Physiological Pressures and Flows

Programme course

6 credits
Fysiologiska tryck och flöden
TBMT09
Valid from: 2020 Spring semester

Determined by
Board of Studies for Electrical Engineering,
Physics and Mathematics

Date determined
2019-09-23
Main field of study

Biomedical Engineering

Course level

Second cycle

Advancement level

A1X

Course offered for

- Master's Programme in Biomedical Engineering
- Engineering Electronics, B Sc in Engineering
- Computer Science and Engineering, M Sc in Engineering
- Information Technology, M Sc in Engineering
- Biomedical Engineering, M Sc in Engineering
- Applied Physics and Electrical Engineering - International, M Sc in Engineering
- Applied Physics and Electrical Engineering, M Sc in Engineering

Entry requirements

Note: Admission requirements for non-programme students usually also include admission requirements for the programme and threshold requirements for progression within the programme, or corresponding.

Prerequisites

Anatomy and Physiology

Intended learning outcomes

The course aims at giving physical description of pressures and flows in i.e. the circulatory and respiratory system and knowledge about corresponding measurement techniques. Specific goals from an engineering point of view are to:

- Formulate and apply fluid dynamics theories and models of the circulatory system
in health and disease
- Utilize theories of respiratory physiology, gas exchange, and respiratory diseases
- Assess and utilize techniques for pressure measurement, blood flow assessment and gas flow analysis
- Generalize theories and measurement techniques for pressures and flows to other physiological systems

Course content

Circulation: Hemodynamics, measurements and clinical applications, fluid mechanics in the circulatory system, models of the circulatory system.
Respiration: respiration physiology, respiratory disease and measurements.

Teaching and working methods

The course comprises lectures, demonstrations and laboratory work

Examination

<table>
<thead>
<tr>
<th>TEN1</th>
<th>Written Examination</th>
<th>U, 3, 4, 5</th>
<th>4 credits</th>
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<tbody>
<tr>
<td>LAB1</td>
<td>Laboratory Work</td>
<td>U, G</td>
<td>2 credits</td>
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Grades

Four-grade scale, LiU, U, 3, 4, 5

Other information

About teaching and examination language

The teaching language is presented in the Overview tab for each course. The examination language relates to the teaching language as follows:

- If teaching language is Swedish, the course as a whole or in large parts, is taught in Swedish. Please note that although teaching language is Swedish, parts of the course could be given in English. Examination language is Swedish.
- If teaching language is Swedish/English, the course as a whole will be taught in English if students without prior knowledge of the Swedish language participate.
Examination language is Swedish or English (depending on teaching language).

- If teaching language is English, the course as a whole is taught in English.
  Examination language is English.

Other

The course is conducted in a manner where both men's and women's experience and knowledge are made visible and developed.

The planning and implementation of a course should correspond to the course syllabus. The course evaluation should therefore be conducted with the course syllabus as a starting point.

Department

Institutionen för medicinsk teknik

Director of Studies or equivalent

Marcus Larsson

Examiner

Tino Ebbers

Education components

Preliminary scheduled hours: 48 h
Recommended self-study hours: 112 h