# BIO361 Syllabus - Fall 2015
(MWF, 9:00am - 9:53am, Javits 100)

<table>
<thead>
<tr>
<th>Lect.</th>
<th>Date</th>
<th>Day</th>
<th>Lecturer</th>
<th>Topic</th>
<th>Readings (Chapter-Section)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>24-Aug</td>
<td>M</td>
<td>SS</td>
<td>Overview and Intro to Thermo</td>
<td>Chapter 1-Section 3</td>
</tr>
<tr>
<td>2</td>
<td>26-Aug</td>
<td>W</td>
<td>SG</td>
<td>Water and Buffers</td>
<td>Chapter 2-Sections 1,2</td>
</tr>
<tr>
<td>3</td>
<td>28-Aug</td>
<td>F</td>
<td>SG</td>
<td>Amino Acids</td>
<td>Chapter 4-Sections 1-3</td>
</tr>
<tr>
<td>4</td>
<td>31-Aug</td>
<td>M</td>
<td>SG</td>
<td>Protein Purif, Techniques, Evolution</td>
<td>Chapter 5-Sections 1,2 &amp; 4</td>
</tr>
<tr>
<td>5</td>
<td>2-Sep</td>
<td>W</td>
<td>SG</td>
<td>Protein Primary Structure, Sequencing</td>
<td>Chapter 5-Section 3</td>
</tr>
<tr>
<td>6</td>
<td>4-Sep</td>
<td>F</td>
<td>SG</td>
<td>Protein Secondary Structure</td>
<td>Chapter 6-Section 1</td>
</tr>
<tr>
<td>7</td>
<td>7-Sep</td>
<td>M</td>
<td>SG</td>
<td>Labor Day, no class</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>9-Sep</td>
<td>W</td>
<td>SG</td>
<td>Protein Tertiary &amp; Quaternary Structure</td>
<td>Chapter 6-Sections 2,3</td>
</tr>
<tr>
<td>9</td>
<td>11-Sep</td>
<td>F</td>
<td>SG</td>
<td>Protein Folding</td>
<td>Chapter 6-Sections 4,5</td>
</tr>
<tr>
<td>10</td>
<td>14-Sep</td>
<td>M</td>
<td>SG</td>
<td>Enzyme Catalysis</td>
<td>Chapter 11-Sections 1-3</td>
</tr>
<tr>
<td>11</td>
<td>16-Sep</td>
<td>W</td>
<td>SG</td>
<td>Enzyme Mechanisms - Lysozyme</td>
<td>Chapter 11-Section 4</td>
</tr>
<tr>
<td>12</td>
<td>18-Sep</td>
<td>F</td>
<td>SG</td>
<td>In class review of LECTURES 1-10</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>21-Sep</td>
<td>M</td>
<td>SG</td>
<td>Enzyme Mechanisms - Proteases</td>
<td>Chapter 11-Section 5</td>
</tr>
<tr>
<td>14</td>
<td>21-Sep</td>
<td>M</td>
<td>SS</td>
<td>Exam 1 Evening (LECTURES 1-10) 8:00-10:00 pm</td>
<td>Chapter 12-Section 1</td>
</tr>
<tr>
<td>15</td>
<td>23-Sep</td>
<td>W</td>
<td>SS</td>
<td>Enzyme Kinetics</td>
<td>Chapter 12-Section 2</td>
</tr>
<tr>
<td>16</td>
<td>25-Sep</td>
<td>F</td>
<td>SG</td>
<td>Enzyme Inhibition</td>
<td>Chapter 7-Section 6</td>
</tr>
<tr>
<td>17</td>
<td>28-Sep</td>
<td>M</td>
<td>SS</td>
<td>Immunoglobulins</td>
<td>Chapter 7-Section 6</td>
</tr>
<tr>
<td>18</td>
<td>30-Sep</td>
<td>W</td>
<td>SS</td>
<td>Muscle and Motor Proteins</td>
<td>Chapter 7-Sections 5</td>
</tr>
<tr>
<td>19</td>
<td>2-Oct</td>
<td>F</td>
<td>SS</td>
<td>Myoglobin and Hemoglobin</td>
<td>Chapter 7-Sections 1-4</td>
</tr>
<tr>
<td>20</td>
<td>5-Oct</td>
<td>M</td>
<td>SS</td>
<td>Allostery</td>
<td>Chapter 12-Section 3</td>
</tr>
<tr>
<td>21</td>
<td>7-Oct</td>
<td>W</td>
<td>SS</td>
<td>Chemistry of Lipids</td>
<td>Chapter 9-Sections 1,2</td>
</tr>
<tr>
<td>22</td>
<td>9-Oct</td>
<td>F</td>
<td>SS</td>
<td>Biological Membranes</td>
<td>Chapter 9-Sections 3-4</td>
</tr>
<tr>
<td>23</td>
<td>12-Oct</td>
<td>M</td>
<td>SS</td>
<td>Carbohydrates</td>
<td>Chapter 8-Sections 1-3</td>
</tr>
<tr>
<td>24</td>
<td>14-Oct</td>
<td>W</td>
<td>SS</td>
<td>In class review of LECTURES 11-20</td>
<td>Chapter 13-Sections 1-3</td>
</tr>
<tr>
<td>25</td>
<td>15-Oct</td>
<td>Thu</td>
<td>SS</td>
<td>Exam 2 Evening (LECTURES 11-20) 8:00-10:00 pm</td>
<td>Chapter 13-Sections 1-3</td>
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<tr>
<td>26</td>
<td>16-Oct</td>
