

SK2531 Biomedicine for Engineers 12,0 hp

Course syllabus H18

All formal information about the course can be seen here:

<https://www.kth.se/student/kurser/kurs/SK2531>

All practical information is published in Canvas. The Canvas pages become visible when the student is admitted to the course. Full functionality becomes available when the student is registered for the course.

Lectures (40 hours)

#	Date and time	Lecture
1	Tue 4 Sep 13:00-15:00	Introduction to the course Cells and cell components
2	Fri 7 Sep 10:00-12:00	Chemical components of the cells
3	Tue 11 Sep 13:00-15:00	Protein structure and function Enzymes, catalysis, biosynthesis
4	Fri 14 Sep 10:00-12:00	DNA and chromosomes; DNA replication and recombination
5	Tue 18 Sep 13:00-15:00	From DNA to protein: transcription, translation
6	Fri 21 Sep 10:00-12:00	Protein transport
7	Tue 25 Sep 13:00-15:00	Transport across cell membranes (part 1)
8	Fri 28 Sep 10:00-12:00	Transport across cell membranes (part 2) Signaling in the body, hormones, endocrine system (part 1)
9	Tue 2 Oct 13:00-15:00	Signaling in the body, hormones, endocrine system (part 2)
10	Fri 5 Oct 10:00-12:00	Signaling in the body, hormones, endocrine system (part 3) Signaling in excitable cells
11	Tue 9 Oct 13:00-15:00	Cytoskeleton
12	Fri 12 Oct 10:00-12:00	Ethical issues in biomedical research
13	Tue 30 Oct 15:00-17:00	Digestive system (part 1)
14	Fri 2 Nov 13:00-15:00	Digestive system (part 2)
15	Mon 5 Nov 10:00-12:00	Energy generation
16	Fri 9 Nov 13:00-15:00	Cardiovascular system, blood Respiration

17	Fri 16 Nov 15:00-17:00	Immune system
18	Fri 23 Nov 13:00-15:00	Urinary system (part 1)
19	Fri 30 Nov 15:00-17:00	Urinary system (part 2)
20	Fri 7 Dec 13:00-15:00	Acid-base homeostasis

Handouts from the lectures become available in Canvas after corresponding lectures.

Mini-tests

On the lectures # 2-20, small quizzes are given, based on the material from lectures # 1-19, respectively. The questions are of true-false type.

The points for the quizzes are used as bonus points at the written exam. Maximal number of bonus points corresponds to about 2/3 of the points needed to pass (grade E).

Seminar

PhD students attending the course tell us about their research projects.

Written examination (5 hours), 12.0 credits, grade scale: A, B, C, D, E, FX, F

The exam consists of about 12 questions. The questions are mostly of essay type.

For the grade A, the student should demonstrate a very good knowledge and clear understanding of all the topics discussed during the course.

For grade C, the student should show a good knowledge and understanding of the topics discussed during the course.

For grade E, the student should have a good knowledge and understanding of the most important concepts and topics discussed during the course.

Course literature

1. Alberts B. et al. Essential Cell Biology. 4th edition. Garland Science, 2013.
2. Despopoulos A., Silbernagl S. Color Atlas of Physiology. 7th edition. Thieme, 2015.

Teacher, examiner, and course responsible

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