Linnæus University

Jnr: UGA 2013/1324-3.1.2

Course syllabus

Faculty of Technology
Department of Buildning and Energy Technology

1KT001 Grundläggande kemiteknik, 15 högskolepoäng
General Chemical Engineering, 15 credits

Main field of study
Chemical Engineering

Subject Group
Chemical Engineering

Level of classification
First Level

Progression
G1N

Date of Ratification
Approved 2010-03-03
Revised 2013-06-15 by Faculty of Technology. Review of Literature and that four modules have become three.
The course syllabus is valid from autumn semester 2013

Prerequisites
General entry requirements and Chemistry A, Mathematics D, Physics B or Chemistry 1, Mathematics 3c, Physics 2.

Objectives

After completing the course the student will have basic knowledge about:

- The atomistic and molecular fundamentals of chemical formulas, reactions, equillibria and stoichiometry applied on eg gasification, combustion, biotechnical processes.
- The prerequisites for the environmental issues and growth of microorganisms.
- The properties of molecules in biological systems.

Practical skills:
Basic knowledge of laboratory techniques, capacity for risk assessment, preparation and execution of individual practical laboratory work.

Report writing:
Aims to create a familiarity in reflecting on the laboratory work and process and evaluate the results.

Content
The course consists of 3 modules.

Module 1 General Chemical Engineering 1 6 credits
The module contains the following elements:

- Basic chemical concepts and nomenclature
- Chemical binding and structural chemsitry
- Chemical formulas, reactions and stoichiometry
- Physical properties of gases
- Chemical equillibria and kinetics
- Thermo dynamical principles and electrochemistry
- Basic chemical structural concepts, reactions, isomerism and nomenclature of organic compounds.

Module 2 General Chemical Engineering 2 6 credits
The module contains the following elements:
The applied areas of organic chemistry, e g:

- Gasification
- Combustion

The biochemical and microbial fundamentals of the use of microorganisms in biotechnical processes. The photosynthesis and basic biochemistry in plants

Module 3 Lab course 3 credits
Practical exercises connected to the other (theoretical) parts of the course.

Type of Instruction
Lectures, exercises and laboratory work. Mandatory elements announced at the beginning
of the course.

Examination
The course is assessed with the grades U,3,4 or 5.
Assessment of the student's performance usually takes place during the special examination periods and can be done through project work, laboratory work, assignments and written exams. Examination may be done both orally and in writing.

Course Evaluation
A course evaluation will be carried out and compiled after the course is completed. The compilation will be presented to the current board as well as to the students and filed by the coordinating department.

Other
Some elements of the course may entail costs defrayed by the course participant.

Required Reading and Additional Study Material
Required reading
Atkins, Jones, Laverman *Chemical principles - The quest for insight* W .H. Freeman 2013, 1000 pp.

Michael T Madigan, *Brock Biology of Microorganisms*, global edition, 700 pp