<td>F</td>
<td>SS</td>
<td>Introduction to Metabolism</td>
<td>Chapter 14-Sections 1,2</td>
</tr>
<tr>
<td>27</td>
<td>19-Oct</td>
<td>M</td>
<td>SS</td>
<td>Glycolysis I</td>
<td>Chapter 15-Sections 1,2</td>
</tr>
<tr>
<td>28</td>
<td>21-Oct</td>
<td>W</td>
<td>SS</td>
<td>Glycolysis II</td>
<td>Chapter 15-Sections 3,5</td>
</tr>
<tr>
<td>29</td>
<td>23-Oct</td>
<td>F</td>
<td>SS</td>
<td>Pyruvate Dehydrogenase Complex</td>
<td>Chapter 17-Sections 1,2</td>
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<tr>
<td>30</td>
<td>26-Oct</td>
<td>M</td>
<td>SS</td>
<td>Citric Acid Cycle I</td>
<td>Chapter 17-Section 3</td>
</tr>
<tr>
<td>31</td>
<td>28-Oct</td>
<td>W</td>
<td>SS</td>
<td>Citric Acid Cycle II</td>
<td>Chapter 17-Sections 4,5</td>
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<tr>
<td>32</td>
<td>30-Oct</td>
<td>F</td>
<td>SS</td>
<td>Mitochondria, Electron Transport</td>
<td>Chapter 18-Sections 1,2</td>
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<tr>
<td>33</td>
<td>2-Nov</td>
<td>M</td>
<td>SS</td>
<td>Oxidative Phosphorylation</td>
<td>Chapter 18-Sections 3</td>
</tr>
<tr>
<td>34</td>
<td>4-Nov</td>
<td>W</td>
<td>SS</td>
<td>Bioenergetics, Metab Regulation</td>
<td>Chapter 18-Sections 4</td>
</tr>
<tr>
<td>35</td>
<td>6-Nov</td>
<td>F</td>
<td>SS</td>
<td>Review (In class); LECTURES 21-29</td>
<td>Chapter 20-Sections 1,2</td>
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<tr>
<td>36</td>
<td>9-Nov</td>
<td>M</td>
<td>MK</td>
<td>Fatty Acid Breakdown I</td>
<td>Chapter 20-Sections 1,3</td>
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<tr>
<td>37</td>
<td>11-Nov</td>
<td>W</td>
<td>MK</td>
<td>Fatty Acid Breakdown II</td>
<td>Chapter 20-Sections 2,3</td>
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<tr>
<td>38</td>
<td>13-Nov</td>
<td>F</td>
<td>MK</td>
<td>Fatty Acid Biosynthesis</td>
<td>Chapter 20-Sections 4,5</td>
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<tr>
<td>39</td>
<td>16-Nov</td>
<td>M</td>
<td>HL</td>
<td>Cholesterol Biosynthesis</td>
<td>Chapter 20-Section 7</td>
</tr>
<tr>
<td>40</td>
<td>18-Nov</td>
<td>W</td>
<td>HL</td>
<td>Pentose Phosphate Pathway</td>
<td>Chapter 15-Section 6</td>
</tr>
<tr>
<td>41</td>
<td>20-Nov</td>
<td>F</td>
<td>HL</td>
<td>Glycogen Metabolism</td>
<td>Chapter 16-Sections 1,2</td>
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<tr>
<td>42</td>
<td>23-Nov</td>
<td>M</td>
<td>HL</td>
<td>Gluconeogenesis</td>
<td>Chapter 16-Sections 4A, B</td>
</tr>
<tr>
<td>43</td>
<td>24-Nov</td>
<td></td>
<td></td>
<td>24-27 Nov THANKSGIVING BREAK</td>
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<tr>
<td>44</td>
<td>30-Nov</td>
<td>M</td>
<td>HL</td>
<td>Regulation of Carbohydrate Metabolism</td>
<td>Chapter 15-Section 4</td>
</tr>
<tr>
<td>45</td>
<td>3-Dec</td>
<td>W</td>
<td>HL</td>
<td>Integration of Metabolism I</td>
<td>Chapter 16-Sections 3 and 4C</td>
</tr>
<tr>
<td>46</td>
<td>4-Dec</td>
<td>F</td>
<td>HL</td>
<td>Integration of Metabolism II</td>
<td>Ch. 22-Sec. 1-4; Ch. 13-Sec. 1,3</td>
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<tr>
<td>47</td>
<td>5-8 Dec</td>
<td>M/K/HL</td>
<td></td>
<td>Review session for LECTURES 30-39. Date, time, and location - TBA</td>
<td></td>
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<tr>
<td>48</td>
<td>9-Dec</td>
<td>W</td>
<td>Final Exam</td>
<td>Final Exam = Exam 4</td>
<td>8:30 PM -11:00 PM (lectures 30-39)</td>
</tr>
</tbody>
</table>

