Health Sciences and Technology
An Overview of the Department
Health Sciences and Technology

The Department of Health Sciences and Technology (D-HEST) promotes discoveries and new technologies to enable improvements in human health and innovations in human medicine.

Maintaining health and a good quality of life present significant challenges to our society and healthcare systems. From food and the gut microbiome to physical and mental health, from movement sciences and robotics to rehabilitation, from advances in chemistry, biochemistry, molecular and cell biology to preventive and regenerative medicine, the Department of Health Sciences and Technology melds together a globally unique combination of expertise and knowledge.

Research at the intersection of engineering, neuroscience, human movement, nutrition and food sciences, as well as biology, medicine and social sciences is of increasing societal and economic importance. The goals of the Department of Health Sciences and Technology are:

› to provide the basis for maintaining and improving the quality of life of people into old age,
› to accelerate the transfer of knowledge and technology to clinics, industry and society,
› to educate a new generation of specialists and leaders at the intersection of science and technology.

Study Programmes

Food Science
The Food Science study programme teaches the fundamental relationships between food quality, manufacturing processes and the effects of nutrition on health.

Health Sciences and Technology
The inter-disciplinary study programme Health Sciences and Technology educates professionals to apply science and technology in the service of human health, creating new opportunities for disease prevention, diagnosis, and treatment.

Human Medicine (Bachelor)
The bachelor’s degree programme in Human Medicine teaches topics from the fields of molecular biology and medical technology in addition to classical medical aspects. The subsequent master’s degree in medicine is completed at a partner university in Switzerland.

Doctorate
The doctorate at ETH Zurich is characterised by independent scientific work under the supervision of a professor. Doctorates at D-HEST are possible in the fields of Food Science and Health Science and technology.

Continuing Education
The Department of Health Sciences and Technology offers a MAS in Nutrition and Health, a CAS in Nutrition for Disease Prevention and Health, a Teaching Diploma in Sport, and Teaching Certificates in Food Science and in Health Sciences and Technology.

www.hest.ethz.ch/studies
www.hest.ethz.ch/doctorate
www.hest.ethz.ch/continuing-education
Research

The strategic research priorities defined by D-HEST focus on some of the world’s most prevalent diseases, including cardiovascular diseases, obesity, malnutrition and undernutrition, neurological or musculoskeletal disorders and immunological diseases. Mental illnesses also require a neuroscientific understanding and holistic treatment approaches.

Researchers from various research areas work together at D-HEST:

Movement Sciences and Sport
The goal is to understand the fundamentals of all aspects of movement. This area deals with muscle function in health, illness and old age: plasticity and the ability to regenerate, neural control of movement, and investigations into energy supply are the key areas.

Food Sciences and Nutrition
Innovative technologies and sound knowledge about the structure of food, possible microbial or toxic contaminations and the metabolism of nutrients enable solution-based responses for the world food system and for the prevention and treatment of nutrition-dependent diseases.

Medical Engineering
Researchers in this area study the influence of mechanical forces on biological tissue and develop advanced quantitative diagnostic and patient-monitoring systems, as well as new technologies to support patient rehabilitation and regeneration.

Neurosciences
Key topics include understanding the relationships between genotypical and phenotypical behavioural characteristics, the interface between the brain and computer science, the analysis and modelling of complex neural circuits, and the understanding of the molecular and genetic mechanisms of aging for the prevention and treatment of pathological processes.

Translation
Researchers from all institutes of D-HEST strive to develop fundamental scientific knowledge and novel technologies, and to translate the associated innovations into more effective prevention methods and more efficient medical diagnosis, therapy and rehabilitation solutions. The goal is to holistically maintain and improve people’s quality of life into old age.

www.hest.ethz.ch/research

Collaborations

Collaboration is of crucial importance for the Department of Health Sciences and Technology as a leading international academic institution.

Domestically and internationally, the research projects of the department’s individual professorships form the basis for intensive research collaboration and wide-ranging integration.

At the same time, the department successfully collaborates with existing competence centres at ETH Zurich and is significantly involved in the strategic initiatives of ETH Zurich.