Opasraportti

(2007 - 2008)

Tutkintorakenteisiin kuulumattomat opintokokonaisuudet ja -jaksot

747605S: Basic aspects of protein crystallographic methods, 3 op
740144P: Biochemical Methodologies I, 8 op
740365A: Biochemical Methodologies II, 8 op
747602S: Biochemistry of protein folding, 2,5 op
747603S: Bioinformatics, 2,5 op
740148P: Biomolecules, 5 op
740143P: Biomolecules for Biochemists, 8 op
740147P: Biomolecules for Bioscientists, 8 op
740362A: Cellular Biology, 6 op
740366A: Cellular Communication, 6 op
744618S: Dissertation, 18 op
740376A: Essay (B.Sc. thesis), 10 op
740372A: Final Examination, 6 op
747693S: Final examination in protein science and biotechnology, 9 op
740369A: Immunobiology, 3 op
747604S: Introduction to biocomputing, 3 op
740672S: Maturity test (M.Sc. degree), 0 op
740146P: Metabolism I, 6 op
740149P: Metabolism I, 4 op
740375A: Metabolism II, 4 op
740367A: Metabolism II, 6 op
740363A: Microbiology, 6 op
740374A: Microbiology, 3 op
740361A: Molecular Biology I, 8 op
740373A: Molecular Biology I, 4 op
740072Y: Orientation, 1 op
744617S: Orientation to research work, 0 - 20 op
740145P: Physical Biochemistry, 6 op
740371A: Physiological Biochemistry, 4 op
747691S: Pro gradu experimental work in protein science and biotechnology, 28 op
747692S: Pro gradu thesis in protein science and biotechnology, 20 op
740364A: Protein Chemistry I, 8 op
747601S: Protein production and analysis, 8 op
740368A: Radiation and Safety, 5 op
744609S: Structural enzymology, 2,5 op
744619S: Systems biology, 4 op
740074Y: Tutoring/confidential posts, 1,5 op

Opintojaksojen kuvaukset
747605S: Basic aspects of protein crystallographic methods, 3 op

Opiskelumuoto: Advanced Studies  
Laji: Course  
Vastuuyksikkö: Department of Biochemistry

Arvostelu: 1 - 5, pass, fail  
Opettajat: Wierenga Rikkert  
Opintokohteen kielet: English

Leikkaavuudet:

ECTS Credits: 3 credits  
Contents:  
The course will describe the principles of x-ray diffraction theory. It will focus on aspects used in the field of protein crystallography including following topics: Crystallisation of proteins, symmetry properties of crystals, X-ray sources and detectors, the diffraction pattern and the reciprocal lattice, the phase problem, isomorphous differences and the MIR-method, anomalous differences and the MAD-method. 

Learning activities and teaching methods:  
20 h lectures and seminars  
Person responsible:  
Rik Wierenga

740144P: Biochemical Methodologies I, 8 op

Opiskelumuoto: Basic Studies  
Laji: Course  
Vastuuyksikkö: Department of Biochemistry

Arvostelu: 1 - 5, pass, fail  
Opettajat: Jari Heikkinen  
Opintokohteen kielet: Finnish

Leikkaavuudet:

Voidaan suorittaa useastil: Kyllä  
Ei opintojaksokuvauksia.

740365A: Biochemical Methodologies II, 8 op

Opiskelumuoto: Intermediate Studies  
Laji: Course  
Vastuuyksikkö: Department of Biochemistry

Arvostelu: 1 - 5, pass, fail  
Opettajat: Ulrich Bergmann  
Opintokohteen kielet: English
Biochemical methodologies II

ECTS Credits: 8 credits
Contents: This module covers more advanced methodologies used in practical biochemistry. Methodologies covered include principles and practice of fluorescence spectroscopy, amino acid analysis, amino acid sequencing, circular dichroism, mass spectrometry 2D-PAGE, native PAGE, surface plasmon resonance, micro-calorimetry, micro-array technology, immunoprecipitation, isoelectric focusing, urea-gel electrophoresis, western-blotting, hybridisation, gas chromatography and capillary electrophoresis. Attendance is compulsory.
Learning activities and teaching methods: 120 h lab., including pre-lab lectures plus exercises 2. kl
Person responsible: Ulrich Bergmann

