

Advanced Chemical Biology I, Fall 2014

Professors:

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Teaching assistant:

Classroom: Chemistry 217

Hours: Monday 13:20-15:10, Thursday 13:20-15:10

Grading scheme:

Midterm exam 50%, final exam 50%; each exam will be normalized by z-score transformation with an average around B+

The final grade will average around B+

The passing grade will be set around 1.8 standard deviations below average

Prerequisite:

Everyone enrolled this class should have taken undergraduate level biochemistry. Some background information from basic biochemistry will be provided in the lectures. We will let undergraduate students enroll only if they have learned biochemistry before.

Course language:

Lectures given in English

Exam questions in English; Answers written in Chinese or English

Online material:

PowerPoint files and supplementary reading materials will be uploaded to CEIBA (ceiba.ntu.edu.tw) course website on the day before each lecture

Course Syllabus (see CEIBA website for updates)

Date	Day	Topic	Lecturer
9/15	Mon	Introduction: what is chemical biology?	Dr. Hwan-Ching Tai
9/18	Thu	DNA sequencing and DNA mimetics	Dr. Hwan-Ching Tai
9/22	Mon	RNA and RNA interference	Dr. Hwan-Ching Tai
9/25	Thu	Ribozymes and aptamers	Dr. Hwan-Ching Tai
9/29	Mon	Protein and peptide synthesis	Dr. Hwan-Ching Tai
10/2	Thu	Antibody and biotin technology	Dr. Hwan-Ching Tai
10/6	Mon	Protein structure and conformation	Dr. Shang-Te Hsu
10/9	Thu	Protein folding and misfolding	Dr. Shang-Te Hsu
10/13	Mon	Carbohydrates: structure	Dr. Hwan-Ching Tai
10/16	Thu	Attending special lecture: carbohydrates and neuroscience (no class)	Dr. Lina Hsieh-Wison (Caltech)
10/20	Mon	Carbohydrates: biosynthesis and function	Dr. Hwan-Ching Tai
10/23	Thu	Glycosaminoglycans	Dr. Hwan-Ching Tai
10/27	Mon	Lipids and membranes	Dr. Hwan-Ching Tai
10/30	Thu	Lipid structure	Dr. Hwan-Ching Tai
11/3	Mon	Bioorthogonal Chemistry	Dr. Hwan-Ching Tai
11/6	Thu	Mass spec: instrumentation	Dr. Hwan-Ching Tai
11/10	Mon	Mass spec of proteins and modifications	Dr. Hwan-Ching Tai
11/13	Thu	Mass spec and protein quantification	Dr. Hwan-Ching Tai
11/17	Mon	Attending KT Wang Bioorganic Lecture Series (no class)	To be announced
11/20	Thu	Attending KT Wang Bioorganic Lecture Series / Exam preparation (no class)	To be announced
11/24	Mon	Midterm exam	Dr. Hwan-Ching Tai
11/27	Thu	Biotech industry and Taiwan	Dr. Hwan-Ching Tai
12/1	Mon	Structural biology: X-ray crystallography	Dr. Shang-Te Hsu
12/4	Thu	Structural biology: X-ray crystallography	Dr. Shang-Te Hsu
12/8	Mon	Structural biology: NMR	Dr. Shang-Te Hsu
12/11	Thu	Structural biology: NMR	Dr. Shang-Te Hsu
12/15	Mon	Structural biology: electron microscopy	Dr. Shang-Te Hsu
12/18	Thu	Biomolecule separation: electrophoresis, chromatography, and centrifugation	Dr. Shang-Te Hsu
12/22	Mon	Biomolecule separation: electrophoresis, chromatography, and centrifugation	Dr. Shang-Te Hsu
12/25	Thu	Introduction to optical and confocal microscopy	Dr. Wei-Yuan Yang
12/29	Mon	Fluorescent dyes and proteins	Dr. Wei-Yuan Yang
1/1	Thu	No class (New Year Holiday)	
1/5	Mon	Cellular studies using fluorescence microscopy and flow cytometry	Dr. Wei-Yuan Yang
1/8	Thu	Super-resolution optical imaging	Dr. Wei-Yuan Yang
1/15	Thu	Final exam	Dr. Shang-Te Hsu