

**SYLLABUS**

# **Metallurgical and Physical Chemistry 7.5 credits Q0045B**

**Metallurgisk och fysikalisk kemi**

**Course syllabus admitted: Spring 2019 Sp 4 - Spring 2020 Sp 4**

**DECISION DATE  
2019-01-11**

# Metallurgical and Physical Chemistry 7.5 credits Q0045B

## Metallurgisk och fysikalisk kemi

### First cycle, Q0045B

Education level	Grade scale	Subject	Subject group (SCB)
First cycle	G U 3 4 5	Kemi	Chemistry

## Entry requirements

In order to meet the general entry requirements for first cycle studies you must have successfully completed upper secondary education and documented skills in English language +  
Matemattics 1a/1b/1c (specific entry A7).

Or:

Mathematics A (specific entry 7)

## Selection

The selection is based on final school grades or Swedish Scholastic Aptitude Test.

## Examiner

Phillip Tretten

## Course Aim

After having concluded the course, the student should be able to:

- understand the meaning of and apply fundamental concepts and principles of thermodynamic
- make equilibrium calculations.

## Contents

The course deals with:

- rate of chemical reactions
- acids and bases
- oxidation and reduction
- fundamental principles of thermodynamics (standard states, first law of thermodynamics, enthalpy, heat capacity)
- second law of thermodynamics ( reversible and irreversible processes, entropy, Gibbs free energy, Gibbs-Duhems equation)
- equilibria( chemical potential, third law of thermodynamics, Le Chatelier`s principle, phase diagram, Gibbs phase rule, Clapeyron`s equation, Claudius-Clapeyrons eqation,
- ideal and regular solutions, activity, standard states, Roults law, Henry`s law, Sievert`s law
- electrochemistry( galvanic cells, electrolys, corrosion
- basic kinetic concept

## Realization

Each course occasion`s language and form is stated and appear on the course page on Luleå University of Technology's website.

Lectures, problems solving sessions and home assignments

## Examination

If there is a decision on special educational support, in accordance with the Guideline Student's rights and obligations at Luleå University of Technology, an adapted or alternative form of examination can be provided.

Written examination 5 credits  
Home assignments 2.5 credits

## Literature. Valid from Spring 2015 Sp 3

Petrucci R.H., et al. General Chemistry, Prentice –Hall Inc, 2002.  
Gaskell D.R., Introduction to the Thermodynamics of Materials. Taylor and Francis, 2008.

## Course offered by

Department of Civil, Environmental and Natural Resources Engineering

## Modules

Code	Description	Grade scale	Cr	Status	From period	Title
0001	Written exam	G U 3 4 5	5	Mandatory	S15	
0002	Assignment report	U G#	2.5	Mandatory	S15	

## Study guidance

Study guidance for the course is to be found in our learning platform Canvas before the course starts. Students applying for single subject courses get more information in the Welcome letter. You will find the learning platform via My LTU.

## Last revised

by Assistant Director of Undergraduate Studies Eva Gunneriusson, Department of Civil, Environmental and Natural Resources Engineering 2019-01-11

## Syllabus established

by Eva Gunneriusson 2014-02-11