Biochemistry of protein folding, 2,5 op

Voimassaolo: - 31.05.2011
Opiskelumuoto: Advanced Studies
Laji: Course
Vastuuysikkö: Department of Biochemistry
Arvostelu: 1 - 5, pass, fail
Opettajat: Lloyd Ruddock
Opintokohteen kielet: English
Leikkaavuudet: 747611S Biochemistry of protein folding 3.0 op

ECTS Credits: 2,5 credits
Contents: This module provides an introduction to protein folding in vivo. Topics covered include protein folding and quality control in the endoplasmic reticulum, mechanisms regulating protein folding including the unfolded protein response, the catalysis of native disulphide bond formation, the biochemistry of molecular chaperones and the role of molecular chaperones and protein folding catalysts in other cellular events. The module is assessed based on a report prepared on individual topics and on participation in the seminars.
Learning activities and teaching methods: 16 contact hours of lectures and seminars
Person responsible: Lloyd Ruddock

Bioinformatics, 2,5 op

Opiskelumuoto: Advanced Studies
Laji: Course
Vastuuysikkö: Department of Biochemistry
Arvostelu: 1 - 5, pass, fail
Opettajat: Ari-Pekka Kvist
Opintokohteen kielet: English

ECTS Credits: 2,5 credits
Contents:
This course introduces basic concepts and methodology in bioinformatic research. Basic computational methods of DNA and protein handling and database searches are introduced. Other methods may include joining database and proteomic searches and evolutionary views of biocomputing. After this course a student has insight of basic methodology of bioinformatics.

Learning activities and teaching methods:
14 contact hours of lectures and practicals

Person responsible:
Ari-Pekka Kvist

740148P: Biomolecules, 5 op

Opiskelumoto: Basic Studies
Laji: Course
Vastuuysikkö: Department of Biochemistry
Arvostelu: 1 - 5, pass, fail
Opettajat: Lloyd Ruddock
Opintokohteen kielet: English

Leikkaavuudet:
ay740157P Basic biochemistry 1: Biomolecules (OPEN UNI) 4.0 op
ay740152P Basic biochemistry 1: Biomolecules (OPEN UNI) 5.0 op
740143P Biomolecules for Biochemists 8.0 op
740147P Biomolecules for Bioscientists 8.0 op

ECTS Credits:
5 credits

Contents:
This module provides an overview of biochemistry, outlining the forces involved in biomolecule structure and the chemical structures and properties of polynucleic acids, proteins, carbohydrates and lipids. There will also be an introduction to prebiotic evolution and a student debate on this subject. The module is arranged into lectures, workshops, a student debate. All of the exercises are in English. Both a final examination and continuous assessment will count towards the final mark and attendance of some parts is compulsory.

Learning activities and teaching methods:
30 h lu, plus exercises 1. sl – 1. kl

Recommended or required reading:
Mathews, van Holde & Ahern: Biochemistry, (3rd edition) , published by Addison Wesley Longman, Inc. or equivalent

Person responsible:
Lloyd Ruddock

Other information:
This module is the same as Biomolecules for Biochemists except that it contains no practical component.

740143P: Biomolecules for Biochemists, 8 op

Opiskelumoto: Basic Studies
Laji: Course
Vastuuysikkö: Department of Biochemistry
Arvostelu: 1 - 5, pass, fail
Opettajat: Lloyd Ruddock
Opintokohteen kielet: English

Leikkaavuudet:
ay740157P Basic biochemistry 1: Biomolecules (OPEN UNI) 4.0 op
ay740152P Basic biochemistry 1: Biomolecules (OPEN UNI) 5.0 op
740143P Biomolecules for Biochemists 8.0 op
740148P Biomolecules 5.0 op
ECTS Credits:
8 credits

Contents:
This module provides an overview of biochemistry, outlining the forces involved in biomolecule structure and the chemical structures and properties of polynucleic acids, proteins, carbohydrates and lipids. There will also be an introduction to prebiotic evolution and a student debate on this subject. The module is arranged into lectures, workshops, a student debate and laboratory work. All of the exercises are in English. Both a final examination and continuous assessment will count towards the final mark and attendance of some parts is compulsory.

