

Cell Biology Course Syllabus (2016-9-12)

Teaching load each week: 2 X 90min lectures + 2 X 90min discussion classes.

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

Textbook will be Lodish "Molecular and Cellular Biology (7th edition)".

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..

WEEK1: Sept 12-16 ----- Yue Zhou (Jiao Tong University)

Sept 13 Tuesday (10:00-11:40 am)

Introduction to Cell Biology

Chapters 1, 2, 3, 4, 6, 7

Sept 18 Sunday (10:00-11:40 am) – [Mid-autumn festival, Friday classes switch to Sunday](#)

Membrane structure, cellular compartments and protein sorting

Chapters 10, 13

WEEK2: Sept 19-23 ---- Yue Zhou (Jiao Tong University)

Sept 20 Tuesday (10:00-11:40 am)

Endoplasmic reticulum and protein synthesis

Chapter 13

Sept 23 Friday (10:00-11:40 am)

Protein trafficking from Endoplasmic Reticulum to Golgi

Chapter 14

WEEK3: Sept 26- Sept 30 ----- Weiliang Xia (Jiao Tong University)

Sept 27 Tuesday (10:00-11:40 am)

Endocytosis and Exocytosis

Chapter 14

Sept 30 Friday (10:00-11:40 am)

Energy conversion: Mitochondria and chloroplasts

Chapter 12

WEEK 4: Oct 3 –Oct 7 ----- Yue Zhou and Weiliang Xia (Jiao Tong University)

National Day break, Friday classes switch to Sunday

Oct 9 Sunday (10:00-11:40 am)

First Mid-term

WEEK 5: Oct 10-14, Le Ma (Thomas Jefferson University)

Oct 10 Tuesday (10:00-11:40 am)

Cytoskeleton: assembly and dynamics

Chapter 17, 18

Oct 13 Thursday (14:00-17:40)

Discussion class I & II: Dynamics of polymer assembly

Oct 14 Friday (10:00-11:40 am)

Cytoskeleton: regulation

Chapter 17, 18

WEEK6: Oct 17-21, Le Ma (Thomas Jefferson University)

Oct 17 Tuesday (10:00-11:40 am)

Molecular Motors

Chapter 17, 18

Oct 20 Thursday (14:00-17:40)

Discussion class I & II: Generation of neuronal cell polarity

Oct 21 Friday (10:00-11:40 am)

Mitosis, cell shape and movement

Chapter 20, 23

WEEK7: Oct 24-28 ---- Gen-Sheng Feng (University of California, San Diego)

Oct 25 Tuesday (10:00-11:40 am)

Signal Transduction: Concept and Mechanism

Chapter 15, 16

Oct 27 Thursday (14:00-17:40)

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

Oct 28 Friday (10:00-11:40 am)

Signal Transduction: New Progress

Chapter 15, 16

Week 8 Oct 31 - Nov 4 Gen-Sheng Feng (University of California, San Diego)

Nov 1 Tuesday (10:00-11:40 am)

Cell Cycle Progression and Control of Cell Proliferation

Chapter 19

Nov 3 Thursday ((14:00-17:40))

Discussion class I & II: Discussion class I: The challenges in cancer diagnosis and treatment

Nov 4 Friday (10:00-11:40 am)

Cell Transformation and Cancer;
Oncogenes and Tumor Suppressor Genes

Chapter 24

WEEK 9: Nov 7-Nov 11 Youwei Zhang (Case Western Reserve Univ)

Nov 8 Tuesday (10:00-11:40 am)

Manipulating Proteins, DNA and RNA

Chapter 5

Nov 10 Thursday (14:00-17:40)

Discussion class I & II: Genome editing

Nov 11 Friday (10:00-11:40 am)

Culturing, Visualization and Perturbing Cells
Chapter 9

WEEK10: Nov 14- Nov 18 ----- Youwei Zhang (Case Western Reserve Univ)

Nov 15 Tuesday (10:00-11:40 am)

DNA damage response

Nov 17 Thursday (14:00-17:40)

Discussion class I & II: DNA damage signaling and cancer

Nov 18, Friday (10:00-11:40am)

DNA damage repair

WEEK11: Nov 21- Nov 25, Yue Zhou and Weiliang Xia (Jiao Tong University)

Nov 22, Tuesday (10:00-11:40)

Second Mid-term

WEEK12: Nov 28-Dec 2 Weiliang Xia (Jiao Tong University)

Nov 29 Tuesday (10:00-11:40)

Cell death: apoptosis, necrosis and autophagy

Chapter 21

Dec 2 Friday (10:00-11:40)

Sexual reproduction and stem cells

WEEK13: Dec 5-Dec 9 ----Liming Li (Northwestern University)

Dec 6 Tuesday (10:00-11:40)

Ion channels and transporters

Chapter 11

Dec 8 Thursday (14:00-17:40)

Discussion class I & II: Channelrhodopsin and application

Dec 9 Friday (10:00-11:40)

Synaptic structure and synapse formation

Chapter 22

Week14----- Dec 12-16 Liming Li (Northwestern University)

Dec 13 Tuesday (10:00-11:40)

Cell-cell adhesion and tight junctions

Chapter 20

Dec 15 Thursday (14:00-17:40)

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

Dec 16 Friday (10:00-11:40)

Gap junctions and extracellular matrix

Chapter 20

WEEK15: Dec 19-23--- Yue Zhou and Weiliang Xia (Jiao Tong University)

December 20 Tuesday (10:00 – 11:40am)

Topics on tissue engineering (机动)

December 23 Friday (10:00 – 11:40am)

Topics on cell biology (机动)

WEEK 16: Dec 26 -30--- Yue Zhou and Weiliang Xia (Jiao Tong University)

December 30 Tuesday (10:00 – 11:40am)

Final Exam