

MMBB 541: Biochemistry I

Fall 2008

<u>Time</u>	Tuesday and Thursday 8:00-9:15 AM (8/26/07 – 12/17/07)
<u>Place</u>	Life Sci. 163
<u>Instructor</u>	Zonglie Hong Office: 132 Gibb Hall Phone: 885-5464 zhong@uidaho.edu

Introduction

This course provides a survey of chemical and physical properties of major components in living organisms. It is one of the two core advanced Biochemistry courses (MMBB541 and MMBB 542) offered by the Department of Microbiology, Molecular Biology and Biochemistry. The course is designed for graduate students who are interested in the chemical and molecular natures of living systems.

Prerequisites

MMBB 300/380 (Introductory Biochemistry), Chem 372 (Organic Chemistry), or Chem 302 (Physical Chemistry), or by permission.

Objectives

- 1) To understand the basic principles and language of chemistry important for explaining biology at the molecular level.
- 2) To understand the structures and functions of major biomolecules in living systems.
- 3) To understand the basic concepts and mechanisms of enzymatic catalysis.
- 4) To understand the basic concepts and mechanisms of energy metabolisms in living systems.

Textbook and Handouts

Biochemistry (3rd Edition), by D. Voet and J. G. Voet, 2004, John Wiley & Sons, Inc.

Handouts will be available for download from (for registered students only):

<http://www.ag.uidaho.edu/mmbb/zhong/mmbb541/login.asp>

Grading

Grading will be based on four exams (a total of 100 points):

Exam 1: 20 points,

Exam 2: 20 points,

Exam 3: 20 points, and

Exam 4: 40 points.

Final course grades will be determined as follows:

A: >90

B: 70-89

C: 50-69

F: < 49

Examinations

Examinations will cover material presented during the lectures and material in the assigned text reading. Each exam will cover the material presented after the previous exam. The last exam (Exam 4) will consist of two parts, Part I (20 points) will cover the material presented after Exam 3, and Part II (20 points) will cover the whole course. All exams will be close-book. Therefore,

you may not bring your text, handouts and notes to exams. The exam format will consist of multiple choices and short answer questions. Make-up examinations will be given only for a valid reason and within a timely manner. Cheating and plagiarism cases will be handled according to the Student Code of Conduct.

Assistance

The instructor will have office hours from 9:30AM to 11:00AM every Tuesday and Thursday. Students are also encouraged to make an appointment to meet with the instructor any other time whenever they have questions about the course.

Lecture Topics for MMBB 541 Biochemistry I (for Fall 2008)

Date	Lecture	Topic	Reading
08/26	1	Water, Buffers & Thermodynamics	Chps 2 & 3
08/28	2	Amino Acids & Polypeptides	Chps 4 & 7
09/02	3	Protein 3-D Structures	Chapter 8
09/04	4	Protein Folding	Chapter 9
09/09	5	Protein Function: Hemoglobins	Chapter 10
09/11	6	Protein Purification & Analysis	Chapter 6
09/16		Study/review day	
09/18		Exam 1	
09/23	7	Enzyme Introduction	Chapter 13
09/25	8	Enzyme Kinetics (1)	Chapter 14
09/30	9	Enzyme Kinetics (2)	Chapter 14
10/02	10	Catalytic Mechanisms	Chapter 15
10/07	11	Enzyme Examples	Chps 13 & 15
10/09	12	Cofactors & Vitamins	Chapter 13
10/14		Study/review day	
10/16		Exam 2	
10/21	13	Biochemical Reactions & Metabolism	Chapter 16
10/23	14	Carbohydrates	Chapter 11
10/28	15	Glycolysis	Chapter 17
10/30	16	TCA cycle	Chapter 21
11/04	17	The pentose Phosphate Pathway	Chapter 23
11/06	18	Gluconeogenesis & Glycogen Metabolism	Chps 18 & 23
11/11		Study/review day	
11/13		Exam 3	
11/18	19	Lipid metabolism	Chapter 25
11/20	20	Membranes: Structures & Functions	Chapter 12
11/25		Thanksgiving week	
11/27		Thanksgiving week	
12/02	21	Mitochondria & Oxidative Phosphorylation	Chps. 20 & 22
12/04	22	Chloroplasts & Photophosphorylation	Chapter 24
12/09	23	The Calvin Cycle	Chapter 24
12/11	24	Photorespiration	Chapter 24
12/17 (Wednesday)		Exam 4 (Life Sci. 163; time 7:30-10:30 am	