

Teaching load for overseas professors each week: 2 X 90min lectures + 2X90min discussion classes.

There will be two midterm exams and one final exam, 40%, 30%, and 30%.

Textbook will be Lodish "Molecular and Cellular Biology". Each week, there will be 2 lectures (90 minutes per lecture) and 2 discussion classes (90 minutes each). The discussion class can cover an original research paper. Discussion class is for 90 minutes for one group of students and the same discussion class is repeated and given to a second group of students.

**WEEK1: Sept 9-13 ----- Yimin Zou (University of California, San Diego)**

September 9 Monday (2:00-3:40 pm)

Introduction to Cell Biology  
Genetics and Biochemistry of the cell  
Cell nucleus  
**Chapters 1, 2, 3, 4, 6, 7**

September 10 Tuesday (2:00-3:40 pm)

Discussion class I: Epigenetics

September 10 Tuesday (4:00-5:40 pm)

Discussion class II: Epigenetics

September 12 Thursday (10:00-11:40 am)

Membrane structure and membrane proteins  
Cellular compartments and protein sorting  
**Chapters 10, 13**

September 15 Sunday (18:00-19:40, 致远 601)

Endoplasmic reticulum and protein synthesis  
**Chapter 13**

**WEEK2: Sept 16-20 ---- Yimin Zou (University of California, San Diego)**

September 16 Monday

Protein trafficking from Endoplasmic Reticulum to Golgi  
**Chapter 14**

September 17 Tuesday

Discussion class I: Super-resolution microscopy (90 min)

September 17 Tuesday

Discussion class II: Super-resolution microscopy (90 min)

**WEEK3: Sept 23-27 ----- Yue Zhou, Weiliang Xia (Jiao Tong University)**

September 23 Monday (90 min)

Endocytosis and Exocytosis

**Chapter 14**

September 26 Thursday

Energy conversion: Mitochondria and chloroplasts

**Chapter 12**

**Oct 1-5 National Day Holiday**

**WEEK4: Oct 7-11 ----Gong Chen (Pennsylvania State University)**

Oct 7 Monday

Ion channels and transporters (90 min)

**Chapter 11**

Oct 8 Tuesday

Discussion class I: Channelrhodopsin and application (90 min)

Oct 8 Tuesday

Discussion class II: Channelrhodopsin and application (90 min)

Oct 10 Thursday

Synaptic structure and synapse formation (90 min)

**Chapter 22**

**WEEK 5: Oct 14-18 Yue Zhou and Weiliang Xia (Jiao Tong University)**

October 14 Monday

Culturing, Visualization and Perturbing Cells

**Chapter 9**

Oct 17 Thursday (90 min)

Manipulating Proteins, DNA and RNA

**Chapter 5**

**WEEK6: Oct 21-25 ----- Gong Chen (Pennsylvania State University)**

Oct 21 Monday

Cell-cell adhesion and tight junctions (90 min)

**Chapter 20**

Oct 22 afternoon Tuesday

Discussion class I: Cell degeneration and disease (90 min)

Oct 22 afternoon Tuesday

Discussion class II: Cell degeneration and disease (90 min)

Oct 24 morning Thursday

Gap junctions and extracellular matrix (90 min)

**Chapter 20**

**Week 7 Yue Zhou and Weiliang Xia (Jiao Tong University)**

October 24 Thursday (90 min)

**First midterm**

**WEEK8: Nov 4- Nov 8 ----- Gen-Sheng Feng (University of California, San Diego)**

Nov 4, Monday

Signal Transduction: Concept and Mechanism  
**Chapter 15, 16**

Nov 5, Tuesday

Discussion class I: Studies on cell signaling: today and tomorrow

Nov 5, Tuesday

Discussion class II: Studies on cell signaling: today and tomorrow

Nov 7, Thursday

Signal Transduction: New Progress  
**Chapter 15, 16**

**WEEK9: Nov 11- Nov 15 ----- Gen-Sheng Feng (University of California, San Diego)**

Nov 11, Monday

Cell Cycle Progression and Control of Cell Proliferation  
**Chapter 19**

Nov 12, Tuesday

Discussion class I: The challenges in cancer diagnosis and treatment

Nov 12, Tuesday

Discussion class II: The challenges in cancer diagnosis and treatment

Nov 14, Thursday

Cell Transformation and Cancer;  
Oncogenes and Tumor Suppressor Genes  
**Chapter 24**

**WEEK10: Nov18-Nov 22 Yue Zhou and Weiliang Xia (Jiao Tong University)**

November 18 Monday (90 min)

Sexual reproduction and stem cells

**Chapter 21**

Nov 21 Thursday (90 min)

Cell death: apoptosis, necrosis and autophagy

**Chapter 21**

**WEEK11: Nov 25-Nov 29 Yue Zhou and Weiliang Xia (Jiao Tong University)**

November 28 Thursday (90 min)

**Second midterm**

**WEEK12: Dec 2-6 ---- Le Ma (University of Southern California)**

Dec 2 Monday

Cytoskeleton: assembly and dynamics (90 min)

**Chapter 17, 18**

Dec 3 Tuesday

Discussion class I: Dynamics of polymer assembly (90 min)

Dec 3 Tuesday

Discussion class II: Dynamics of polymer assembly (90 min)

Dec 5 Thursday

Cytoskeleton: regulation (90 min)

**Chapter 17, 18**

**WEEK13: Dec 9-13 ---- Le Ma (University of Southern California)**

Dec 9 Monday

Molecular Motors (90 min)

**Chapter 17, 18**

Dec 10 Tuesday

Discussion class I: Generation of neuronal cell polarity (90 min)

Dec 10 Tuesday

Discussion class II: Generation of neuronal cell polarity (90 min)

Dec 12 Thursday

Mitosis, cell shape and movement (90 min)

**Chapter 20, 23**

**WEEK14: Dec 16-20--- Yue Zhou (Jiao Tong University)**

December 16 Monday (90 min)

Tissue engineering materials and directed cell growth and differentiation?

December 19 Thursday (90 min)

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**Early January ----- Final Exam**