



**Karolinska  
Institutet**

Course syllabus for

## **Biochemistry, 12 credits**

Biokemi, 12 hp

This course syllabus is valid from spring 2018.

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

Spring2018 , [Spring2019](#) , [Spring2020](#) , [Spring2021](#) , [Spring2022](#) , [Spring2023](#) , [Spring2024](#)

Course code	1BI031
Course name	Biochemistry
Credits	12 credits
Form of Education	Higher Education, study regulation 2007
Main field of study	Biomedicine
Level	G2 - First cycle 2
Grading scale	Pass with distinction, Pass, Fail
Department	Department of Medical Biochemistry and Biophysics
Decided by	Programme committee for study programmes in biomedicine
Decision date	2017-11-02
Course syllabus valid from	Spring 2018

## **Specific entry requirements**

At least the grade Pass on the course Introduction to Biomedical Science and at least grade Pass on the part 1, Organic-chemical laboratory work, 5 hp, in the course General and Organic Chemistry, 12 credits

## **Objectives**

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

Regarding knowledge and understanding:

- describe the biochemical functions and regulation of metabolic processes of individual human cells and organs,
- describe connections between changes at the molecular level and changes in metabolism in common diseases.

Regarding competence and skills:

- discuss the effects of pharmaceuticals or genetic variation on metabolic processes,
- search for and select relevant literature for specific topics covered in the course,
- present his/her own results and summaries of literature within the field of biochemistry, both

- verbally and in writing,
- perform and evaluate experiments,
- perform biomedical laboratory work in a safe manner.

Regarding judgement and approach:

- evaluate relevant methods for biochemical laboratory work.

## Content

The course is divided into the following parts:

**Biochemistry, 5 hp** Catabolism and anabolism, and general principles for turnover of intermediates and energy. Particular focus on regulation of enzyme activity, specific signal transduction systems of the cell, digestion and absorption of nutrients, carbohydrate metabolism – including energy conversions in the cell, lipid metabolism, ketone bodies and oxidative stress. The functions of enzymes from an organic chemistry perspective. Amino acid metabolism including urea, one carbon pool and creatine phosphate, plasma proteins, nucleotide metabolism and alcohol metabolism. **Biochemical laboratory methods, 2 hp** Studies of cellular metabolism and the application of chromatographic methods in this field. **Integration of theory and practice, 5 hp** Integration of theory and practice in biochemistry and metabolism.

## Teaching methods

The teaching includes lectures, laboratory sessions, group tuition (seminars), and project works.

## Examination

Biochemistry (5 credits). The examination consists of an oral test, written report and oral presentations of project works, graded Fail/Pass.

Biochemical laboratory methods (2 credits). The examination consists of written laboratory reports. Graded Fail/Pass.

Integration of theory and practice (5 credits). The examination consists of a written examination. The written examination is graded Fail/Pass/Pass with distinction. To be eligible to participate in the final written examination, the student must have passed the oral test in the Biochemistry part of the course.

The course grade is based on the grade of the final written examination. To pass the whole course, the grade Pass must have been obtained for all parts of the course.

### Compulsory participation

Laboratory sessions and project work are compulsory, as well as presentations and lectures linked to these parts. The course director assesses if and, in that case, how absence can be compensated. Before the student has participated in all compulsory parts or compensated absence in accordance with the course director's instructions, the student's results for respective part will not be registered in LADOK. Absence from a compulsory part may lead to that the student can't compensate the absence before the next time the course is given.

### Limited number of examinations or practical training sessions

Students who have not passed the regular examination are entitled to participate in five more examinations. If the student has failed six examinations/tests, no additional examination or new admission is provided.

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 counted as an examination.

## Transitional provisions

After each course occasion there will be at least six occasions for the examination within a two-year period from the end of the course.

## Other directives

The course language is English.

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

Oral evaluation in the form of course council meetings will be carried out during the course.

## Literature and other teaching aids

*Ferrier, Denise R.*

### **Biochemistry**

6. ed. : Lippincott Williams and Wilkins, 2013

ISBN:978-1-4511-7562-2 LIBRIS-ID:13993817

[Library search](#)

*Berg, Jeremy M.; Tymoczko, John L.; Stryer, Lubert*

### **Biochemistry**

7. ed., International ed. : Basingstoke : Palgrave Macmillan, cop. 2012 - xxxii, 1098, [78] s.

ISBN:978-1-4292-7635-1 LIBRIS-ID:12135215

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