INSTRUCTOR:  Dr. H. Lee Weith  
office:  BCHM 116A  
TEL:  494-1659 (I do not have voice mail – leave a message with the secretary)  
e-mail:  weith@purdue.edu  
Office hours:  Wed. 9:30 AM - 11:00 AM or by appointment

LECTURE TA:  Claire Chen  
office:  BCHM 102  
e-mail:  chen825  
Office hours:  Mon.  9:30 AM – 11:20  AM and Wed.  1:30 PM – 3:20 PM, or by appointment

LECTURE TA:  Long Chen  
Office:  BCHM 102  
e-mail:  chen937  
Office hours:  Fri. 1:30 PM – 3:20 PM, or by appointment

COURSE OBJECTIVES

This course will provide undergraduate and graduate students with basic understanding of biochemical and structural properties of amino acids, nucleic acids, lipids and carbohydrates. This course will allow students to connect the relationship between structure and function of biomolecules. In addition, students will learn to understand enzyme properties, enzyme mechanism of action and enzyme regulation.

A sound background in both general and organic chemistry are crucial for success in BCHM 561. CHM 256 or CHM 262 or an equivalent two-semester course from another institution are required. If you have any concerns about your preparation for BCHM 561, please see the instructor or TA as soon as possible.

LEARNING OUTCOMES

BCHM 561 students will understand the molecular principles of life based on the core disciplines of biology, chemistry and physics. Students will:

- Be able to describe the chemical structures of the building blocks of biological macromolecules, including amino acids, nucleotides, sugars and fatty acids.
- Demonstrate knowledge of the higher order structures of proteins, nucleic acids and polysaccharides.
- Understand the principles of enzyme catalysis and regulation.
- Demonstrate knowledge of lipid membrane structure and function.
- Understand how genetic information is encoded and transferred in biological organisms.
TEXTBOOK

The following textbook is required:


Several copies of the text are on reserve in the Life Sciences Library – Lilly Hall and the Hicks Undergraduate Library – Stewart Center. On reserve for two classes BCHM 361 and BCHM 561

The following supplemental text may be helpful, but is NOT required:


LECTURE TIME AND PLACE

M,W,F, 8:30 – 9:20 AM, Lilly Hall of Life Sciences (LILLY), Room 1105

REVIEW SESSIONS

Review sessions will be conducted by the Graduate Teaching Assistants.

Date: Wednesday evening the week before each exam: 9/11, 10/16, 11/6

Time: 6:00-7:30 PM

Place: BCHM 105

Additional help sessions may be scheduled as needed

BLACKBOARD

The syllabus for the course, overheads, lecture notes, and grading keys for study questions and exams will be available via the Purdue University Blackboard site at:

http://www.itap.purdue.edu/learning/tools/blackboard/

ASSESSMENT

Exams are non-cumulative.

The grading for this course will be as follows:

<table>
<thead>
<tr>
<th>Exam</th>
<th>Points</th>
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<tbody>
<tr>
<td>Exam 1</td>
<td>100</td>
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<tr>
<td>Exam 2</td>
<td>100</td>
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<tr>
<td>Exam 3</td>
<td>100</td>
</tr>
<tr>
<td>Final Exam</td>
<td>100</td>
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</table>

The cutoff values for letter grades are as follows:

<table>
<thead>
<tr>
<th>Points</th>
<th>Grade</th>
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<tbody>
<tr>
<td>360</td>
<td>A</td>
</tr>
<tr>
<td>320</td>
<td>B</td>
</tr>
<tr>
<td>280</td>
<td>C</td>
</tr>
<tr>
<td>240</td>
<td>D</td>
</tr>
<tr>
<td>239 points and below</td>
<td>F</td>
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</tbody>
</table>
I reserve the right to lower these grade cut-offs if appropriate, but these cut-offs will not be raised. The +/- grading system will not be used.

If you must miss an exam, contact Professor Weith (by telephone – leave a specific message with the secretary – or by e-mail) prior to the examination time. Missing an exam will result in a grade of 0 being recorded unless documented justification for the absence is presented. Any request to be excused from an exam must include official documentation (doctor's note, request from academic advisor, etc) explaining why the exam was or will be missed. Makeup tests will be scheduled in consultation with the instructor.

If you have any disagreements with the way your exams have been graded, please consult the grading key and then discuss them with the lecture TA. In the event this does not resolve your concerns, please take them up with the instructor.

