

Biological Chemistry

Fall Semester, 2014

Mondays: 10:00 am-11:40 am; Thursdays: 2:00 pm –3:40 pm

Zhong Yuan, Room 506

Course Description

This is an undergraduate biochemistry course. The course introduces the structure and the function of proteins, nucleic acids, carbohydrates, and lipids. We will also discuss concepts and researches related to the flow of genetic information, protein synthesis, enzymology and metabolism (4 credits).

Instructors:

Prof. **Yongting Wang** and **Weihai Ying**

School of Biomedical Engineering and Med-X Research Institute

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Overseas Guest Lectures:

C. James Ingles, Ph.D. <cj.ingles@utoronto.ca>

Professor (Emeritus)

University of Toronto

Jimmy Zhou, Ph.D. <jimmy.zhou@yale.edu>

Marvin L. Sears Professor of Ophthalmology and Visual Science

Yale University School of Medicine

Textbook: Biochemistry, 7th Edition (2012), by J. M. Berg, J. L. Tymoczko, & L. Stryer.

Exams and Final Grades:

Two Midterm Exams: 25% each

Final Exam: 50%

#	Date			Topic	Instructor
1	Sep	15	Mon	Course Logistics and Introduction/Physical Chemistry and Thermodynamics review	Wang
2		18	Thu	Transfer of Genetic Information	Ingles
3		22	Mon	DNA Replication	Ingles
4		25	Thu	Transcription (I)	Ingles
5		28	Sun	Transcription (II) (Exchange for National Day)	Ingles
6		29	Mon	Transcription (III) and RNA Processing	Ingles
7	Oct	9	Thu	DNA Repair and Recombination	Ingles
8		13	Mon	Catalytic and Non-Coding RNAs	Wang
		16	Thu	First Examination	
9		20	Mon	Amino Acids and Protein Structure	Wang
10		23	Thu	Protein Synthesis	Wang
11		27	Mon	Protein Folding and Dynamics	Wang
12		30	Thu	Protein Purification, Analysis and Detection	Wang
13	Nov	3	Mon	Lipids and Membranes	Zhou
14		6	Thu	Channels and Pumps (I)	Zhou
15		10	Mon	Channels and Pumps (II)	Zhou
16		13	Thu	Kinases and Signal-Transduction Pathways	Zhou
		17	Mon	Second Examination	
17		20	Thu	Enzymes: Basic Concepts	Wang
18		24	Mon	Enzymes: Kinetics and catalytic strategies	Wang
19		27	Thu	Enzymatic regulation	Wang
20	Dec	1	Mon	Metabolism: Basic Concepts and Design	Ying
21		4	Thu	Glycolysis and gluconeogenesis	Ying
22		8	Mon	Citric Acid Cycle	Ying
23		11	Thu	Electron Transport and Oxidative Phosphorylation (I)	Ying
24		15	Mon	Electron Transport and Oxidative Phosphorylation (II) and the Pentose Phosphate Pathway	Ying
25		18	Thu	Photosynthesis and the Calvin Cycle	Ying
26		22	Mon	Glycogen Metabolism	Ying
27		25	Thu	Fatty Acid Metabolism	Ying
28		29	Mon	Nucleotide Biosynthesis and Metabolism	Ying
				Final Exam (Comprehensive) (Between Jan. 5-10)	

Note: Final Exam Dates to be decided based on the final week notice from the University.