Learning Agreement MSc HST
Major: Medical Technology (MT)

Matr. no. & student's name:

Tutor's name:

Start of study program:

Major Profile ‘Medical Technology’

Students with a Master’s focus in Medical Technology will participate in an education that exposes them to interdisciplinary research and development and trains them to contribute to human health and healthcare. Our goal is to prepare students for project leadership roles requiring the integration of engineering and life science disciplines to address urgent societal challenges in human health.

The Medical Technology Master’s program focuses on the interface of technology with biology and human health, providing students with broad and complementary knowledge of biomaterials, biomechanics, biomedical devices, biomedical imaging, medical instrumentation, rehabilitation technology, and tissue engineering.

Our specific aim is to enable students to pursue a diverse range of careers in the fields of human health technology and health care. This includes research and development of biomedical devices, and more generally the translation of scientific research to clinical application. The program is designed to enable our graduates to become leaders that are able to understand, innovate, and bring to market enabling technologies that improve human health and health care, while allowing them to recognize the social, economic, and ethical implications of their work.

The curriculum also provides a strong foundation for our students that will enter graduate research programs in medical technology, biomedical engineering, or basic sciences, as well as graduate studies in health care policy, or business.

Compulsory Courses of the Major

<table>
<thead>
<tr>
<th>Code</th>
<th>Course Description</th>
<th>CP</th>
<th>semester</th>
<th>exam</th>
</tr>
</thead>
<tbody>
<tr>
<td>x 376-0300-00</td>
<td>Translational Science for Health and Medicine</td>
<td>Goldhahn</td>
<td>3</td>
<td>2G</td>
</tr>
<tr>
<td>x 376-0302-00</td>
<td>Practicing Translational Science</td>
<td>Goldhahn</td>
<td>2</td>
<td>6A</td>
</tr>
<tr>
<td>x 376-0302-01</td>
<td>GCP Basic Course (Modul 1 and 2)</td>
<td>Senti</td>
<td>1</td>
<td>1G</td>
</tr>
</tbody>
</table>

Total Core Courses  
6

Glossary:

V = lecture  
G = lecture with exercise  
U = exercise  
S = seminar  
K = colloquium  
P = practical/laboratory course  
A = independent project  
D = diploma thesis  

HS = autumn semester  
FS = spring semester  

wSE / oSE = written / oral Session Examination  
EE = End-of-semester Examination  
gSP / uSP = graded / ungraded Semester Performance
Elective Courses I of the Major
Elective courses I that are counted for the Bachelor diploma (please tick column BSc) cannot count for the Master diploma, too.
In this case, elective courses II of maximum the same amount of CP can count as elective courses I to reach the 12 CP (-> please list below).

- □ 376-0021-00 Introduction to Biomedical Engineering I
  - CP: 4
  - sem. exam: 3G, HS, wSE
  - BSc
- □ 376-1714-00 Biocompatible Materials
  - CP: 4
  - sem. exam: 3G, HS, wSE
  - BSc
- □ 376-0022-00 Introduction to Biomedical Engineering II
  - CP: 4
  - sem. exam: 3G, HS, wSE
  - BSc
- □ 376-0210-00 Biomechatronics
  - CP: 4
  - sem. exam: 3G, FS, wSE
  - BSc

Electives II counted as electives I

- □ 377-0595-00 Image Analysis and Image Processing
  - CP: 4
  - sem. exam: 3G, FS, wSE
  - BSc
- □ 377-0595-00 Image Analysis and Image Processing
  - CP: 4
  - sem. exam: 3G, FS, wSE
  - BSc
- □ 377-0595-00 Image Analysis and Image Processing
  - CP: 4
  - sem. exam: 3G, FS, wSE
  - BSc
- □ 377-0595-00 Image Analysis and Image Processing
  - CP: 4
  - sem. exam: 3G, FS, wSE
  - BSc

Total Elective Courses I of the Major

Elective Courses II of the Major
Elective courses II that are counted for the Bachelor diploma (please tick column BSc) cannot count for the Master diploma, too.

