

**Module Description, available in: EN*****Biology, physiology and anatomy for engineers*****General Information****Number of ECTS Credits**

3

**Module code**

FTP\_BioEng

**Valid for academic year**

2024-25

**Last modification**

2022-10-17

**Coordinator of the module**

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**Explanations regarding the language definitions for each location:**

- Instruction is given in the language defined below for each location/each time the module is held.
- Documentation is available in the languages defined below. Where documents are in several languages, the percentage distribution is shown (100% = all the documentation).
- The examination is available 100% in the languages shown for each location/each time it is held.

|                      | Lausanne |  |  | Lugano   | Zurich |  |  |
|----------------------|----------|--|--|----------|--------|--|--|
| <b>Instruction</b>   |          |  |  | X E 100% |        |  |  |
| <b>Documentation</b> |          |  |  | X E 100% |        |  |  |
| <b>Examination</b>   |          |  |  | X E 100% |        |  |  |

**Module Category**

FTP Fundamental theoretical principles

**Lessons**

2 lecture periods and 1 tutorial period per week

**Entry level competences****Prerequisites, previous knowledge**

No previous knowledge is required

**Brief course description of module objectives and content**

Medical engineering is the intersection of many different disciplines. From engineering in its most varied forms, mechanics, electronics, computer science, management, to disciplines related to medicine: biology, anatomy, and physiology. In order to understand and put into practice the notions that the student will learn in this fascinating path, the same can not ignore the acquisition of basic knowledge about the human body. Thanks to this module the student will learn the basics of life as we know it, as well as the structure and functioning of the major systems present in the human body.

## Aims, content, methods

### Learning objectives and acquired competencies

The student is faced with the most important aspect of human biology, anatomy, and physiology. She/he learns the basics of:

- mammalian cell biology
- the most important physiological systems
- the anatomy systems
- human pathology

### Contents of module with emphasis on teaching content

Basics of mammalian cell biology including stem cell biology and cell cultivation techniques.

Basics of anatomy; skeleton, locomotory system, cardio-vascular system, respiratory system, nervous system (CNS & PNS) and the sensory system (eye, ear, olfactory system, vestibular system, proprioception, and touch)

Basics of physiology: introduction of the physiology of the nervous system (CNS and PNS), the cardio-vascular system, the locomotory apparatus as well as the hormone system

Basics of human pathology

### Teaching and learning methods

Lectures, hands on exercise

### Literature

Slides, course material and books chapters

## Assessment

### Certification requirements

Module does not use certification requirements

### Basic principle for exams

**As a rule, all the standard final exams for modules and also all resit exams are to be in written form**

### Standard final exam for a module and written resit exam

Kind of exam

written

Duration of exam

120 minutes

Permissible aids

*Aids permitted as specified below:*

**Permissible electronic aids**

No electronic aids (e.g.: smartphones, computers, iPads, etc.) are permitted.

**Other permissible aids**

The use of course material (only into paper format), as well as the course Handouts, the course presentations, the exercises and the exercises corrections, is allowed.

### Special case: Resit exam as oral exam

Kind of exam

oral

Duration of exam

30 minutes

Permissible aids

No aids permitted