Course Syllabus
CH4710 – Biomolecular Chemistry I
Department of Chemistry
Fall 2015

Instructor Information
Instructor:  Dr. Ashutosh Tiwari, Associate Professor
Office Location:  402B ChemSci
Telephone:  Office – (906) 487-1840
E-mail:  tiwari@mtu.edu ; Please write CH4710 in subject line
Office Hours:  M: 10 am – 11:30 am and by appointment

Course Identification
Course Number:  CH4710
Course Name:  Biomolecular Chemistry I
Course Location:  101ChemSci
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 including nucleic acids and proteins, and bioprocesses including enzyme kinetics, mechanisms of enzyme-catalyzed reactions, DNA replication, transcription, and common molecular biology techniques.

Course Resources
Required Course Text
- Fundamentals of Biochemistry, Life at The Molecular Level by Voet, Voet and Pratt; 4th edition; Wiley Publisher. ISBN: 978-0-470-54784-7

Course Website
- CAMPUS Learning Management System (LMS): Michigan Tech is using LMS called CANVAS. To access CANVAS, go to http://mtu.instructure.com and enter your Michigan Tech ISO username and password. Once logged in, you can select
your course from the “courses & groups” menu. Select the one that is labeled “CH4710 ………” for access to class related materials

- **REDINOTES:** The class PowerPoint slides will be made available on CANVAS for you to download and print. These notes are NOT designed to replace taking good notes, but they will allow you to pay closer attention to classroom discussion, and write down any additional information.

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**Grading Scheme**

**Grading Policy**

Grades will be based on the following percentage distribution:

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homework/Assignment</td>
<td>10%</td>
</tr>
<tr>
<td>Quizzes/i&gt;clicker</td>
<td>15%</td>
</tr>
<tr>
<td>Class participation</td>
<td>5%</td>
</tr>
<tr>
<td>Midterm I</td>
<td>20%</td>
</tr>
<tr>
<td>Mid-term II</td>
<td>20%</td>
</tr>
<tr>
<td>Final exam (comprehensive)</td>
<td>30%</td>
</tr>
</tbody>
</table>

**Schedule of Exams**

- **Midterm I:** 30 Sept 2015 (Wednesday, 5th week)
- **Midterm II:** 4 Nov. 2015 (Wednesday, 10th week)
- **Final Exam:** During the week of December 14, 2015 (Final exams week). Dates are located at [www.mtu.edu/registrar](http://www.mtu.edu/registrar) (look under Most Viewed Pages)

**i>CLICKER:** Studies have shown that it is extremely important for students to be engaged in the classroom experience if they are to maximize their learning. In an attempt to engage all of you and get you thinking about the problem posed in class we will use **i>clicker** in class. The **i>clicker** is a response system that allows you to respond to questions I pose during class, and you will be graded on your responses, and your participation. The purpose of i>clicker remotes is to help guide your learning rather than simply acting as a measure of attendance. You will be able to accumulate maximum of 10 points per lecture (1 point for answering the question and 2 points for answering the question correctly). In addition, I will drop up to 10% of the lowest scores so that you can “have bad days” or absences without significant penalty. We will begin accumulating points in Week 2.

In order to receive this credit, you will need to register your i>clicker remote using Canvas within the first **TWO WEEKS** of class as follows:
1. Before registering, you must come to class and vote on at least one question in order to complete this registration properly. This should, hopefully, have happened on the first day.

2. Once you have voted on a question in my class, go to LMS Logon to Canvas and select the ‘CH4710 OA Fall 2015’ from ‘my course’ menu.

   a. Click on the ‘i>clicker’ in the menu on the left side and complete the registration by filling in the remote ID of your i>clicker.

   b. Your remote ID is the series of numbers and sometimes letters found on the bottom of the back of your i>clicker remote. See instructions for registering on i>clicker page on Canvas.

   i>clicker will be used every day in class, and you are responsible for bringing your remote daily. After the first two weeks I will upload scores on a weekly basis and do not backdate for people who forget to register.

Late Assignments
Any assignment which is delayed more than 1 day will have 10% marks cut; up to 3 days 20% marks cut. Any assignment late by one week or more will not be used for grading.

Course Policies
I look forward to a lot of participation and active learning in the classroom. By participation, I mean enthusiastic engagement during class, asking and answering questions, and articulating and defending your ideas relevant to the topic of the day. If you do not have the opportunity to ask questions in class, you are welcome to use my office hours. For homework/assignment individual study is encouraged.

Attendance at all of the class session is mandatory unless you are sick. You are responsible for announcements made in class.

Collaboration/Plagiarism Rules
While collaboration is encouraged students should not copy work from each other and should read and follow the academic policies and procedures as governed by the University (see below).

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.mtu.edu/deanofstudents/academic-policies/integrity/

**Affirmative Action:**
http://www.mtu.edu/equity/

**Student Support Services:**
http://www.mtu.edu/catalog/undergraduate/overview/student-life/

**Equal Opportunity Statement:**
http://www.admin.mtu.edu/admin/boc/policy/ch5/ch5p2.htm

**ELECTRONIC DEVICES:** *Please turn silence AND stow all unapproved electronic devices for the duration of each class period.* The only approved devices are calculators, dedicated language translators, documented assistive technologies, and i>Clickers. The use of computers, mobile phones, and other electronic devices are increasingly creating a significant classroom distraction, so I am asking you to please refrain from using them. *Only dedicated calculators may be used during examinations.*

<table>
<thead>
<tr>
<th>Letter Grade</th>
<th>Percentage</th>
<th>Grade points/credit</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>90% &amp; above</td>
<td>4.00</td>
<td>Excellent</td>
</tr>
<tr>
<td>AB</td>
<td>85% – 89%</td>
<td>3.50</td>
<td>Very good</td>
</tr>
<tr>
<td>B</td>
<td>80% – 84%</td>
<td>3.00</td>
<td>Good</td>
</tr>
<tr>
<td>BC</td>
<td>75% – 79%</td>
<td>2.50</td>
<td>Above average</td>
</tr>
<tr>
<td>C</td>
<td>70% – 74%</td>
<td>2.00</td>
<td>Average</td>
</tr>
<tr>
<td>CD</td>
<td>65% – 69%</td>
<td>1.50</td>
<td>Below average</td>
</tr>
<tr>
<td>D</td>
<td>60% - 64%</td>
<td>1.00</td>
<td>Inferior</td>
</tr>
<tr>
<td>F</td>
<td>59% and below</td>
<td>0.00</td>
<td>Failure</td>
</tr>
</tbody>
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Course Outline

Fundamentals of Biochemistry: Life at the Molecular Level

Part 1: INTRODUCTION

Chapter 1: Introduction to the Chemistry of Life
Chapter 2: Water

Part 2: BIOMOLECULES

Chapter 3: Nucleotides, Nucleic Acids, and Genetic Information
Chapter 4: Amino acids
Chapter 5: Proteins: Primary Structure
Chapter 6: Proteins: Three-Dimensional Structure

Part 3: ENZYMES

Chapter 11: Enzymatic Catalysis
Chapter 12: Enzyme kinetics, inhibition, and control

Part 4: GENE EXPRESSION AND REPLICATION

Chapter 24: Nucleic Acid Structure
Chapter 25: DNA Replication* (Sections 1, 2, and 3 only)
Chapter 26: Transcription* (Section 1 and 2 only)