Cell Biology and Microbial Processes

Programme course

6 credits

Cellbiologi och mikrobiella processer

TFBI22

Valid from: 2017 Spring semester

Determined by
Board of Studies for Industrial Engineering and Logistics

Date determined
2017-01-25

Main field of study
Biology

Course level
First cycle

Advancement level
G1X

Course offered for
- Industrial Engineering and Management - International, M Sc in Engineering
- Industrial Engineering and Management, 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
Basic chemistry

Intended learning outcomes
The aim is to provide basic knowledge about theoretical and practical aspects of cell biology and microbiology. Having successfully passed the course, the student will be able to:

- present differences between cells in different organism domains
- explain the main structure of cells
- present and discuss differences between organisms regarding cell functions
- give a basic overview of some common types of microbial metabolism
- explain and discuss the use of some microbial processes in the environmental technology field, and give examples of the role of microbial processes in the environment.
- use some basic techniques for cultivation of microorganisms and for process studies, as well as present and discuss the results.

Course content

The course covers the structure and function of procaryotic and eucaryotic cells, e.g. cellmembranes, organelles, metabolism, photosynthesis, and cellular communication. Organisms groups included are bacteria, archaea, fungi, and algae. In the second part of the course, microbial growth and metabolism is studied along with microbial processes such as aerobic and anaerobic decomposition of organic material, e.g. composting and biogas production, as well as other examples of human use of microbial processes.

Teaching and working methods

The course is based on lectures, to give an overview of the theory, and mandatory seminars to discuss the studied literature. In addition, there are mandatory laboratory exercises and a small project for a hands-on understanding of the theory. Results are discussed during seminars and in written reports.

Examination

PRA1	Project Work, Oral and Written Presentations	2 credits	U, 3, 4, 5
LAB2	Laboratory Work with Seminars Incl. Article Analysis	2 credits	U, G
TEN1	Written examination	2 credits	U, 3, 4, 5

The written examination and the project contribute equally to the final grade.

Grades

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

Department

Institutionen för fysik, kemi och biologi

Director of Studies or equivalent

Agneta Johansson

Examiner

Agneta Johansson

Education components

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

Course literature

Additional literature

Books

Silverthorn, D.U., *Human Physiology: An integrated approach*. 6th ed.

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.