Biomedical Engineering - Project Course

Programme course

12 credits

Projektkurs i medicinsk teknik, CDIO

TBMT14

Valid from: 2017 Spring semester

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

Date determined
2017-01-25

Offered for the last time
Autumn semester 2025

Replaced by
TBMT39

Main field of study

Biomedical Engineering

Course level

Second cycle

Advancement level

A1F

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

Specific information

The Entrepreneurship part overlap with other CDIO courses and cannot be included more than once in a degree.

Exchange students may apply for the course after arrival to the university but before it starts. The international officer for exchange studies must be contacted before applying.

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

Basic knowledge in physics, mathematics, electronics, programming and signal processing. Previous experience of the Lips model, or similar model. Specific knowledge in Biomedical engineering and Anatomy and physiology.

Intended learning outcomes

The course aims to consolidate the student's engineering and professional ability to plan, manage and implement an industrial-like project using the CDIO (Conceive - Design - Implement - Operate) concept. During the course, the student will also develop and consolidate its biomedical engineering excellence, especially within the field of the project. After completing the project course, the student should be able to:

- identify biomedical needs and suggest solutions/actions.
- analyze and structure problems with respect to a priori knowledge.
- create and implement new knowledge within the biomedical engineering domain based on synthesis from other engineering core domains.
- demonstrate biomedical engineering solutions to well-defined needs or problems.
- critically examine project proposals and solutions.
- document and follow up of project plan and time plans.
- develop power of initiative and demonstrate creative solutions.
- actively participating and well functioning in at least one project group.
- present project results, both written and orally, acquired within a given time period and budget.

A purpose for the course is also for the students to acquire knowledge and abilities within the general area of entrepreneurship, with particular focus on business planning for new ventures. After the course, students should be able to:

- account for models that describe what it takes for a new venture to have a stable basis for further development and to asess the level of development of ventures using such models; and
- account for the information and analyses needed to evaluate a development project from a business point of view and have the ability to collect and analyse relevant information for the purpose.

Course content

The project course serves as an umbrella for a variety of projects with a biomedical engineering focus. The projects will be application focused and may vary from year to year. For example: body-worn sensors, bio-optical imaging and diagnostic systems, biomedical model analysis, medical information systems, and medical imaging. For more detailed information please refer to the course website. The projects are of prototype character but should demonstrate the possibility of being turned into a commercial product.

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Teaching and working methods

At the start of the project a directive describing the client needs is given to each project group. Based on this directive, the project team will negotiate with the client to agree upon a set of requirements that are considered relevant in relation to the given time and resources. Resources in all forms are known at the start of the project. Project management is exercised in accordance with the LIPS model (full scale). The group consists of at least four participants but usually between 5-8. The group size requires scalability of the specifications. The group is also assigned a supervisor.

The course runs throughout the fall semester, where a theoretical part, a requirements specification and a project plan constitutes the first part of the project. Design, implementation, documentation, delivery and evaluation of the project constitutes the second part.

Examination

UPG1	Entrepreneurship assignments	3 credits	U, G
UPG2	Written assignment	1.5 credits	U, G
PRA1	Project work	7.5 credits	U, G

If the amount of exchange students are numerous the education is performed in English. If not, exchange students will be tutored individually in English.

Grades are given as 'Fail' or 'Pass'.

Grades

Two-grade scale, U, G

Department

Institutionen för medicinsk teknik

Director of Studies or equivalent

Marcus Larsson

Examiner

Marcus Larsson

Course website and other links

http://www.imt.liu.se/edu/courses/TBMT14/

Education components

Preliminary scheduled hours: 96 h
Recommended self-study hours: 224 h

Course literature

Additional literature

Books

T. Svensson & C. Krysander, (2011) *Projektmodellen Lips* Studentlitteratur

Other

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://styrdokument.liu.se/Regelsamling/Innehall/Utbildning_pa_grund-_och_avancerad_niva.