STUDY QUESTIONS

A list of specific study questions from the textbook or in the form of handouts will be posted on the course web page on Blackboard. You are encouraged to work out these questions on your own (before looking at the answers at the back of the textbook). Exams may contain questions related to or similar to these study questions. These study questions are not to be turned in, and will not be graded. They will help you prepare for exams, however. Answers to the questions that are not in the textbook will be posted on the course web page a few days after the questions themselves are posted.

EXTRA CREDIT

There is no opportunity for extra credit in this course.

OBTAINING EXTRA HELP

Dr. Weith will be available to answer your questions immediately after class, during office hours, or by appointment (arranged in class or by e-mail).

The lecture TAs will hold office hours for at least 2 hours per week, and will be able to answer additional questions by appointment.

ACADEMIC MISCONDUCT

Academic misconduct of any kind will not be tolerated in any course offered by the Department of Biochemistry. Information on Purdue’s policies with regard to academic misconduct can be found at http://www.purdue.edu/studentregulations/student_conduct/regulations.html

Any student found cheating on an exam will receive a score of zero on that exam, may receive an F in the course, and their misconduct will be reported to the Office of the Dean of Students. The Office of the Dean of Students will review the misconduct to determine if that student should be suspended or expelled from the university.

To provide you with an unambiguous definition of academic misconduct, the following text has been excerpted from "Academic Integrity: A Guide for Students", written by Stephen Akers, Ph.D., Executive Associate Dean of Students (1995, Revised 1999, 2003), and published by the Office of the Dean of Students in cooperation with Purdue Student Government, Schleman Hall of Student Services, Room 207, 475 Stadium Mall Drive West Lafayette, IN 47907-2050.
“Purdue prohibits "dishonesty in connection with any University activity. Cheating, plagiarism, or knowingly furnishing false information to the University are examples of dishonesty." [Part 5, Section III-B-2-a, Student Regulations]. Furthermore, the University Senate has stipulated that "the commitment of acts of cheating, lying, and deceit in any of their diverse forms (such as the use of substitutes for taking examinations, the use of illegal cribs, plagiarism, and copying during examinations) is dishonest and must not be tolerated. Moreover, knowingly to aid and abet, directly or indirectly, other parties in committing dishonest acts is in itself dishonest." [University Senate Document 72-18, December 15, 1972]

More specifically, the following are a few examples of academic dishonesty which have been discovered at Purdue University.

- substituting on an exam for another student
- substituting in a course for another student
- paying someone else to write a paper and submitting it as one's own work
- giving or receiving answers by use of signals during an exam
- copying with or without the other person's knowledge during an exam
- doing class assignments for someone else
- plagiarizing published material, class assignments, or lab reports
- turning in a paper that has been purchased from a commercial research firm or obtained from the internet
- padding items of a bibliography
- obtaining an unauthorized copy of a test in advance of its scheduled administration
- using unauthorized notes during an exam
- collaborating with other students on assignments when it is not allowed
- obtaining a test from the exam site, completing and submitting it later
- altering answers on a scored test and submitting it for a regrade
- accessing and altering grade records
- stealing class assignments from other students and submitting them as one's own
- fabricating data
- destroying or stealing the work of other students

Plagiarism is a special kind of academic dishonesty in which one person steals another person's ideas or words and falsely presents them as the plagiarist's own product. This is most likely to occur in the following ways:

- using the exact language of someone else without the use of quotation marks and without giving proper credit to the author
- presenting the sequence of ideas or arranging the material of someone else even though such is expressed in one's own words, without giving appropriate acknowledgment
- submitting a document written by someone else but representing it as one's own

EMERGENCY PREPAREDNESS

In the event of a major campus emergency, course requirements, deadlines and grading percentages are subject to changes that may be necessitated by a revised semester calendar or other circumstances. To get information about changes in this course consult the class Blackboard site or e-mail or phone the instructor.
ON-LINE COURSE EVALUATIONS

During the last two weeks of the semester, you will be provided an opportunity to evaluate this course and your instructor(s). To this end, Purdue has transitioned to online course evaluations. On Monday of the fifteenth week of classes, you will receive an official email from evaluation administrators with a link to the online evaluation site. You will have two weeks to complete this evaluation. Your participation in this evaluation is an integral part of this course. Your feedback is vital to improving education at Purdue University. I strongly urge you to participate in the evaluation system.

