Course syllabus for

Biochemistry 1, 6 credits

Biokemi 1, 6 hp

This course has been cancelled, for further information see Transitional provisions in the last version of the syllabus.

Please note that the course syllabus is available in the following versions:
Spring2008 , Spring2013

Course code	1BA006
Course name	Biochemistry 1
Credits	6 credits
Form of Education	Higher Education, study regulation 2007
Main field of study	Not applicable
Level	GX - First cycle
Grading scale	Pass with distinction, Pass, Fail
Department	Department of Laboratory Medicine
Decided by	Programnämnden för Biomedicinska analytikerprogrammet, inriktning laboratoriemedicin
Decision date	2007-11-20
Revised by	Education committee LABMED
Last revision	2017-09-28
Course syllabus valid from	Spring 2013

Specific entry requirements

General entry requirements for higher studies and specific entry requirements as stated in the programme syllabus for the Biomedical laboratory science education or the equivalent knowledge. In addition to this is, completion of the theme course Acid/base and Energy is required, or the equivalent knowledge.

Objectives

The course comprises the structure and properties of proteins, and their function as biological catalysts and carriers. The course also deals with the structure and function of biological membranes and the importance of weak bindings for the stability, flexibility and functions of both proteins and membranes.

On completion of the course, the student should be able to:

· explain the importance of amino acids for the different structural levels in the structure and function of proteins
· discuss the catalytic properties of enzymes

· determine kinetic parameters and discuss these in a physiological context and explain various types of enzyme regulation
· describe the structure and properties of membranes and discuss membrane the function of proteins in the transport of low-molecular compounds

Content

An important part of the course comprises the characteristics of amino acids and the peptide binding to understand how the secondary, tertiary and quaternary structure of proteins is built up and held together by different bonding types. That the function of proteins is dependent on the conformation is illustrated by myoglobin and hemoglobin. The role of enzymes as catalysts and their regulation is a major part of the course, in which the catalytic impact of enzymes is studied . The meaning of kinetic parameters is explained by i.a. carbonic anhydrase and lactate dehydrogenase. The impact of different enzyme inhibitors on reaction rate and allosteric and covalent regulation of enzymes, with examples from cell metabolism is discussed. The course also comprises the characteristics of fatty acids, triglycerides and phosphoglycerides for the students to understand how membranes are built. The important role of proteins in the membrane transport is illustrated i.a. by aquaporin and glucose carriers. The importance of the Na-K pump for maintaining the membrane potential is also included in the course.

Teaching methods

The teaching is given as lectures, self-study with web-based materials, group discussions and laboratory sessions. The student should document laboratory work in a personal workbook.

Examination

Group home examination with a following oral individual examination. All laboratory sessions in the course are compulsory parts. In case of absence, an agreement concerning compensation is made between the student and the responsible teacher . Students who have not passed the regular examination are entitled to participate in five more examinations. If the student is not approved after four examinations, he/she is recommended to retake the course at the next regular course date and may, after that, participate in two more examinations. If the student has failed six examinations/tests, no additional examination or new admission in the course is given. The number of times that the student has participated in one and the same examination is regarded as an examination session. Submission of a blank examination is regarded as an examination. An examination for which the student registered but not participated in, will not be regarded as an examination.

Transitional provisions

The course has been cancelled and was offered for the last time in the spring semester of 2013. Examination will be provided until the spring of 2018 for students who have not completed the course.

Other directives

Course evaluation will be carried out in accordance with the guidelines established by the Board of Education.

Literature and other teaching aids

Nelson, David L.; Cox, Michael M.
Lehninger principles of biochemistry
Lehninger, Albert L.

4. ed. : New York : W.H. Freeman, cop. 2005 - 1119, [91] s.
ISBN:0-7167-4339-6 LIBRIS-ID:9372754
Library search