**Instructors’ office hours:**

Li (Course Director, Huilin.Li@stonybrook.edu)  
Glynn (Steven.Glynn@stonybrook.edu)  
Simon (Sanford.Simon@stonybrook.edu)  
Kaczocha (Martin.Kaczocha@stonybrook.edu)  

CM 142 (2-1041): M/W/F 11:30 AM-12:30 PM (lecture days only)  
CM 148 (2-1055): M/W/F 11:30 AM-12:30 PM (lecture days only)  
BST-9 Room 154 HSC (4-3007); by appointment, page: 263-8059  
HSC Level 4 RM077: M/W/F 11:30 AM-12:30 PM (lecture days only)
Learning objectives
Biochemistry is the study of the chemical processes in living organisms. Students will also learn the molecular bases of many diseases. Biochemical knowledge will guide students in making health decisions in their life and help them in pursuing biomedically related careers. By completing this course, students will

1. Know the structure and function of the basic component molecules in a cell: sugars, polysaccharides, lipids, amino acids, proteins, nucleic acids, and how these components are polymerized and the functions of these biological polymers.
2. Be able to identify the levels of protein structure. Describe the physical and chemical forces that stabilize these structures. Know how the primary sequences of proteins are solved and the features of the three-dimensional structures of proteins. Interpret enzyme kinetics data and describe the catalytic mechanisms of representative enzymes. Be familiar with the basic thermodynamics of biochemical reactions and understand the bioenergetics of the multiple enzyme reactions in the cell.
3. Know the major pathways in central metabolism. Be able to identify the key regulatory points, the energetics of the reactions and the key chemical transformations involved.
4. Gain a deep appreciation of the interconnectedness of all of the life forms on earth, as the basic set of chemical principles and biological pathways apply across the kingdoms of life.

Reading assignments given above may be changed by instructors

It is important that students read the assigned materials before coming to the lectures.

Class web site: http://blackboard.sunysb.edu/ (NetID username and password)

All recitations will be held in Room 471 in the Life Sciences Building. Schedule posted on blackboard web site.

Graduate TAs: TBA

Undergraduate TAs: TBA

Required textbook
(1) Fundamentals of biochemistry, voet (4e), loose leaf 978-1-118-12918-0 or hardbound 978-0-470-54784-7.
(2) Clicker (turning tech): 978-1-934-93149-3.

Rules for the course
Please read the following extremely carefully and use them for future reference. We cannot overemphasize the importance of attending ALL lectures. Exam questions will be based on the material presented in the lectures.

