electrical Engineering (D-ITET) has a rich history of research and education that dates back many decades. Landmark innovations in information theory, signal processing, controls, electromagnetics and communications were developed by the ITET faculty – innovations that have helped shape the modern world.

The Department of Computer Science (D-INFK) is the proud heir to a tradition going back to some of the first computers ever created, pioneering work in numerical computing and logic, as well as the design of the programming languages Pascal, Modula-2 and Oberon and associated hardware, user interfaces and operating systems by Niklaus Wirth and his colleagues.

www.master-robotics.ethz.ch

www.mavt.ethz.ch

www.ee.ethz.ch

www.inf.ethz.ch

Application admission: www.rektorat.ethz.ch/students

ETH Zurich

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- Edition: 3/2012 -

