

## SK2531 Biomedicine for Engineers 12,0 hp

### Course syllabus H19

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 3 Sep 13:00-15:00	Introduction to the course Cells and cell components
2	Fri 6 Sep 10:00-12:00	Chemical components of the cells
3	Tue 10 Sep 13:00-15:00	Protein structure and function Enzymes, catalysis, biosynthesis
4	Fri 13 Sep 10:00-12:00	DNA and chromosomes; DNA replication and recombination
5	Tue 17 Sep 13:00-15:00	From DNA to protein: transcription, translation
6	Fri 20 Sep 10:00-12:00	Protein transport
7	Tue 24 Sep 13:00-15:00	Transport across cell membranes (part 1)
8	Fri 27 Sep 10:00-12:00	Transport across cell membranes (part 2) Signaling in the body, hormones, endocrine system (part 1)
9	Tue 1 Oct 13:00-15:00	Signaling in the body, hormones, endocrine system (part 2)
10	Fri 4 Oct * 10:00-12:00	Signaling in the body, hormones, endocrine system (part 3)
11	Tue 8 Oct 13:00-15:00	Signaling in excitable cells Ethical issues in biomedical research
12	Fri 11 Oct 10:00-12:00	Cytoskeleton
13	Tue 29 Oct 15:00-17:00	Digestive system (part 1)
14	Fri 1 Nov 13:00-15:00	Digestive system (part 2) Energy generation (part 1)
15	Mon 4 Nov 10:00-12:00	Energy generation (part 2)
16	Fri 8 Nov 13:00-15:00	Circulatory system, blood Respiration
17	Fri 15 Nov	Immune system

	13:00-15:00	
18	Fri 22 Nov 13:00-15:00	Urinary system (part 1)
19	Fri 29 Nov 13:00-15:00	Urinary system (part 2)
20	Fri 6 Dec 13:00-15:00	Acid-base homeostasis
	Wed 11 Dec 13:00-17:00	Seminar

\* - this lecture was cancelled, and all the topics were shifted down. The last topic was omitted from the course.

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 parallel course FSK3531 will 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. 5th edition. Garland Science, 2019.
2. Despopoulos A., Silbernagl S. Color Atlas of Physiology. 7th edition. Thieme, 2015.

### Teacher, examiner, and course responsible

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