The Biogas Process

Programme course

6 credits

Biogasprocessen

TRTE18

Valid from: 2017 Spring semester

Determined by
Board of Studies for Chemistry, Biology and Biotechnology

Date determined
2017-01-25

Main field of study
Engineering Biology, Chemical Biology

Course level
Second cycle

Advancement level
A1X

Course offered for
- Chemical Biology
- Engineering Biology, M Sc in Engineering

Specific information
The course is not available for exchange students.

Prerequisites
90 hp in chemistry/biology or equivalent

Intended learning outcomes
After completed the course the student should be able to:
- account for the microbial processes responsible for biogas production and describe the delicate balances of the anaerobic degradation chain,
- identify and discuss causes of process disturbances and give suggestions on how to cure improve and control the biogas process,
- know the terminology relevant to the biogas process and define key terms, perform relevant calculations and laboratory analyses in relation to different aspects of the process.

Course content
The course contains a theoretical and a practical part. The microbiology of the biogas process as ruled by the used substrate is first treated on a theoretical level. Planning and construction of biogas plants for different applications including control systems and treatment and use of the fermented residue are critical ingredients. Furthermore hygienic and environmentally related aspects will be discussed. The practical part of the course involves operation of lab-scale reactors. The experiments will be used to exemplify the biogas potential, kinetics, hydraulic retention times and process performance related to different substrates.

Teaching and working methods

The course is based on lectures, seminars and practical exercises using lab-scale bioreactors. In addition a visit to a full scale biogas plants will normally be performed.

Examination

LAB1	Laboratory report	4 credits	U, 3, 4, 5
UPG1	Written report and oral presentation.	2 credits	U, 3, 4, 5

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

Grades

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

Department

Institutionen för Tema

Director of Studies or equivalent

Erik Glaas

Examiner

Annika Björn

Education components

Preliminary scheduled hours: 96 h
Recommended self-study hours: 64 h

Course literature

Additional literature

Articles

Research articles.

Compendia

Laboratory compendium

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.