Chemistry 103.3
Basic Biochemistry
Fall 2016
Queens College, Department of Chemistry and Biochemistry

Instructor: Wilma Saffran
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718-997-4195
Remsen 206A
Office Hours Wednesday 9:30 – 10:20 AM and Friday 1:00 – 1:50 PM

Lecture: Wednesday and Friday, 10:50 AM – 12:05 PM


Course description: Basic Biochemistry presents a study of the structure, properties, and metabolism of the major groups of biological importance, with special emphasis on the role of those compounds required in the diet.
Prerequisite: a grade of C or better in Chem 102.3 and 102.1; corequisite: Chem 103.1

Course goals:
Basic Biochemistry covers the structure and function of the major classes of cellular components: amino acids and proteins, sugars and polysaccharides, lipids, including triacylglycerols and membrane lipids, nucleotides and nucleic acids. Metabolism of nutrients will be covered, with emphasis on the metabolic breakdown of carbohydrates, fats, and protein and generation of energy.
After completing the course students will be able to:
- Describe the structures and properties of cell components, including amino acids, proteins, carbohydrates, lipids, and nucleotides.
- Understand the properties of water and the roles that interactions with water have on the physical and chemical properties of cell components.
- Explain the functions of enzymes, the mechanisms of enzymatic catalysis, interactions of enzymes with substrates and inhibitors, and the roles of coenzymes and vitamins.
- Describe how biological molecules are transported through the body and across lipid membranes.
- Analyze the metabolic pathways leading to the degradation of carbohydrates, fats, and proteins, and understand how metabolic reactions are coupled to the synthesis of ATP.
- Calculate the energy yields of nutrient degradation.
- Understand how metabolic pathways are regulated in response to energy needs, energy balance, and the cellular environment.
Exams

Exam 1: September 28  Chapters 18, 19, 20
Exam 2: November 2  Chapters 21, 22, 23
Exam 3: December 7  Chapters 24, 25, 28
Final Exam: TBA  Comprehensive

Course policies:
You are required to attend all quizzes and exams. There are no makeup exams. You must obtain a doctor’s note or provide other written documentation if you miss an exam due to sickness or any other circumstance. This note should be given to your instructor.

There will be a comprehensive final exam, given during finals week. Each exam counts for 25% of the course grade.

Tentative course schedule:

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<tr>
<th>Topics</th>
<th>Chapter</th>
<th>Dates</th>
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<tbody>
<tr>
<td>Acids and bases (review)</td>
<td>10</td>
<td>8/26</td>
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<tr>
<td>Amino acids and proteins</td>
<td>18</td>
<td>8/31, 9/2</td>
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<td>Enzymes and vitamins</td>
<td>19</td>
<td>9/7, 9, 14</td>
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<td>Carbohydrates</td>
<td>20</td>
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<td>Generation of biochemical energy</td>
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<td>9/21, 23, 30</td>
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<td>Carbohydrate metabolism</td>
<td>22</td>
<td>10/5, 7, 19, 21</td>
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<td>Lipids</td>
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<tr>
<td>Lipid metabolism</td>
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<td>10/28, 11/4, 9, 11</td>
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<tr>
<td>Protein and amino acid metabolism</td>
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<td>11/16, 18, 23</td>
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<td>Chemical messengers</td>
<td>28</td>
<td>11/30, 12/2, 9</td>
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Note: There are no classes on Wednesday, 10/12. Friday, 10/14 follows a Tuesday schedule.

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