Qualification Profile of MSc ETH in Mechanical Engineering

D-MAVT furthers the development of many emerging areas of engineering while maintaining a strong commitment to the fundamentals upon which mechanical engineering is based. It is also focused on building infrastructures and networks. The department considers key technological, economic, and social trends in pursuing its mission.

In this master's program, in-depth knowledge of core areas of mechanical engineering, such as mechanics, thermodynamics, fluid dynamics, materials and manufacturing science, control systems, and product development, is integrated with mathematics, computer science, physics, chemistry, and biology. This integration is critical for multidisciplinary areas, such as robotics, micro and nanotechnologies, aerospace engineering, production systems, and energy systems. Tools ranging from computer simulation and systems modeling to advanced experimental techniques are developed and applied in order to provide a deeper understanding of the underlying phenomena, processes, and system characteristics.

Products and systems created by engineers have the potential to significantly impact society. Therefore, graduate students must understand the importance of developing sustainable technologies which benefit the entire world. The social context in which mechanical engineering is practiced plus its broad interdependencies are reflected and encouraged by an education in economics, organization and management, political science, and humanities.

The members of the faculty are committed to cutting-edge research in various fields with strong international exposure. Research results are used to raise the quality and relevance of the classroom lectures and independent projects. The students' involvement in research and innovation is stimulated by project-work, in which theory and practice are combined. A semester project is aimed at the solution of specific engineering problems and at the advancement of team skills, effective communication, and creativity. The master's thesis, a 6-month full-time project, is aimed at advancing the above skills and capabilities of the students to work independently and creatively toward the solution of a research problem.

The job market for masters' graduates of D-MAVT is attractive and broad. Potential employers range from large international firms in manufacturing, automotive, aerospace, aircraft, and energy industries, to small high-technology start-up companies, to research and teaching institutions across the globe. The skills the graduates obtain will qualify them for many challenging positions in industry including: technical, innovation, or product manager; consultant; head of research and development; all culminating to a chief technology officer or chief executive officer, or to become an entrepreneur.

For those interested in a scientific career, a large number of relevant research issues remain unresolved and offer excellent opportunities. These new challenging and rewarding research problems can be found in many traditional and emerging fields. These can be further addressed within the framework of a doctorate program. In academia and governmental research organizations, both in Switzerland and abroad, the outstanding reputation of the department is well established.