



**Karolinska  
Institutet**

Course syllabus for

## **Biochemistry, 12 credits**

Biokemi, 12 hp

This course syllabus is valid from spring 2023.

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	Programnämnden för biomedicinprogrammen
Decision date	2017-11-02
Revised by	Programme committee for study programmes in biomedicine
Last revision	2022-10-18
Course syllabus valid from	Spring 2023

## **Specific entry requirements**

At least the grade Pass (G) on the course Introduction to Biomedical Science, at least grade Pass (G) on the part Organic-chemical laboratory work, (5 credits), in the course General and Organic Chemistry, and the part Laboratory practicals (4 credits) of the course Cell-, stem cell and developmental biology, at the Bachelor's programme in Biomedicine

## **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 biochemical experiments,
- perform biochemical 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, 5.0 hp**

Grading scale: GU

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, nucleotide metabolism and alcohol metabolism.

### **Biochemical laboratory methods, 2.0 hp**

Grading scale: GU

Studies of cellular metabolism and the application of chromatographic methods in this field.

### **Integration of theory and practice, 5.0 hp**

Grading scale: VU

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 digital tests 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 digital tests in the Biochemistry part of the course.

The course grade is based on the grade of the final written examination in part 3. To pass the whole course, the grade Pass must have been obtained for all parts of the course.

Students that fail to submit compulsory assignments by the deadlines will lose the opportunity to be graded with pass with distinction on the course.

### Compulsory participation

Laboratory sessions and project work are compulsory, as well as presentations, quizzes 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.

If there are special grounds, or a need for adaptation for a student with a disability, the examiner may decide to deviate from the syllabus's regulations on the examination form, the number of examination opportunities, the possibility of supplementation or exemptions from the compulsory section/s of the course etc. Content and learning outcomes as well as the level of expected skills, knowledge and abilities may not be changed, removed or reduced.

## Other directives

The course language is English.

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

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

## Literature and other teaching aids

### Lippincott illustrated reviews: Biochemistry

*Abali, Emine Ercikan; Cline, Susan D.; Franklin, David S.; Viselli, Susan*

Eighth edition, international edition : Philadelphia : Wolters Kluwer, [2022] - xi, 625 pages

ISBN:9781975155117 LIBRIS-ID:gvl8qzq3dxc5pb7b

[Library search](#)

### Biochemistry

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

9. edition : New York : Macmillan International Higher Education, 2019 - 1288 sidor

ISBN:9781319114657 LIBRIS-ID:kvkcg7hcgwfxpfz

[Library search](#)

*Miesfeld, Roger L.; McEvoy, Megan M.*

### Biochemistry

Second edition. International student edition : New York N.Y. : W. W. Norton & Company, 2021 - xxviii, 1228, 56, 28, 50 sidor

ISBN:9780393533538 LIBRIS-ID:1ffnggtwzwx0jjfc

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