Learning activities and teaching methods:
30 h lu, 48 h lab., plus exercises 1. sl – 1. kl

Recommended or required reading:

Person responsible:
Lloyd Ruddock

740147P: Biomolecules for Bioscientists, 8 op

Opiskelumuoto: Basic Studies
Laji: Course
Vastuuysikkö: Department of Biochemistry
Arvostelu: 1 - 5, pass, fail
Opettajat: Lloyd Ruddock

Opintokohteen kielet: English
Leikkaavuudet:
<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ay740157P</td>
<td>Basic biochemistry 1: Biomolecules (OPEN UNI)</td>
<td>4.0 op</td>
</tr>
<tr>
<td>ay740152P</td>
<td>Basic biochemistry 1: Biomolecules (OPEN UNI)</td>
<td>5.0 op</td>
</tr>
<tr>
<td>740143P</td>
<td>Biomolecules for Biochemists</td>
<td>8.0 op</td>
</tr>
<tr>
<td>740148P</td>
<td>Biomolecules</td>
<td>5.0 op</td>
</tr>
</tbody>
</table>

ECTS Credits:
8 credits

Contents:
This module provides an overview of biochemistry, outlining the forces involved in biomolecule structure and the chemical structures and properties of polynucleic acids, proteins, carbohydrates and lipids. There will also be an introduction to prebiotic evolution and a student debate on this subject. The module is arranged into lectures, workshops, a student debate and laboratory work. All of the exercises are in English. Both a final examination and continuous assessment will count towards the final mark and attendance of some parts is compulsory.

Learning activities and teaching methods:
30 h lu, 48 h lab., plus exercises 1. sl – 1. kl

Recommended or required reading:
Mathews, van Holde & Ahern: Biochemistry, (3rd edition), published by Addison Wesley Longman, Inc. or equivalent

Person responsible:
Lloyd Ruddock

Other information:
This module is the same as Biomolecules for Biochemists except that there is the option for some of the exercises to be in Finnish.

740362A: Cellular Biology, 6 op

Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuysikkö: Department of Biochemistry
Arvostelu: 1 - 5, pass, fail
Opettajat: Sakari Kellokumpu
Opintokohteen kielet: Finnish
Leikkaavuudet:
740323A  Cell culture course   3.0 op
744610S  Advanced course for cell biology   3.0 op

Ei opintojaksokuvauksia.

740366A: Cellular Communication, 6 op

Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuysikkö: Department of Biochemistry
Arvostelu: 1 - 5, pass, fail
Opettajat: Sakari Kellokumpu
Opintokohteen kielet: English

Ei opintojaksokuvauksia.

744618S: Dissertation, 18 op

Opiskelumuoto: Advanced Studies
Laji: Course
Vastuuysikkö: Department of Biochemistry
Arvostelu: 1 - 5, pass, fail
Opettajat: Lloyd Ruddock
Opintokohteen kielet: English

Leikkaavuudet:
744631S  Dissertation   15.0 op

ECTS Credits:
18 credits

Contents:
This module is based around the student producing an extensive, in-depth literature report in the style of a scientific review. Students are responsible for finding a suitable supervisor for their dissertation with whom they will discuss the scientific background and relevant literature. Students are strongly encouraged to meet with their supervisor weekly to discuss progress and ideas and to resolve problems. A one-page outline of the dissertation subject area, including details of the supervisor (who need not be from the University of Oulu), must be approved by the module convener before starting this module. While the dissertation subject can be closely linked with the Pro Gradu project subject, students are advised that having distinct topics for these two modules will look better on their CV.

Learning activities and teaching methods:
480 hours of student work
Person responsible:
Lloyd Ruddock

740376A: Essay (B.Sc. thesis), 10 op

Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuysikkö: Department of Biochemistry
Arvostelu: 1 - 5, pass, fail
Opettajat: Tuomo Glumoff
Opintokohteen kielet: Finnish
**740372A: Final Examination, 6 op**

**Opiskelumuoto:** Intermediate Studies  
**Laji:** Course  
**Vastuuysikkö:** Department of Biochemistry  
**Arvostelu:** 1 - 5, pass, fail  
**Opettajat:** Lloyd Ruddock  
**Opintokohteen kielet:** English

**ECTS Credits:**  
6 credits  
**Contents:**  
This examination will test the ability of students to integrate knowledge from the core biochemistry modules they have taken during their BSc. It will include questions covering the material from Biomolecules for Biochemists, Biokemian menetelmät I, Physikal biochemistry, Aineenvahdunta I, Molekyylibiologia I, Solun biologia, Mikrobiologia, Protein Chemistry I, Biochemical methodologies II, Solujen kommunikaatio and Aineenvaihdunta II. The questions will require an understanding of the basic principles of biochemistry and each will be based on subject specific material from at least two modules.  
**Learning activities and teaching methods:**  
Toteutus Student self-study  
**Person responsible:**  
Conveners from the core modules coordinated by Lloyd Ruddock

**747693S: Final examination in protein science and biotechnology, 9 op**

**Opiskelumuoto:** Advanced Studies  
**Laji:** Course  
**Vastuuysikkö:** Department of Biochemistry  
**Arvostelu:** 1 - 5, pass, fail  
**Opettajat:** Lloyd Ruddock  
**Opintokohteen kielet:** English

**ECTS Credits:**  
9 credits  
**Person responsible:**  
Lloyd Ruddock

**740369A: Immunobiology, 3 op**

**Voimassaolo:** - 31.07.2009  
**Opiskelumuoto:** Intermediate Studies  
**Laji:** Course  
**Vastuuysikkö:** Department of Biochemistry  
**Arvostelu:** 1 - 5, pass, fail  
**Opettajat:** Surcel, Heljä-Marja Irmeli  
**Opintokohteen kielet:** Finnish  
**Leikkaavuudet:**  
741661S Immunobiology 3.0 op

Ei opintojaksokuvauksia.
747604S: Introduction to biocomputing, 3 op

Opiskelumuoto: Advanced Studies
Laji: Course
Vastuuysikkö: Department of Biochemistry
Arvostelu: 1 - 5, pass, fail
Opettajat: André Juffer
Opintokohteen kielet: English

ECTS Credits:
3 credits

Contents:
An overview is given of commonly employed techniques of biocomputing to study the structural, dynamical, functional and thermodynamical properties of proteins and membranes and their interaction with other molecules. This will include a overview of computer simulation techniques such as molecular dynamics, Monte Carlo and Langevin (stochastic, Brownian) dynamics, but also concepts of continuum electrostatics, statistical thermodynamics, protein modeling techniques, protein-ligand affinity calculations and the computer simulation of the protein folding process and enzyme action. In addition, some topics in the field of Bioinformatics are discussed as well and certain commonly employed protein modeling software is introduced.

Learning activities and teaching methods:
20 h lectures, student tasks

Person responsible:
Andre Juffer

740672S: Maturity test (M.Sc. degree), 0 op

Opiskelumuoto: Advanced Studies
Laji: Course
Vastuuysikkö: Department of Biochemistry
Arvostelu: 1 - 5, pass, fail
Opintokohteen kielet: Finnish

Ei opintojaksokuvauksia.

740146P: Metabolism I, 6 op

Opiskelumuoto: Basic Studies
Laji: Course
Vastuuysikkö: Department of Biochemistry
Arvostelu: 1 - 5, pass, fail
Opettajat: Tuomo Glumoff
Opintokohteen kielet: Finnish

Leikkaavuudet:
ay740158P Basic biochemistry 3: Metabolis (OPEN UNI) 4.0 op
ay740154P Basic biochemistry 3: Metabolis (OPEN UNI) 3.0 op
740149P Metabolism I 4.0 op

Ei opintojaksokuvauksia.

740149P: Metabolism I, 4 op

Opiskelumuoto: Basic Studies
Laji: Course
Vastuuysikkö: Department of Biochemistry
Arvostelu: 1 - 5, pass, fail
Opettajat: Tuomo Glumoff
Opintokohteen kiele: Finnish
Leikkaavuudet:
  ay740158P Basic biochemistry 3: Metabolism (OPEN UNI) 4.0 op
  ay740154P Basic biochemistry 3: Metabolism (OPEN UNI) 3.0 op
  740146P Metabolism I 6.0 op

Ei opintojaksokuvauksia.

