<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Chapter</th>
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<tbody>
<tr>
<td>Aug 19</td>
<td>Introduction &amp; Amino Acids I</td>
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<td>Amino Acids II</td>
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<td>Protein Structure I</td>
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<td>Protein Structure IV</td>
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<td>Protein Purification I</td>
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<td>Protein Interrelationships/Evolution</td>
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<td>16</td>
<td>TEST I</td>
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<tr>
<td>19</td>
<td>Enzymes I: Catalysis</td>
<td>13 &amp; 15</td>
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<tr>
<td>21</td>
<td>Enzymes II: Kinetics</td>
<td>14</td>
</tr>
<tr>
<td>23</td>
<td>Enzymes III: Functional Groups</td>
<td>15</td>
</tr>
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<td>26</td>
<td>Enzymes IV: Trypsin</td>
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<td>28</td>
<td>Enzymes V: Inhibition</td>
<td>14</td>
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<td>30</td>
<td>Enzymes VI: Triose Phosphate Isomerase, RNase</td>
<td>15</td>
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<td>Oct 3</td>
<td>Enzymes VII: Ribozymes, Lysozyme</td>
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<td>Enzymes VIII: Catalytic Antibodies; Two Recent Publications</td>
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<td>Special Topics Lecture I: Antibodies (Dr. Kistler)</td>
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<td>Exam II Review</td>
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<td>TEST II (Enzymes I-VIII)</td>
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<td>17</td>
<td>Bisubstrate Enzymes</td>
<td>14</td>
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<td>Special Topics Lecture II: Enzymology &amp; Crystallography (Dr. Chruszcz)</td>
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<td>21</td>
<td>Special Topics Lecture III: Metalloenzymes</td>
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<td>Regulation I: Allostery</td>
<td>13</td>
</tr>
<tr>
<td>26</td>
<td>Regulation II: Isozymes, Covalent Modification, Zymogen Activation</td>
<td>15 &amp; 18</td>
</tr>
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<td>28</td>
<td>Coenzymes I: Thiamine Pyrophosphate, Pyridoxal Phosphate</td>
<td>17 &amp; 26</td>
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<tr>
<td>31</td>
<td>Coenzymes II: Nicotinamide, Flavin</td>
<td>17 &amp; 22</td>
</tr>
<tr>
<td>Nov 2</td>
<td>Coenzymes III: Phosphopantetheine, Lipoic Acid &amp; Biotin</td>
<td>21, 23 &amp; 28</td>
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<td>Coenzymes IV: Folate, Metals, Two Recent Publications</td>
<td>15 &amp; 26</td>
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<tr>
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<td>TEST III (Bisubstrate Enzymes, Regulation &amp; Coenzymes)</td>
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<td>Carbohydrates: Purification &amp; Characterization</td>
<td>11</td>
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<td>Carbohydrates: Structure-Function I</td>
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<td>Carbohydrates: Structure-Function II</td>
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<tr>
<td>16</td>
<td>Carbohydrates: Glycoproteins</td>
<td>11</td>
</tr>
<tr>
<td>18</td>
<td>Membranes : Introduction</td>
<td>12</td>
</tr>
<tr>
<td>21</td>
<td>Membranes: Lipids &amp; Proteins</td>
<td>12</td>
</tr>
<tr>
<td>23-25</td>
<td>Thanksgiving – no class</td>
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<tr>
<td>Nov 28</td>
<td>Membranes: Structure</td>
<td>12</td>
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<td>30</td>
<td>Membranes: Transport I</td>
<td>12</td>
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<tr>
<td>Dec 2</td>
<td>Membranes: Transport II</td>
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</tr>
<tr>
<td>5</td>
<td>TEST IV (9:00 AM) (Carbohydrates and Membranes)</td>
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*aThe 8:30-9:20 AM time slot is for exams only.


*cStudents missing an exam must arrange to take the exam or a make-up within three days of the original exam or risk failing the exam. At the discretion of the professor, longer delays may be granted, but only for truly extenuating circumstances.
At the end of this course the student should understand:

1. The contribution of each amino acid to protein structure and function.
2. How proteins fold to assume their final conformation.
3. How proteins are purified.
4. How proteins are characterized.
5. How protein sequences are analyzed.
6. The importance of transition state stabilization in enzyme catalysis.
7. The nature of enzyme active sites and enzyme-substrate complexes.
8. The relationship between substrate concentration and reaction rate known as saturation (Michaelis-Menten) kinetics.
9. How key amino acid side chains participate in catalysis and how they are identified.
10. The role of proximity and orientation, covalent catalysis, and general acid/base catalysis in enzyme activity.
11. The use of small molecules to reversibly or irreversibly inhibit enzyme activity including mechanism-based inactivators that require enzyme activation.
12. The distinction between single and double displacement classes of bi-substrate enzyme catalyzed reactions.
13. How enzyme activity is regulated by means of allosterism, isozymes, covalent modification and zymogen activation.
14. The role of organic co-factors (co-enzymes) in enzyme catalysis.
15. How protein and polysaccharides differ in their structure and synthesis.
16. How sugars and linkages contribute to a polysaccharides’ structure.
17. How glycoproteins are synthesized.
18. How membrane lipids contribute to a membrane’s properties.
19. How channels and pumps work at a molecular level.

Grading Policy:

There will be four major exams, one over each of the four sections of the course; there will not be a comprehensive final and there is no extra credit work. No major exam will be dropped. These four exams will be weighted equally. A slight adjustment (usually 5-10 points) may be made at the end of the semester after the final numerical grades have been calculated. That is, an A is normally 90-100, but may be set at 85-100 if the grade distribution indicates that this letter assignment would be more appropriate. Plus grades are given, where appropriate.

Dr. Chruszcz's Office Hours:

Dr. Chruszcz's office hours are Monday and Wednesday, 10:50-11:50 AM, or by appointment. He is usually available in his office. If not, please check his laboratory (GSRC 334 and 335).
REFERENCES

**Amino Acids & Protein Structure:**


**Protein Folding:**


Protein Methodology:

Protein Homology:
Carbohydrates:

Lipids & Membrane Proteins:


