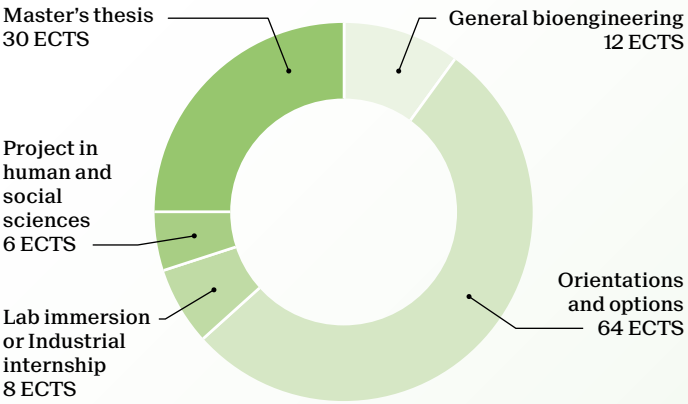
ÉCOLE POLYTECHNIQUE
FÉDÉRALE DE LAUSANNE

Master of Science in

BIOENGINEERING

2-year program - 120 ECTS



Students must choose at least 12 ECTS in one of the orientations A to E, at least 3 credits in domain F and max. 6 credits in domain G.

Students can also opt for a 30 ECTS Minor.
Minors recommended with this Master:

- Biocomputing
- Biomedical Technologies
- Biotechnology
- Management, Technology, Entrepreneurship
- Neuroprosthetics

This program includes an 8-week compulsory internship in industry.

	Orientation							Credits
General bioengineering								**12**
Analysis and Modelling of Locomotion								3
Biomicroscopy I								3
Fundamentals of Neuroengineering								4
Materials Science								3
Principles and Applications of Systems Biology								3
Stem Cell Biology and Technology								3
Orientations and options								**64**
Regenerative Medicine	A							
Biomechanical Engineering		B						
Systems Bioengineering			C					
Nanoscale bioengineering				D				
Biophotonics and bioimaging					E			
Law, Organization and Economics in LST						F		
Scientific Thinking							G	
Advanced Analysis I, II								8
Advanced Bioengineering Methods Laboratory				D				4
Artificial Organs and Systems								4
Biomaterials	A	B						3
Biomechanics of the Cardiovascular System		B						3
Biomechanics of the Musculoskeletal System		B						5
Biomedical Optics								3
BioMEMS	A							2
Biomicroscopy II	A				E			4
Biomolecular Structure and Mechanics			C	D				4
Biophysics I, II								6
Brain Computer interaction								3
Chemical Biology - Tools and Methods				D				3
Computational Motor Control		B						4
Data Analysis and Model Classification								4
Diffraction Methods in Structural Biology				D				4
Dynamical System Theory for engineers			C		E			4
Economics of innovation in the biomedical industry						F		3
Flexible bioelectronics								3
Fundamentals of Biomedical Imaging					E			4
Fundamentals of Biophotonics					E			3
Fundamentals of biosensors and electronic biochips				D				3
Genomics and Bioinformatics	A		C					4
Image Processing I, II					E			6
Introduction au droit et à l'éthique en STV						F		3
Lab Immersion II								8
Lab Immersion III								8
Lab methods: Animal Experimentation								2
Lab methods: Bioactive compounds screening								2
Lab methods: Biosafety						F		3
Lab methods: Flow Cytometry								2
Lab methods: Histology								2
Lab methods: Proteomics								2
Mécanique des structures								4
Multidisciplinary organization of medtechs/biotechs						F		3
Nanobiotechnology and biophysics								3
Numerical methods in biomechanics		B						3
Pharmacology and Pharmacokinetics								5
Semester project in Bioengineering								12
Scientific project design in Synthetic Biology (iGEM)							G	6
Scientific project design in Drug Discovery							G	6
Scientific literature analysis in Bioengineering							G	6
Scientific literature analysis in Computational molecular biology							G	6
Scientific project design in Regenerative Medicine and Diagnostics							G	6
Sensors in medical instrumentation	A	B						3
Sensorimotor Neuroprosthetics		B						4
Signal Processing for Functional Brain Imaging					E			3
Single cell genomics								4
Statistical population genetics								4
Statistical Physics of Biomacromolecules			C	D				4
Tissue Engineering	A							4
Understanding statistics and experimental design								4
Other accredited courses							max. 10	
Lab immersion or Industrial internship								**8**
Lab Immersion I								8
Industrial internship in bioengineering								8

School of Life Sciences
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