- □ 151-0255-00 Energy Conversion and Transport in Biosystems
  - CP: 4
  - sem. exam: 3VU, HS, wSE
  - BSc
- □ 151-0604-00 Microrobotics
  - CP: 4
  - sem. exam: 3G, HS, EE
  - BSc
- □ 227-0385-10 Biomedical Imaging
  - CP: 6
  - sem. exam: 5G, HS, wSE
  - BSc
- □ 227-0391-00 Medical Image Analysis
  - CP: 3
  - sem. exam: 2G, HS, oSE
  - BSc
- □ 227-0393-10 Bioelectronics and Biosensors
  - CP: 6
  - sem. exam: 4VU, FS, wSE
  - BSc
- □ 227-0447-00 Image Analysis and Computer Vision
  - CP: 6
  - sem. exam: 4VU, HS, oSE
  - BSc
- □ 227-0965-00 Micro- and Nano-Tomography of Biological Tissues
  - CP: 4
  - sem. exam: 3G, HS, oSE
  - BSc
- □ 227-0969-00 Methods & Models for fMRI Data Analysis
  - CP: 6
  - sem. exam: 3V, HS, EE
  - BSc
- □ 327-0505-00 Surfaces and Interfaces & their Applications I
  - CP: 3
  - sem. exam: 3V, HS, wSE
  - BSc
- □ 327-2125-00 Microscopy Training SEM I – Introduction to SEM [limited to 6 students]
  - CP: 1
  - sem. exam: 3P, HS, uSP
  - BSc
- □ 327-2126-00 Microscopy Training TEM I – Introduction to TEM [limited to 6 students]
  - CP: 1
  - sem. exam: 3P, HS, uSP
  - BSc
- □ 363-0790-00 Technology Entrepreneurship
  - CP: 2
  - sem. exam: 2V, HS, gSP
  - BSc
- □ 376-0815-00 Writing your Master’s Thesis: Natural Sciences and Engineering C1-C2 (either autumn or spring)
  - CP: 5
  - sem. exam: 5G, HS, gSP
  - BSc
- □ 363-1065-00 Design Thinking: Human-Centred Solutions to Real World Challenges [limited places]
  - CP: 5
  - sem. exam: 5G, HS, gSP
  - BSc
- □ 376-1103-00 Frontiers in Nanotechnology
  - CP: 4
  - sem. exam: 4V, HS, gSP
  - BSc
- □ 376-1177-00 Human Factors I
  - CP: 2
  - sem. exam: 2V, HS, wSE
  - BSc
- □ 376-1197-00 Applications of Cybernetics in Ergonomics
  - CP: 1
  - sem. exam: 1U, HS, gSP
  - BSc
- □ 376-1219-00 Rehabilitation Engineering II: Rehabilitation of Sensory and Vegetative Functions
  - CP: 3
  - sem. exam: 2V, HS, oSE
  - BSc
- □ 376-1279-00 Virtual Reality in Medicine
  - CP: 2
  - sem. exam: 2V, HS, wSE
  - BSc
- □ 376-1351-00 Micro/Nanotechnology and Microfluids for Biomedical Applications
  - CP: 2
  - sem. exam: 2V, HS, gSP
  - BSc
- □ 376-1504-00 Physical Human Robot Interaction (pHRI) [limited to 26 students]
  - CP: 4
  - sem. exam: 4V, HS, oSE
  - BSc
- □ 376-1622-00 Practical Methods in Tissue Engineering (either autumn or spring) [limited to 12 students]
  - CP: 5
  - sem. exam: 4P, HS, gSP
  - BSc
- □ 376-1651-00 Clinical and Movement Biomechanics
  - CP: 4
  - sem. exam: 3G, HS, oSE
  - BSc
- □ 376-1985-00 Trauma Biomechanics
  - CP: 4
  - sem. exam: 3V, HS, EE
  - BSc
- □ 376-1974-00 Colloquium in Biomechanics (either autumn or spring)
  - CP: 2
  - sem. exam: 2K, HS, uSP
  - BSc
<table>
<thead>
<tr>
<th>Code</th>
<th>Course Description</th>
<th>CP</th>
<th>semester</th>
<th>exam</th>
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<tbody>
<tr>
<td>401-0629-00</td>
<td>Applied Biostatistics</td>
<td>4</td>
<td>3G</td>
<td>HS</td>
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<tr>
<td>402-0674-00</td>
<td>Physics in Medical Research: From Atoms to Cells</td>
<td>6</td>
<td>3VU</td>
<td>HS</td>
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<tr>
<td>535-0423-00</td>
<td>Drug Delivery and Drug Targeting</td>
<td>2</td>
<td>2V</td>
<td>HS</td>
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<tr>
<td>551-0317-00</td>
<td>Immunology I</td>
<td>3</td>
<td>2V</td>
<td>HS</td>
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<tr>
<td>551-0319-00</td>
<td>Cellular Biochemistry (Part I)</td>
<td>3</td>
<td>2V</td>
<td>HS</td>
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<tr>
<td>636-0003-00</td>
<td>Biological Engineering and Biotechnology</td>
<td>6</td>
<td>3V</td>
<td>HS</td>
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<td>151-0630-00</td>
<td>Nanorobotics</td>
<td>4</td>
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<td>151-0980-00</td>
<td>Biofluidodynamics</td>
<td>4</td>
<td>3VU</td>
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<tr>
<td>227-0946-00</td>
<td>Molecular Imaging - Basic Principles and Biomedical Appl.</td>
<td>2</td>
<td>2V</td>
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<tr>
<td>227-0948-00</td>
<td>Magnetic Resonance Imaging in Medicine</td>
<td>4</td>
<td>3G</td>
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<tr>
