



Programme syllabus

[An accessible version of the syllabus can be found in the Course and programme directory.](#)

Master's Programme, Innovative Technology for Healthy Living 120 credits

Masterprogram, innovativ teknik för en hälsosam livsmiljö

Valid for students admitted to the education from autumn 20 (HT - Autumn term; VT - Spring term).

This is a translation of the Swedish, legally binding, programme syllabus.

Programme objectives

The two years master programme will foster a new generation of master's graduates with advanced skills and approaches within health-related engineering and innovation. The overall aim of the programme is to equip students with the skills to develop technical and business solutions for healthy living and active ageing.

Graduates from the programme will be R&D specialists with strong innovation and entrepreneurial skills, able to create bridges between human science, technology and health.

On top of the learning objectives that are specified in the Higher Education Degree Ordinance, there are also more specific goals for this programme that are listed in the following.

Knowledge and understanding

After completing the programme, the student should have acquired:

- a deep understanding of the biomedical engineering field and technological solutions for the healthy living.
- knowledge and experience to develop, plan and implement sport and exercise activities for individuals (athletes, non-athletes and those with more sedentary lifestyles), and monitor the effects or the impact of such involvement and participation on their health and well-being, using evidence based on anthropometric, biomechanical, biochemical, physiological and psychological parameters.
- knowledge about scientific tools for acquiring, processing and analyzing of the BigData for development of pervasive and personalized healthcare solutions

Skills and abilities

After completing the programme, the student should have acquired:

- ability to conduct patient-focused and disease-oriented research demonstrating a high level of discipline-specific skill developed through coursework, placements and the conduct of independent research;
- ability to work collaboratively in maintaining a three-way 'dialogue' between bench, bedside and business;
- ability to describe the translation of innovative research to the clinical and commercial arena;
- awareness of the development and protection of Intellectual Property;
- understanding of the regulatory environment governing the commercialization of patient-oriented research.

Ability to make judgements and adopt a standpoint

After completing the programme, the student should have acquired:

- An ability to make scientifically and technologically-motivated, social and ethical judgement of the complex biomedical engineering problem that span all levels from the cellular through organismic to systemic.
- a will to create engineering and business solutions that make it possible for citizens to monitor and manage their own health by being informed and skilled in making wellness-driven choices.

Extent and content of the programme

The programme consists of 120 higher education credits which correspond to two years full time studies. The programme is mainly on the second level.

All the mandatory courses, except for the HL1007 basic course in Medical engineering, which is compulsory for some students, are on the second level, but some elective and conditionally elective courses may be on the first level.

The language of instruction for the programme is English. Students are allowed to take some elective and conditionally elective courses that are given in Swedish.

Innovation and entrepreneurship courses are included in the curriculum as individual stand-alone courses but the I&E content is also integrated into the content of some courses.

The programme is strongly multi-disciplinary and cover a broad range of topics from medical engineering, innovation and entrepreneurship.

The student might spend their third semester at one of the five EIT Health Partners universities, in order to gain additional I&E experience and to take courses that are not available at KTH. During the mobility semester, students might undertake an internship through clinical, SME or industrial placements.

Current list of the partners (2019):

Academic partners:

- Universidade de Lisboa
- Università degli Studi di Napoli Federico II (Unina)
- Trinity College Dublin
- Université Grenoble Alpes
- Universidade de Coimbra

Non-academic partners :

- LEITAT
- GE Healthcare

Eligibility and selection

In order to be eligible to apply to the master's programme, a bachelor's degree or corresponding degree in the first level within Engineering Physics, Electrical Engineering, Computer Science, Mathematics or equivalent of at least 180 ECTS, must be completed. The degree must contain courses in Mathematics, Physics, Computing and Electronics equivalent to at least 60 ECTS. The 60 ECTS must contain at least 25 credits in Mathematics, 15 credits in Physics, 10 credits in Computing and 5 credits in Electronics.

The selection to the programme is based on the evaluation of the following criteria: grades in the bachelor courses with extra weight on courses relevant to the programme , ranking of university /higher education institute where the bachelor degree was earned, proposal to the potential master

thesis project (max 1000 words) with extra weight on the topics relevant to the programme, CV, personal letter with motivation of the choice of programme.

For students who earned a bachelor degree without defending a thesis, a summary of a chosen project should be submitted.

Implementation of the education

Structure of the education

Each academic year consists of two semesters which are 20 weeks each, and each semester is further divided into two study periods.

Typically most of the mandatory courses are taught in the first year of the programme. The last semester of the second year is dedicated to the master degree project (30 credits). The first semester of the second year may be used for academic and or cross-organizational (industry, healthcare sector) mobility.

Courses

The programme is course-based. Lists of courses are included in appendix 1.

Grading system

Courses in the first and the second cycle are graded on a scale from A to F. A-E are passing grades, A is the highest grade. The grades pass (P) and fail (F) are used for courses under certain circumstances.

Appendix 1 - Course list

Appendix 2 - Programme syllabus descriptions



Appendix 1: Course list

Master's Programme, Innovative Technology for
Healthy Living (TIHLM)



Appendix 2: Specialisations

Master's Programme, Innovative Technology for Healthy Living (TIHLM)

This programme has no specialisations.