**740375A: Metabolism II, 4 op**

Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuysikkö: Department of Biochemistry
Arvostelu: 1 - 5, pass, fail
Opettajat: Tuomo Glumoff
Opintokohteen kiele: Finnish
Leikkaavuudet:
  740367A Metabolism II 6.0 op

Ei opintojaksokuvauksia.

**740367A: Metabolism II, 6 op**

Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuysikkö: Department of Biochemistry
Arvostelu: 1 - 5, pass, fail
Opettajat: Tuomo Glumoff
Opintokohteen kiele: Finnish
Leikkaavuudet:
  740367A Metabolism II 4.0 op

Ei opintojaksokuvauksia.

**740363A: Microbiology, 6 op**

Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuysikkö: Department of Biochemistry
Arvostelu: 1 - 5, pass, fail
Opettajat: Tuomo Glumoff
Opintokohteen kiele: Finnish
Leikkaavuudet:
  740374A Microbiology 3.0 op
  740322A Microbiology 3.0 op
  740324A Laboratory course in microbiology 3.0 op
740374A: Microbiology, 3 op

Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuysikkö: Department of Biochemistry
Arvostelu: 1 - 5, pass, fail
Opintokohteen kielet: Finnish
Leikkaavuudet:
   740363A Microbiology 6.0 op
   740322A Microbiology 3.0 op

Ei opintojaksokuvauksia.

740361A: Molecular Biology I, 8 op

Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuysikkö: Department of Biochemistry
Arvostelu: 1 - 5, pass, fail
Opintokohteen kielet: Finnish
Leikkaavuudet:
   740373A Molecular Biology I 4.0 op
   740318A Molecular Biology 4.0 op
   740337A Laboratory Course in Molecular Biology 3.0 op

Ei opintojaksokuvauksia.

740373A: Molecular Biology I, 4 op

Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuysikkö: Department of Biochemistry
Arvostelu: 1 - 5, pass, fail
Opintokohteen kielet: Finnish
Leikkaavuudet:
   740361A Molecular Biology I 8.0 op
   740318A Molecular Biology 4.0 op

Ei opintojaksokuvauksia.

740072Y: Orientation, 1 op

Opiskelumuoto: General Studies
Laji: Course
Vastuuysikkö: Department of Biochemistry
Arvostelu: 1 - 5, pass, fail
Opettajat: Jari Heikkinen
Opintokohteen kielet: Finnish
744617S: Orientation to research work, 0 - 20 op

Opiskelumuoto: Advanced Studies
Laji: Practical training
Vastuuysikkö: Department of Biochemistry
Arvostelu: 1 - 5, pass, fail
Opettajat: Jari Heikkinen
Opintokohteen kielet: English
Voidaan suorittaa useasti: Kyllä

ECTS Credits:
12 - 18 credits

Contents:
This module provides an introduction to research work via the active integration of students into research groups and/or via one to two week advanced practical courses. The integration into groups can be either full-time or part-time research work, with 1.5 op being awarded for each full-time week equivalent worked. A maximum of 6 op can be awarded for working in one research group. The research groups do not need to be in the Department of Biochemistry, University of Oulu, but advance permission should be sought if the research group is not part of the University of Oulu.

Person responsible:
Jari Heikkinen

740145P: Physical Biochemistry, 6 op

Opiskelumuoto: Basic Studies
Laji: Course
Vastuuysikkö: Department of Biochemistry
Arvostelu: 1 - 5, pass, fail
Opettajat: André Juffer
Opintokohteen kielet: English

ECTS Credits:
6 credits

Contents:
This module will cover the concepts of thermodynamics and their application to biochemical systems plus chemical and enzymatic kinetics. Topics covered will include: Concepts of thermodynamics: First, Second and Third Law of Thermodynamics. Heat. Work. Enthalpy. Entropy, Gibbs and Helmholtz free energy, Chemical potential, Chemical potential of a solute, Free energy and equilibrium. Applications of thermodynamics: Chemical reactions, Protein-ligand association, Acids, bases and pH regulation, Acid-dissociation constants, introduction to thermodynamics of protein folding. Chemical kinetics: Basic chemical reactions and single step reactions, Applications of chemical kinetics to multistep reactions, Catalysis and enzyme kinetics.

Attendance of some parts of the course is compulsory.

