

# Physiological Pressures and Flows

Programme course

6 credits

Fysiologiska tryck och flöden

TBMT09

Valid from: 2017 Spring semester

**Determined by**

Board of Studies for Electrical  
Engineering, Physics and Mathematics

**Date determined**

2017-01-25

## Main field of study

Biomedical Engineering

## Course level

Second cycle

## Advancement level

A1X

## Course offered for

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

LAB1	Laboratory Work	2 credits	U, G
TEN1	Written Examination	4 credits	U, 3, 4, 5

## Grades

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

## Department

Institutionen för medicinsk teknik

## Director of Studies or equivalent

Linda Rattfält

## Examiner

Tino Ebbers

## Course website and other links

<http://www.imt.liu.se/edu/courses/TBMT09/>

## Education components

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

## Course literature

Monitoring of Respiration and Circulation, J.A. Blom (CRC Press, 2004). Biofluid Mechanics: The Human Circulation, K.B. Chandran, S.E. Rittgers, A.P. Yoganathan 2:nd ed. (CRC Press, 2012). Principles of Anatomy and Physiology. G.J. Tortora and S.R. Grabowski: 10:th ed. (Harper Collins College Publ. 2003)

## Common rules

Regulations (apply to LiU in its entirety)

The university is a government agency whose operations are regulated by legislation and ordinances, which include the Higher Education Act and the Higher Education Ordinance. In addition to legislation and ordinances, operations are subject to several policy documents. The Linköping University rule book collects currently valid decisions of a regulatory nature taken by the university board, the vice-chancellor and faculty/department boards.

LiU's rule book for education at first-cycle and second-cycle levels is available at [http://stydokument.liu.se/Regelsamling/Innehall/Utbildning\\_pa\\_grund-\\_och\\_avancerad\\_niva](http://stydokument.liu.se/Regelsamling/Innehall/Utbildning_pa_grund-_och_avancerad_niva).