

Introduction to the molecular mechanisms of cell function in the context of cutting-edge applications in bioengineering and medicine. Biological concepts include: molecular building blocks, energetics, reaction kinetics, nucleic acids and DNA repair, transcription, translation, regulation and cytoskeleton. Applications include bioenergy, biomanufacturing, antibiotics, diabetes, protein therapeutics, gene circuit engineering, & tissue engineering. Quantitative principles, computational methods, and experimental methods will be integrated into lectures and labs.

**LECTURE/SEMINAR/EXAMINATION**

**Required Text: Essential Cell Biology, B. Alberts et. al. 2014**

**Tuesday 11.10am–3pm; even weeks: Friday 9am-2pm**

**Location (see map)**

**Room: Institute für Physiologische Chemie (Biochemistry), Library, Building 91, MTZ**

**Examination/Grading: Active Attendance / Written (different formats: MC/open questions, etc.)**

**Exam Seminar 1: 24%, Exam Seminar 2: 32%, Exam 3: 27%, Exam Laboratory: 7%, Active Attendance: 10%**

Week	Time	Topic	Room
14	<u>April</u> Tue 4 Fri 7	CH1 (10/0) + CH2 (24/0) CH3 (18/1) + CH4 (27/4)	Biochemistry Library
15	Tue 11	CH5 (18/2) + CH6 (32/6)	
16	<b>Tue 18</b>	<b>EXAM SEMINAR 1: CH1-6</b>	
	<u>May</u>		
20	Tue 16 Fri 19	CH7 (42/7) + CH8 (21/3) CH9 (23/1) + CH11 (32/4)	
21	Tue 23	CH12 (32/5) + CH 13 (15/2) + CH14 (26/4)	
	<u>June</u>		
25	<b>Tue 20</b>	<b>EXAM SEMINAR 2: CH7-14</b>	
26	Tue 27 <b>Fri 30</b>	CH15 (24/2) + CH16 (35/3) <b>EXAM LABORATORY + CH17 (32/6) + CH18 (26/5)</b>	
	<u>July</u>		
27	Tue 4	CH19 (19/1) + CH20 (31/4)	
28	<b>Tue 11</b>	<b>FINAL EXAM: CH15-20</b>	