

Protein Chemistry

Programme course

6 credits

Proteinkemi

TFKE46

Valid from: 2018 Spring semester

Determined by

Board of Studies for Chemistry, Biology
and Biotechnology

Date determined

Offered for the last time

Spring semester 2022

Replaced by

TFKE71

Main field of study

Biotechnology, Chemical Biology, Chemistry

Course level

Second cycle

Advancement level

A1X

Course offered for

- Chemical Biology, 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

General Chemistry, Physical Chemistry, Organic Chemistry 1 and Biochemistry 1 & 2 or equivalent courses.

Intended learning outcomes

The objective of the course is to provide comprehensive knowledge in the following areas: protein chemistry, protein engineering, structure and function relationships, physicochemical properties of proteins and methodologies for characterization of proteins.

After studies well learned the student will have proficiency to:

- Identify structure motifs and from this draw conclusions regarding the structure and function of proteins.
- Search for information from various data bases to visualize protein structures and compare amino acid sequences.
- Draw conclusions about protein dynamics, structure and function from detailed chemical and physical properties.
- Comprehend the fundamental mechanisms of protein folding and to have a deeper understanding of the factors determining the stability of a protein.

Course content

Studies of different structure motifs of proteins, membrane proteins, prediction, of protein structures. Studies of physico-chemical properties of proteins and methodology for studies of these properties: Chemical characteristics of polypeptides, protein engineering, physical interactions determining the properties of proteins, role of hydrophobic interaction, conformation flexibility, protein stability, mechanisms of protein folding, interaction with other proteins, enzyme catalysis.

Teaching and working methods

The theory is presented at lectures and lessons. Three-dimensional structures of proteins and computer simulations are performed in smaller groups.

Examination

TEN5 Written examination 6 credits U, 3, 4, 5

Grades

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

Department

Institutionen för fysik, kemi och biologi

Director of Studies or equivalent

Magdalena Svensson

Examiner

Lars-Göran Mårtensson

Education components

Preliminary scheduled hours: 41 h

Recommended self-study hours: 119 h

Course literature

David Whitford: Proteins Structure and Function, Wiley.