<td>376-0815-00</td>
<td>Writing your Master's Thesis: Natural Sciences and Engineering C1-C2 (either autumn or spring)</td>
<td>2</td>
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<td>FS</td>
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<td>376-1178-00</td>
<td>Human Factors II</td>
<td>2</td>
<td>2V</td>
<td>FS</td>
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<td>376-1217-00</td>
<td>Rehabilitation Engineering I: Motor Systems</td>
<td>4</td>
<td>3VU</td>
<td>FS</td>
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<td>376-1308-00</td>
<td>Development Strategies for Medical Implants (limited to 25-30 students)</td>
<td>3</td>
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<td>376-1392-00</td>
<td>Mechanobiology: Implications for Development, Regeneration and Tissue Engineering</td>
<td>3</td>
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<td>376-1397-00</td>
<td>Orthopaedic Biomechanics</td>
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<td>Transfer of Technologies into Neurorehabilitation</td>
<td>2</td>
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<tr>
<td>376-1614-00</td>
<td>Principles in Tissue Engineering</td>
<td>3</td>
<td>2V</td>
<td>FS</td>
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<tr>
<td>376-1620-00</td>
<td>Skeletal Repair (limited to 45 students)</td>
<td>3</td>
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<td>376-1622-00</td>
<td>Practical Methods in Tissue Engineering (limited to 12 students)</td>
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<tr>
<td>376-1660-00</td>
<td>Writing, Reporting and Communication</td>
<td>3</td>
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<tr>
<td>376-1712-00</td>
<td>Finite Element Analysis in Biomedical Engineering</td>
<td>3</td>
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<td>376-1721-00</td>
<td>Bone Biology and Consequences for Human Health</td>
<td>2</td>
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<tr>
<td>376-1724-00</td>
<td>Appropriate Health System Design [lim. 48 stud.]</td>
<td>3</td>
<td>2V</td>
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<td>376-1974-00</td>
<td>Colloquium in Biomechanics (either autumn or spring)</td>
<td>2</td>
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<td>FS</td>
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<tr>
<td>402-0673-00</td>
<td>Physics in Medical Research: From Humans to Cells</td>
<td>6</td>
<td>3VU</td>
<td>FS</td>
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<tr>
<td>551-0318-00</td>
<td>Immunology II (Req.: Immunology I; exam 1+II)</td>
<td>3</td>
<td>2V</td>
<td>FS</td>
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<tr>
<td>551-0320-00</td>
<td>Cellular Biochemistry (Part II) (Req.: Part I)</td>
<td>3</td>
<td>2V</td>
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**Total Elective Courses II of the Major**

**Elective Courses in Humanities, Social or Political Sciences**

**Total Elective Courses D-GESS**
Practical Training
Research or job oriented internship(s), lab courses, ...

<table>
<thead>
<tr>
<th>CP</th>
<th>semester</th>
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<tr>
<td>15</td>
<td>34P</td>
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<tr>
<td>10</td>
<td>23P</td>
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<td>5</td>
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Total Practical Training (min. 15 CP)

Research Internship

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<th>semester</th>
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<tbody>
<tr>
<td>15</td>
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Total Research Internship 15

Master Thesis

<table>
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<tr>
<th>CP</th>
<th>semester</th>
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<tbody>
<tr>
<td>30</td>
<td>71D</td>
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</tbody>
</table>

Total Master Thesis 30

Comments (e.g. Additional Admission Requirements)

Zurich, .............................................................

Signed .................................................................. Student

.............................................................................. Tutor