Course Syllabus
CH4710 – Biomolecular Chemistry I
Department of Chemistry
Fall 2009

Instructor Information

Instructor: Pushpa Murthy, Professor
Office Location: 505 Chem Sc. and Engg
Telephone: Office – (906-487-2094)
E-mail: ppmurthy@mtu.edu
Office Hours: MW: 10am – noon and by appointment

Course Identification

Course Number: CH4710
Course Name: Biomolecular Chemistry I
Course Location: 101 Chem Sc. and Engg
Class Times: MWF 9:05am – 9:55pm
Prerequisites: CH2420

Course Description/Overview

The goal of this course is to survey topics representative of modern biochemistry and molecular biology with emphasis on the interconnections between chemistry and biology. Chemical concepts developed in organic chemistry courses such as reaction mechanisms, stereochemistry, and structure-activity relationships will be extended to biological processes. Topics covered will include structures of biomolecules and proteins, enzyme kinetics, mechanisms of enzyme-catalyzed reactions, structure of nucleic acid, RNA biosynthesis (transcription), protein biosynthesis (translation), and common molecular biology techniques.

Course Resources

Required Course Text

- Lehninger Principles of Biochemistry by D.L. Nelson and M.M. Cox; 5th edition; Freeman Publisher.

Course Website
Syllabus, problem sets, and sample quizzes and exams can be found at http://www.chemistry.mtu.edu/pages/courses/class.php?class=CH4710&section=0A&sem=20081

Grading Scheme

Grading Policy
Grades will be based on the following:

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<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
<th>Grade points/credit</th>
<th>Rating</th>
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<tbody>
<tr>
<td>Midterm I</td>
<td>25%</td>
<td>4.00</td>
<td>Excellent</td>
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<tr>
<td>Mid-term II</td>
<td>25%</td>
<td>3.50</td>
<td>Very good</td>
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<tr>
<td>Final exam (comprehensive)</td>
<td>40%</td>
<td>3.00</td>
<td>Good</td>
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<tr>
<td>Quizzes</td>
<td>10%</td>
<td>2.50</td>
<td>Above average</td>
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<td>2.00</td>
<td>Average</td>
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<td>1.50</td>
<td>Below average</td>
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<td>1.00</td>
<td>Inferior</td>
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<td>0.00</td>
<td>Failure</td>
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Schedule of Exams
- **Midterm I**: 2 Oct. 2009 (5th week)
- **Midterm II**: 11 Nov. 2009 (11th week)
- **Final Exam**: 16 Dec. 09 (Wednesday); 8-10 am (Final exams week)

Course Policies

I want a lot of classroom participation. By participation, I mean enthusiastic engagement during class, asking and answering questions, and articulating and defending your ideas.

You must come to all classes. Please be punctual; chronic lateness annoys fellow students and me.
University Policies

Academic regulations and procedures are governed by University policy. Academic dishonesty cases will be handled in accordance the University's policies.

If you have a disability that could affect your performance in this class or that requires an accommodation under the Americans with Disabilities Act, please see me as soon as possible so that we can make appropriate arrangements. The Affirmative Action Office has asked that you be made aware of the following:

Michigan Tech complies with all federal and state laws and regulations regarding discrimination, including the Americans with Disabilities Act of 1990. If you have a disability and need a reasonable accommodation for equal access to education or services at Michigan Tech, please call the Dean of Students Office, at 487-2212. For other concerns about discrimination, you may contact your advisor, department head or the Affirmative Action Office, at 487-3310

Academic Integrity: http://www.studentaffairs.mtu.edu/dean/judicial/policies/academic_integrity.html

Affirmative Action: http://www.admin.mtu.edu/aao/

Disability Services: http://www.admin.mtu.edu/urel/studenthandbook/student_services.html#disability

Course Outline

I. Fundamentals of Biochemistry

Chapter 1: The Foundations of Biochemistry
Problems 7, 8, 11, 12 and Problem Set 1

Chapter 2: Water
Problems 12, 13, 14, 28, and Problem Set 2

II. Proteins and Enzymology

Chapter 3: Amino acids, Peptides and Proteins
Problems 2, 3a, 4, 5, 6a,b, 11a, 12, 13 and Problem Set 3

Chapter 4: The Three-Dimensional Structure of Proteins
Problems 1, 4, 5, 6, 10 and Problem Set 4

Chapter 6: Enzymes
Problems 1, 4, 7, 18 and Problem Set 5

III. Nucleic acid and Information Transfer

Chapter 8: Nucleotides and Nucleic Acids
Problems 2,8, 9, 10, 11 and Problem Set 6

Chapter 9: DNA-based Information Technologies
Problem Set 7

Chapter 24: Genes and Chromosomes

Chapter 26: RNA metabolism
Problem 2, 3,5,10 and Problem Set 8

Chapter 27: Protein Metabolism
Problems 1, 2, 3, 4, 5, 6, 9