



DEPARTMENT OF CHEMISTRY AND MOLECULAR BIOLOGY

KEM060 Biochemistry, 15 credits

Biokemi, 15 högskolepoäng

First Cycle

Confirmation

This course syllabus was confirmed by Department of Chemistry and Molecular Biology on 2013-12-20 and was last revised on 2018-12-20 to be valid from 2018-12-20, spring semester of 2019.

Field of education: Science 100%

Department: Department of Chemistry and Molecular Biology

Position in the educational system

The course is classified on the level 30-60 credits for Degree of Bachelor and can also be read as a freestanding course. The course replaces course KEN060 and the courses may not be counted in together for a degree.

The course can be part of the following programmes: 1) Bachelor's Programme in Biology (N1BIO), 2) Bachelor of Science in Environmental Science (N1MVN), 3) Bachelor's Programme in Molecular Biology (N1MB1), 4) Bachelor of Science Programme in Medicinal Chemistry (N1LMK) and 5) Bachelor of Science Programme in Chemistry (N1KEM)

Main field of studies

Chemistry

Specialization

G1F, First cycle, has less than 60 credits in first-cycle course/s as entry requirements

Entry requirements

For admission to course, approved result on course KEM011 Basic chemistry 1 (15 credits) and KEM021 Basic chemistry 2 (15 credits), or equivalent knowledge, is required.

Learning outcomes

The aim of the course is to give complementing and advanced knowledge of biochemical structures and processes.

On successful completion of the course the student will be able to:

Knowledge and understanding

- at a basic level **explain** dynamic biochemical and biological processes at the molecular scale,
- at a basic level **explain** molecular biological concepts and the application of modern gene technological working methodology,
- **show** practical basic knowledge of biochemical-laboratory methods and equipment.

Competence and skills

- independently **perform** experiments to solve elementary biochemical/molecular biological problems,
- **present** results of their own biochemical experiments in lucid form.

Judgement and approach

- independently **collect** biochemical research results and **present** them on a popular way,
- **discuss** possibilities and challenges for chemists connected to development of a social, economic, and environmentally sustainable society.

Course content

The course is divided into five sub-courses according to the following. Modules 1 and 3 comprise teaching sessions that provide an advanced treatment of the subjects presented at the lectures. Take-home problems solved of students are treated and discussed in detail.

Sub-courses

1. **Biochemistry of Metabolism, Theory** (*Ämnesomsättningens biokemi, teori*), 5 credits
Grading scale: Pass with Distinction (VG), Pass (G) and Fail (U)
 - Metabolic processes to trap, convert and store energy.
 - The use of stored metabolic energy at biosynthetic processes.
 - The regulation of metabolic processes and metabolic signal systems.
2. **Biochemistry of Metabolism, Lab Exercises** (*Ämnesomsättningens biokemi, laborationer*), 2 credits
Grading scale: Pass (G) and Fail (U)

The laboratory exercises illustrate important issues from the theoretical part and give the student practical experiences of biochemical and molecular biological work in laboratory, e.g. use of commonly occurring methods and equipment, management of biological material and application of good laboratory practice.

3. Genetic Information, Theory (*Genetisk information, teori*), 5 credits

Grading scale: Pass with Distinction (VG), Pass (G) and Fail (U)

- Molecular structures and processes for storing, transfer and expression of genetic information.
- Modern molecular biological/gene technological methodology and its application.

4. Genetic Information, Lab Exercises (*Genetisk information, laborationer*), 2.5 credits

Grading scale: Pass (G) and Fail (U)

See module 2.

5. Generic Skills (*Generiska färdigheter*), 0.5 credits

Grading scale: Pass (G) and Fail (U)

The students are to perform a literature search assignment and present result in the form of a poster. The chosen subject is to be combined with a biochemical/molecular biological aspect with emphasis on a molecular understanding for the function of proteins. In addition, a sustainability perspective should be included for the chosen subject.

Form of teaching

Teaching is conducted in the form of lectures, teaching sessions (exercises), laboratory sessions and literature studies.

Language of instruction: English and Swedish

The course is given as principal rule in Swedish but can completely or partly give in English if the circumstances requires it.

Course literature in English can be involved.

Assessment

Modules 1 and 3: Examination takes place through written examinations.

Modules 2 and 4: Examination takes place through laboratory reports. Laboratory sessions are compulsory.

Module 5: Examination takes place through a written assignment in the form of a poster.

A student who has not passed the regular examination session is offered additional examination sessions.

If a student who has failed the same examined component twice wishes to change examiner before the next examination a written application shall be sent to the department responsible for the course and shall be granted unless there are special reasons against it (Chapter 6, Section 22 of Higher Education Ordinance).

In cases where a course has been discontinued or has undergone major changes, the student shall normally be guaranteed at least three examination occasions (including the ordinary examination) during a period of at least one year from the last time the course was given.

Grades

The grading scale comprises: Pass with Distinction (VG), Pass (G) and Fail (U). For grade Pass (G) in the whole course, at least grade Pass (G) in all modules is required.

For grade Pass with distinction (VG) in the whole course, grade Pass with distinction (VG) on modules 1 and 3 and grade Pass (G) on other modules are required.

Regarding application of ECTS scale for grades see the Vice-chancellor's decision 28/05/2007, dnr G 8 1976/07.

Course evaluation

Students who participate in or have completed course should be given possibility to anonymously perform experiences of and views in the course in a course evaluation. A compilation of the course evaluation and the reflection of the course coordinator should be made available for the students within reasonable time after the end of the course. Next time the course is given the compilation and, if applicable, actions taken should be presented for the students.