Learning activities and teaching methods:
24 h lect, 8 h lab., plus exercises 1. kl

Recommended or required reading:

Person responsible:
André Juffer
740371A: Physiological Biochemistry, 4 op

Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuysikkö: Department of Biochemistry
Arvostelu: 1 - 5, pass, fail
Opettajat: Kalervo Hiltunen
Opintokohteen oppimateriaali: Murray, R.K., 2006
Opintokohteen kielet: English
Leikkaavuudet:

- 742627S  Physiological biochemistry  4.0 op

Ei opintojaksokuvauksia.

747691S: Pro gradu experimental work in protein science and biotechnology, 28 op

Opiskelumuoto: Advanced Studies
Laji: Practical training
Vastuuysikkö: Department of Biochemistry
Arvostelu: 1 - 5, pass, fail
Opettajat: Lloyd Ruddock
Opintokohteen kielet: English

ECTS Credits: 28 credits
Contents: This module provides an extensive, 6 month, project in a research group. The experimental work can be started after 30 op of Master studies have been completed. Students are responsible for finding a suitable research group in which they wish to undertake the Pro Gradu work. Students should produce a short (typically 2 page) study plan detailing the proposed content of their Pro Gradu work, supervisor(s) and start date which must be approved before they start work. The Pro Gradu thesis is based only on the work done during the first 6 months of work by the student on the project, except in cases of mitigating circumstances. The work may be undertaken in the research groups of department of Biochemistry or in any other suitable research group in Finland or abroad.

Person responsible: Lloyd Ruddock

747692S: Pro gradu thesis in protein science and biotechnology, 20 op

Opiskelumuoto: Advanced Studies
Laji: Diploma thesis
Vastuuysikkö: Department of Biochemistry
Arvostelu: A,B,N,C,M,EX,L
Opettajat: Tuomo Glumoff
Opintokohteen kielet: English

ECTS Credits: 20 credits
Contents: The Pro gradu thesis (typically around 50-60 pages long) is based on the experimental work undertaken by the student and the contextualization of the research and the results based on the published literature in the field. For detailed instructions see http:/www.biochem.oulu.fi/.

740364A: Protein Chemistry I, 8 op
747601S: Protein production and analysis, 8 op

Opiskelumuoto: Advanced Studies
Laji: Course
Vastuuyksikkö: Department of Biochemistry
Arvostelu: 1 - 5, pass, fail
Opettajat: Lloyd Ruddock
Opintokohteen kielet: English

Leikkaavuudet:
747618S Protein production and analysis 10.0 op

ECTS Credits:
8 credits
Contents:
This module provides an overview of recombinant protein production and analysis. Topics covered include an overview of DNA technology, PCR, cloning, mutagenesis, protein production, purification, enzyme catalysis, protein structure analysis, basic proteomics and mass spectrometry. This course covers some of the material taught in Protein Chemistry I (740364A) and Molekyylibiologia I (740361A) and therefore cannot be taken by students who have either of these modules.

Learning activities and teaching methods:
30 contact hours of lectures and seminars, 80 hours of lab

Person responsible:
Lloyd Ruddock

Other information:
Timing Autumn yr1 Previous studies A BSc in biochemisty or a closely related subject.

740368A: Radiation and Safety, 5 op

Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuyksikkö: Department of Biochemistry
Arvostelu: 1 - 5, pass, fail
Opettajat: Jari Heikkinen
Opintokohteen kielet: Finnish

Leikkaavuudet:
740320A Radiochemistry and Radiation Safety 4.5 op
740339A Laboratory course in isotope techniques 1.5 op

Ei opintojaksokuvauksia.
ECTS Credits:
2.5 credits

Contents:
General and specific aspects of the reaction mechanism of several well studied enzymes will be discussed. It will include the serine proteases (such as chymotrypsine and trypsine). The following topics will be addressed: Chemical catalysis, forces stabilizing the enzyme-ligand interaction, structural properties of proteins, enzyme kinetics, crystallization of proteins, general aspects of enzyme catalysed reactions, reaction mechanisms of serine proteases. The course is aimed at biochemistry and chemistry students.

Learning activities and teaching methods:
14 h lectures

Recommended or required reading:

Person responsible:
Rik Wierenga