CLASS ATTENDANCE

In accordance with University policy, you are expected to attend every scheduled class. If you have a valid reason for missing class such as a University-sponsored activity, religious observances, illness, or family emergency, the instructor or TA will assist you in obtaining information and materials you may have missed. Students who skip class without a valid excuse should not expect the instructor or TA to supply class notes or provide special help. The official university policy, see: www.purdue.edu/odos/services/classabsence.php and http://www.purdue.edu/studentregulations/regulations_procedures/classes.html

TENTATIVE LECTURE SCHEDULE

<table>
<thead>
<tr>
<th>Lecture Date</th>
<th>Topic</th>
<th>VVP Chapter</th>
<th>Notes</th>
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</thead>
<tbody>
<tr>
<td>1 08/19</td>
<td>Course Policy/Introduction</td>
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<tr>
<td>2 08/21</td>
<td>Biochemistry: Basic Concepts from Chemistry</td>
<td>1</td>
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<tr>
<td>3 08/23</td>
<td>Water, solutions, pH and buffers</td>
<td>2</td>
<td>✓</td>
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<tr>
<td>4 08/26</td>
<td>Nucleotides, Nucleic Acids, Genetic Information</td>
<td>3, 24</td>
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<td>5 08/28</td>
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<td>6 08/30</td>
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<tr>
<td>09/02</td>
<td>LABOR DAY – NO CLASS</td>
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<td>7 09/04</td>
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<td>8 09/06</td>
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<td>9 09/09</td>
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<tr>
<td>09/11</td>
<td>NO CLASS to accommodate evening exam 9/18</td>
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<tr>
<td></td>
<td>review session at 6:00 PM BCHM 105</td>
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<tr>
<td>10 09/13</td>
<td>end of material for exam 1</td>
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<td>✓ ✓</td>
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<tr>
<td>11 09/16</td>
<td>Amino Acids and Polypeptides</td>
<td>4</td>
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<tr>
<td>12 09/18</td>
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<tr>
<td>09/18</td>
<td>EXAM 1 8:00 – 10:00 pm EE 129</td>
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<tr>
<td>13 09/20</td>
<td></td>
<td></td>
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<tr>
<td>14 09/23</td>
<td>Proteins: Primary Structure</td>
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<td>15 09/25</td>
<td></td>
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<tr>
<td>16 09/27</td>
<td>Proteins: Three Dimensional Structure</td>
<td>6</td>
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<tr>
<td>17 09/30</td>
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<tr>
<td>18 10/02</td>
<td>Protein Function</td>
<td>7</td>
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<td>10/07</td>
<td>OCTOBER BREAK - NO CLASS</td>
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<tr>
<td>19 10/09</td>
<td>NO CLASS to accommodate evening exam 10/21</td>
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<td>20 10/11</td>
<td>Protein Function</td>
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<td>21 10/14</td>
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<tr>
<td>22 10/16</td>
<td>Carbohydrates</td>
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<td>review session 6:00 PM BCHM 105</td>
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<td>23 10/18</td>
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<td>24 10/21</td>
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<tr>
<td>10/21</td>
<td>EXAM 2 8:00 – 10:00 pm EE 129</td>
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<tr>
<td>Lecture Date</td>
<td>Topic</td>
<td>VVP Chapter</td>
<td>Notes</td>
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<td>25</td>
<td>10/23</td>
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<tr>
<td>26</td>
<td>10/25 Lipids and Biological Membranes</td>
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<td>27</td>
<td>10/28</td>
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<td>28</td>
<td>10/30</td>
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<tr>
<td>29</td>
<td>11/01 Membrane Transport</td>
<td>10</td>
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<tr>
<td>30</td>
<td>11/04</td>
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<tr>
<td>31</td>
<td>11/06 end of material for exam 3</td>
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<td>✓</td>
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<td>review session 6:00 PM BCHM 105</td>
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<tr>
<td>32</td>
<td>11/08 Enzymes, Catalysis and Kinetics</td>
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<td>33</td>
<td>11/11</td>
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<td>34</td>
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<tr>
<td>11/14</td>
<td>EXAM 3 8:00 – 10:00 pm EE 129</td>
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<td>36</td>
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<td>37</td>
<td>11/20</td>
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<td>✓✓</td>
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<tr>
<td>38</td>
<td>11/22 Biochemical Signaling</td>
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<tr>
<td>11/25</td>
<td>NO CLASS to accommodate evening exam on 11/14</td>
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<td>11/27</td>
<td>THANKSGIVING BREAK</td>
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<td>11/29</td>
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<td>12/06 review for 4th exam</td>
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<tr>
<td>TBA</td>
<td>EXAM 4 (finals week)</td>
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**No Class Dates:**
Evening exams require the elimination of three class periods during the semester. No class will be held on Wednesday, September 11; Wednesday October 9; and Monday, November 25.

**Notes (✓) chapter summary provided**