Examinations & grading
There will be four partial exams in this course. Each exam covers the material in the lectures presented for that quarter of the class (see syllabus). There will be no cumulative exam this year. The final grade for the course will be determined on the results of the examinations, class attendance, and clicker response. The lowest grade amongst the four partial exams will be dropped. Each of the three remaining exams will count for 30% of the final grade.
The following rules must be observed during all exams:

1. Display your student ID on your desk throughout the exam.
2. Leave at least one empty seat between you and your neighbor.
3. Leave all books, notes, papers etc., by the side of the room.
4. You may not leave the exam hall for any reason until you have completed your exam.

Before calculating final grades, the averages of all exams are normalized to 60. During Fall 2009, the class average (after adding in the homework grade) at the end of the semester was 70.2% and the grade distribution was as follows: >93 A; >86 to <93 A; >77 to <86 B-,B,+; >60 to <77 C-,C,C+; >52 to <60 D and <52 F. These numbers are for your guidance only. This year’s grades will depend on the class average at the end of the semester. Use the above numbers to evaluate your own performance.
**Clicker questions**
10% of your final grade is based on your clicker responses: 5% for participation/attendance and 5% based on the actual score you earn. Instructor may choose to include potential questions in the ppt slides posted before the lecture.

**Makeup exams**
There are NO MAKEUP EXAMS for the four partial exams. If you miss any one of the partial exams, your grade for that exam will be zero and will become your dropped grade. If you miss more than one partial exam, you MAY be entitled for a makeup exam provided you have done the following: You must submit valid documents for each missed exam WITHIN ONE WEEK OF THE MISSED EXAM to either instructor (Li, Glynn, or Simon). Examples of acceptable documents include a physician's note if you were ill, a letter from a clergyman or another person officiating at a funeral, or a letter from a medical school for which you had an interview. Although documents are not required if only one of the four partial exams is missed, you should nevertheless file such documents with us in the event that unforeseen circumstances result in your missing a second exam.

**Academic Integrity**
Each student must pursue his or her academic goals honestly and be personally accountable for all submitted work. Representing another person's work as your own is always wrong. Faculty are required to report any suspected instances of academic dishonesty to the Academic Judiciary. The university rules permit anyone caught cheating to be failed in the course. We have failed students in the past for cheating. For more comprehensive information on academic integrity, including categories of academic dishonesty, please refer to the academic judiciary website at http://www.stonybrook.edu/uaa/academicjudiciary/

**Regrading**
Please note that we routinely copy a large fraction of the exams before returning them to you to check for alterations on exams submitted for regrading. If you believe your exam was graded unfairly, you must leave your exam with either Prof. Li, Glynn, or Simon, within one week after the exams are returned in the class. No exam will be regraded if not submitted within one week after being returned. On a separate piece of paper, write clearly the question or questions that you want regraded and reasons why you think they deserve to be regraded. DO NOT write anything on the exam itself. Your entire exam will be regraded before it is returned to you. You may gain points on ONE question, BUT may lose points on ANOTHER question. Think carefully before submitting your exam for regrading.

**Americans with Disabilities Act**
If you have a physical, psychological, medical or learning disability that may impact your course work, please contact Disability Support Services, ECC (Educational Communications Center) Building, room128, (631) 632-6748. They will determine with you what accommodations, if any, are necessary and appropriate. All information and documentation is confidential.

**Student athletes**
If you are an athlete and will miss exams due to travel, you must give us your schedule with potential conflicts within the first week of classes so that we can make alternative arrangements. If we do not receive this information, we will not consider travel with a team a valid excuse for missing an exam.

**Critical incident management**
Stony Brook University expects students to respect the rights, privileges, and property of other people. Faculty are required to report to the Office of Judicial Affairs any disruptive behavior that interrupts their ability to teach, compromises the safety of the learning environment, and/or inhibits students' ability to learn.

**Email policies**
Email sent via Blackboard (http://blackboard.stonybrook.edu) is the principal way we will officially communicate with you for this course. It is your responsibility to make sure that you read your email in your official University email account. For most students that is Google Apps for Education (http://www.stonybrook.edu/mycloud) but you may verify your official Electronic Post Office (EPO) address at: http://it.stonybrook.edu/help/kb/checking-or-changing-your-mail-forwarding-address-in-the-epo

If you choose to forward your official University email to another off campus account, we not responsible for any undeliverable messages to your alternative personal accounts. You can set up email forwarding using these DoIT-provided instructions found at: http://it.stonybrook.edu/help/kb/setting-up-mail-forwarding-in-google-mail

If you need technical assistance, please contact Client Support at (631) 632-9800 or supportteam@stonybrook.edu